2N® Access Unit

Access Control

Installation Manual

Version 2.2

www.2n.cz

The 2N TELEKOMUNIKACE a.s. is a Czech manufacturer and supplier of telecommunications equipment.

The product family developed by 2N TELEKOMUNIKACE a.s. includes GSM gateways, private branch exchanges (PBX), and door and lift communicators. 2N TELEKOMUNIKACE a.s. has been ranked among the Czech top companies for years and represented a symbol of stability and prosperity on the telecommunications market for almost two decades. At present, we export our products into over 120 countries worldwide and have exclusive distributors on all continents.

2N TELEKOMUNIKACE a.s. administers the FAQ database to help you quickly find information and to answer your questions about 2N products and services. On www.faq.2n.cz you can find information regarding products adjustment and instructions for optimum use and procedures „What to do if...".

2N TELEKOMUNIKACE a.s. hereby declares that the 2N® Access Unit product complies with all basic requirements and other relevant provisions of the 1999/5/EC directive. For the full wording of the Declaration of Conformity see the CD-ROM (if enclosed) or our website at www.2n.cz.

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.

The 2N TELEKOMUNIKACE a.s. is the holder of the ISO 9001:2009 certificate. All development, production and distribution processes of the company are managed by this standard and guarantee a high quality, technical level and professional aspect of all our products.

Content

1. Product Overview

Here is what you can find in this section:

Basic Properties

2N® Access Unit is an elegant and reliable access IP system equipped with a number of useful functions, which are not always common in devices of this category.

2N® Access Unit is a modular access system that meets all individual user needs. Unlike other access systems available on the market,**2N® Access Unit** is not a single-module system with a fixed functionality, but a user friendly modular system, allowing the user to assemble required modules and accessories on a "plug and play" basis. This approach provides individual configuration options and increase in functionality as necessary.

Keypadis a numeric keypad module that allows you to use the intercom for code lock switch activation or phone number/user number calling.

Integrated card reader moduleprovides the RFID card access control functionality. With additional software settings, you can control more functions than the door lock using the card.

Electric lock switch. This switch can be can be controlled via a numeric keypad, PC application or any phone during a call. The switch can be completed with additional output modules if necessary. A wide range of the switch mode settings provide an infinite number of applications.

Resistance – **2N® Access Unit** is designed as a robust, mechanically resistant access system, which withstands any weather conditions without requiring additional accessories.

Installation of 2N® Access Unit is very easy. All you have to do is assemble the required modules and connect the system to your LAN via a mains cable. Being of the "plug and play" type, the modules need not be configured individually. Feed the

intercom either from a 12V power supply or directly from your PoE-supporting LAN.

To configure 2N® Access Unit , you need a PC equipped with any Internet browser. To manage extensive intercom installations easily, use the**2N® Access Commander**.

Advantages of Use

- Elegant design
- Weather resistance
- Variable mounting options (brick/plasterboard flush mounting, wall mounting)
- Optional numeric keypad with backlight
- Use of multiple modules of the same type - e.g. building entrance/exit card reader
- Integrated electronic lock switches with wide setting options
- Integrated RFID card reader module
- LAN (PoE) or external 12V power supply
- Configuration via web interface or special PC application
- HTTP server for configuration
- SNTP client for server time synchronisation
- SMTP client for e-mail sending
- TFTP/HTTP client for automatic configuration and firmware update

1.1 Components and Associated Products

Basic Units

	
Part No. 916009 **2N®Access Unit (125kHz)**	**Part No. 916010** **2N®Access Unit (13.56MHz + NFC)**

Tip

- **Supported auxiliary modules:2N®Helios IP Verso modules are supported**- RFID card reader (125kHz; 13.56MHz), keypad, 5-button module, Wiegand, etc.

Frames

	
Part No.9155011 Flush mounting frame, 1-module Covering frame for the 1-module brick/plasterboard flush mounting box. This 1-module frame is used for connection of an OUT card reader or keypad, for example. Remember to order the frame when you order a 1-module flush mounting box, Part No. 9155014.	**Part No.9155012** Flush mounting frame, 2-module Covering frame for the 2-module brick/plasterboard flush mounting box. Remember to order the frame when you order a 2-module flush mounting box, Part No. 9155015.

	
Part No.9155021 Wall mounting frame, 1-module Covering frame for wall (surface) mounting.This 1-module frame is used for connection of an OUT card reader or keypad, for example.	**Part No.9155022** Wall mounting frame, 2-module Covering frame for wall (surface) mounting.

Tip

- The 1-module frame is used when an auxiliary module from **2N®Helios IP Verso**is mounted onto an extended interconnecting cable, for an OUT card reader or keypad, for example.

Tip

- Remember to order the flush mounting frame when you order a brick/plasterboard flush mounting box:
  - 1-module frame, Part No.**9155011**– 1-module flush mounting box, Part No.**9155014**.
  - 2-module frame, Part No.**9155012**2-module flush mounting box, Part No.**9155015**.

5.3 Extending Modules

		
Part No. 916020 RJ45 adapter	**Part No. 9155033** **2N® Helios IP Verso**– 13.56 MHz RFID Card Reader The card reader module works with **2N®Access Unit**as an OUT card reader. The module supports cards, key fobs and/or other 13.56MHz standard carriers. **ISO 14443A**Mifare Classic 1k & 4k, DESFire EV1, Mini, Plus S&X, Ultralight, Ultralight C **ISO 14443B**CEPAS, HID iCLASS **JIS X 6319**Felica	**Part No. 9155040** **2N®Helios IP Verso** - 13.56MHz RFID Card Reader, NFC Preparation The card reader module works with **2N®Access Unit**as an OUT card reader. The module supports cards, key fobs and/or other 13.56MHz standard carriers. **ISO 14443A**Mifare Classic 1k & 4k, DESFire EV1, Mini, Plus S&X, Ultralight, Ultralight C **ISO 14443B**CEPAS, HID iCLASS **JIS X 6319**Felica **ISO 18092**SmartPhone with NFC/HCE support, from Android version 4.3
		

Part No.9155032 **2N®Helios IP Verso**– 125kHz RFID Card Reader The card reader module works with **2N®Access Unit** as an OUT card reader. The module supports cards, key fobs and/or other 125kHz standard carriers:**EM-41xx**or **HID Proximity**.	**Part No.9155031** **2N®Helios IP Verso**– keypad The numeric keypad module helps enter a numeric entrance code. Use the keypad for departures or double entrance authentication. The keypad digits and symbols are backlit.	**Part No. 9155037** **2N®Helios IP Verso**-Wiegand Module The Wiegand module helps you interconnect your system with other systems (access, security) via the Wiegand interface. The module is installed under another module, i.e. cannot be installed directly into the**2N®Access Unit**(must be mounted outside).
		
Part No. 9155034 **2N® Helios IP Verso**I/O Module The logic input/output module helps you integrate various sensors and control doors or other equipment. The module is installed under another module, i.e. cannot be installed directly into the **2N®Access Unit**(must be mounted outside).	**Part No.9155030** **2N®Helios IP Verso**– Infopanel The Infopanel module helps you add your company logo, opening hours and similar information to the access unit. The Infopanel has software-controlled backlight.	**Part No.9155050** 1m Interconnecting Cable **Part No. 9155054** 3m Interconnecting Cable **Part No. 9155055** 5m Interconnecting Cable

Mounting Accessories

	
Part No.9155014 Flush mounting box, 1-module	**Part No.9155015** Flush mounting box, 2-module
	
Part No. 9155061 Backplate, 1 module	**Part No. 9155062** Backplate, 2 modules

The mounting boxes for **2N®Helios IP Verso**are compatible with the**2N®Access Unit** , refer to the table below:

Part No.	Name	Description
9155011	**2N®Helios IP Verso**– Flush mounting frame, 1-module	Covering frame for the 1-module brick/plasterboard flush mounting box. This 1-module frame is used for connection of an OUT card reader or keypad, for example. Remember to order the frame when you order a 1-module flush mounting box, Part No. 9155014.

9155012	**2N®Helios IP Verso**– Flush mounting frame, 2-module	Covering frame for the 2-module brick/plasterboard flush mounting box. Remember to order the frame when you order a 2-module flush mounting box, Part No. 9155015.
9155014	**2N®Helios IP Verso**– Flush mounting box, 1-module	The box is designed for brick/plasterboard flush mounting of a 1-module installation. Supplied including accessories for multiple box assemblies.
9155015	**2N®Helios IP Verso**– Flush mounting box, 2-module	The box is designed for brick/plasterboard flush mounting of a 2-module installation. Supplied including accessories for multiple box assemblies.
9155021	**2N® Helios IP Verso**– Wall mounting frame, 1-module	Covering frame for wall (surface) mounting.This 1-module frame is used for connection of an OUT card reader or keypad, for example.
9155022	**2N®Helios IP Verso**– Wall mounting frame, 2-module	Covering frame for wall (surface) mounting.
9155061	**2N® Helios IP Verso** Backplate, 1-module	A backplate for glass or uneven surface mounting. For 1 module.
9155062	**2N® Helios IP Verso** Backplate, 2-module	A backplate for glass or uneven surface mounting. For 2 modules.
9155030	**2N® Helios IP Verso**– Infopanel	The Infopanel module helps you add your company logo, opening hours and similar information to the access unit. The Infopanel has software-controlled backlight.
9155031	**2N® Helios IP Verso**- Keypad	The numeric keypad module helps enter a numeric entrance code. Use the keypad for departures or double entrance authentication. The keypad digits and symbols are backlit.
9155032	**2N® Helios IP Verso** 125kHz RFID card reader	The card reader module works with the**2N®Access Unit**as an OUT card reader. The module supports cards, key fobs and/or other 125kHz standard carriers:**EM-41xx**or**HID Proximity**.

9155033	**2N® Helios IP Verso** 13.56MHz RFID card reader	The card reader module works with the**2N®Access Unit**as an OUT card reader. The module supports cards, key fobs and/or other 13.56MHz standard carriers. **ISO 14443A**Mifare Classic 1k & 4k, DESFire EV1, Mini, Plus S&X, Ultralight, Ultralight C **ISO 14443B**CEPAS, HID iCLASS **JIS X 6319**Felica
9155034	**2N® Helios IP Verso** I/O module	The logic input/output module helps you integrate various sensors and control doors or other equipment. The module is installed under another module, i.e. cannot be installed directly into the**2N®Access Unit**(must be mounted outside).
9155037	**2N® Helios IP Verso**- Wiegand module	The Wiegand module helps you interconnect your system with other systems (access, security) via the Wiegand interface. The module is installed under another module, i.e. cannot be installed directly into the**2N®Access Unit**(must be mounted outside).
9155040	**2N® Helios IP Verso** RFID card reader, preparation for NFC	The card reader module works with the**2N®Access Unit**as an OUT card reader. The module supports cards, key fobs and/or other 13.56MHz standard carriers. **ISO 14443A**Mifare Classic 1k & 4k, DESFire EV1, Mini, Plus S&X, Ultralight, Ultralight C **ISO 14443B**CEPAS, HID iCLASS **JIS X 6319**Felica **ISO 18092**SmartPhone with NFC/HCE support, from Android version 4.3

The 2N® Access Unit is designed for outdoor applications and requires no additional roof.

For **the 2N® Access Unit installation** choose the appropriate mounting frame and box if necessary.

Electric Locks

		
Part No.932071E BEFO 11211 12V/230mA DC low consumption	**Part No.932081E** BEFO 11221 with momentary pin 12V/230mA DC low consumption A very short electric pulse is enough to put the lock into the OPEN position and unlock the door. After passage, the lock gets in the CLOSED (relax) position again.	**Part No.932091E** BEFO 11211MB with mechanical blocking 12V/230mA DC low consumption You can set the lever mechanically into the OPEN or CLOSED position. When OPEN, the lock is constantly open, when CLOSED, it is a standard lock.
		

Part No. 932061E BEFO 11211MB with momentary pin, mechanical blocking low consumption 12V/230mA DC A regular lock with a built-in contact to indicate whether the door is open or closed.	**Part No. 932072E** BEFO 31211 fail safe 12V/170mA DC The fail safe lock is closed when electricity is switched on. When electricity is interrupted, the lock is opened.	**Part No. 932062E** BEFO 321211 fail safe plus door signalling 12V/170mA The fail safe lock is closed when electricity is switched on. When electricity is interrupted, the lock is opened. It contains a built-in contact to indicate whether the door is open or closed.

Tip

- FAQ:Electric locks - Differences between locks for 2N®Helios IP

Power Supply

		
Part No. 91378100 PoE injector - without cable **Part No. 91378100E** PoE injector - with EU cable **Part No. 91378100US** PoE injector - with US cable For intercom supply via Ethernet cable where the PoE switch is absent.	**Part No.91341481E** 12V/2A adapter A stabilised power supply is required where PoE is not used.	**Part No. 932928** 12V transformer for electric lock

Additional Modules

		
Part No.9159010 Security relay A simple, security enhancing add-on. Prevents lock tampering. Installed between the intercom, from which it is also supplied, and the lock to be controlled.	**Part No. 9159013** Departure button Connects the logic input for door unlocking from inside the building.	**Part No. 9159012** Magnetic door contact A door installation set for door opening status identification. Used for door protection, open door or violent door opening detection.
		
Part No.9134173 13.56MHz Mifare RFID card	**Part No.9134174** 13.56MHz Mifare RFID key fob	**Part No.9134165E** 125kHz RFID card of type EM4100
		

Part No.9134166E 125kH RFID key fob	**Part No.9137420E** External RFID card reader for connection to PC using a USB interface. Suitable for system administration and adding of 125kHz EM41xx cards using a web interface or the **2N®Access Commander**.	**Part No. 9137421E** 13.56MHz and 125kHz USB RFID card reader External RFID card reader for connection to PC using a USB interface. Suitable for system administration and adding of 13.56MHz and 125kHz cards using a web interface or the **2N®Access Commander**.
		
Part No.9137410E External IP relay - 1 output A stand-alone IP device, which can be controlled from an IP intercom via HTTPcommands. Helps control a device remotely.	**Part No.9137411E** External IP relay - 4 outputs, PoE A stand-alone IP device, which can be controlled from an IP intercom via HTTP commands. Helps control a device remotely.	**Part No. 9159014EU/US/UK** **2N®2Wire** (set of 2 adapters plus EU/US/UK power supply) Converter**2N®2Wire**helps you connect any IP device to your existing two-wire cabling from the original door bell/phone without reconfiguring. All you have to do is have one **2N®2Wire**unit at each end of the cable and connect one of them at least to the power supply. The**2N® 2Wire unit**then providesPoEsupply not only to the other converter, but also to all the IP terminal equipment connected.
		

Part No. 9159030 External 125kHz RFID card reader Secondary reader for connection to an internal reader. Allows for control of card entry from both sides of the door. IP67 cover, also suitable for exteriors. Reads EM4100 and EM4102 cards.	**Part No. 9159031** External 13.56MHz Mifare RFID card reader, Wiegand Secondary reader for connection to an internal reader. Allows for control of card entry from both sides of the door. IP68 cover, also suitable for exteriors. Reads Mifare cards.	

Tip

- Refer to the local 2N distributor for more accessories and recommendations please.

1.2 Terms and Symbols

The following symbols and pictograms are used in the manual:

Safety

- **Always abide** by this information to prevent persons from injury.

Warning

- **Always abide** by this information to prevent damage to the device.

Caution

- **Important information** for system functionality.

Tip

- **Useful information** for quick and efficient functionality.

Note

- Routines or advice for efficient use of the device.

2. Description and Installation

Here is what you can find in this section:

2.1 Before You Start

Product Completeness Check

Check your **2N® Access Unit** package for completeness before installation.

- **2N® Access Unit**
- **Brief manual**

2.2 Mechanical Installation

Mounting Types Overview

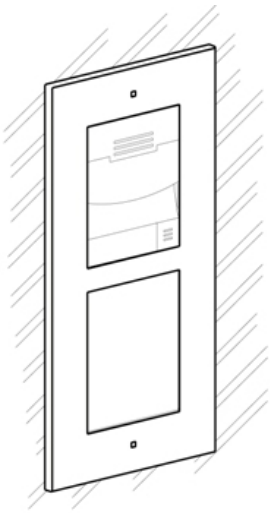
Refer to the table below for a list of mounting types and necessary components. You can assemble multiple units in all the mounting types.

Flush mounting - classic bricks

- incl. hollow bricks, thermally insulated walls, etc.

What you need for mounting:

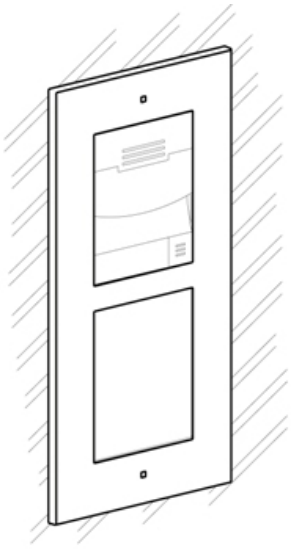
- a properly cut hole as instructed in the box package
- plaster, mounting glue, mounting foam or mortar as necessary
- **2N® Access Unit**
- flush mounting box and frame
  - 1 module: box Part No.**9155014**, frame part No. **9155011**
  - 2 modules: box Part No.**9155015**, frame part No. **9155012**



Flush mounting - plasterboard

What you need for mounting:

- a properly cut hole as instructed in the box package
- **2N® Access Unit**
- flush mounting box and frame
  - 1 module: box Part No.**9155014**, frame part No. **9155011**
  - 2 modules: box Part No.**9155015**, frame part No. **9155012**



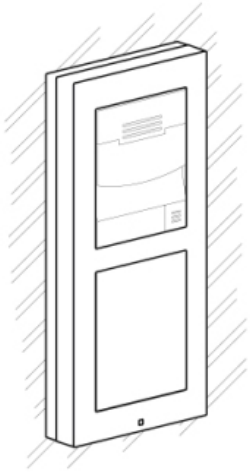
Wall (surface) mounting

- (concrete and steel structures, entry barrier columns, interiors, etc.)

What you need for mounting:

- **2N® Access Unit**
- a proper frame
- 1 module: frame Part No.**9155021**
- 2 modules: frame Part No.**9155022**

For uneven surfaces use a backplate for the required count of modules, Part Nos.**9155061**-**9155062**



Caution

- The warranty does not apply to the product defects and failures arisen as a result of improper mounting (in contradiction herewith). The manufacturer is neither liable for damage caused by theft within an area that is accessible after the attached electric lock is switched on. The product is not designed as a burglar protection device except when used in combination with a standard lock, which has the security function.
- When the proper mounting instructions are not met, water might get in and destroy the electronics. It is because the intercom circuits are under continuous voltage and water infiltration causes an electro-chemical reaction. The manufacturer's warranty shall be void for products damaged in this way!

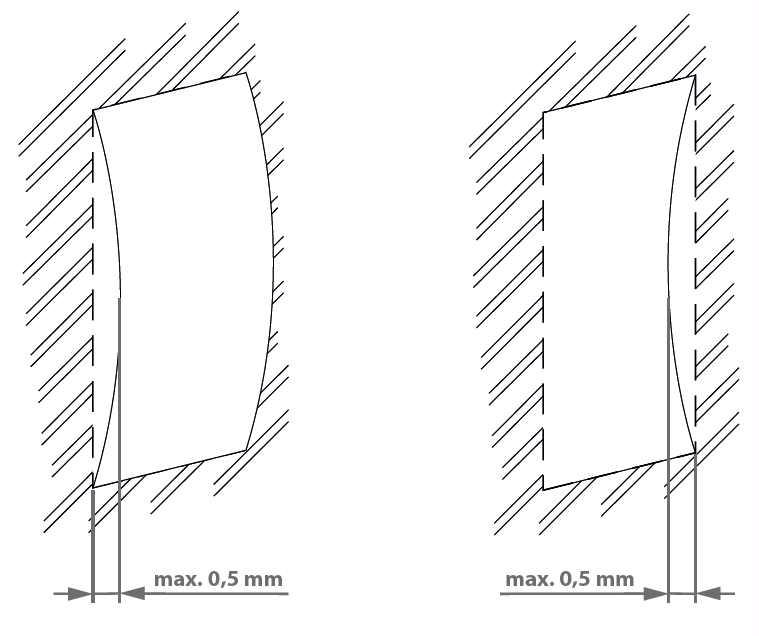
General Mounting Principles

Tip

- Select flush mounting where possible to make your product elegant looking, more vandal resistant and more secure.
- You are advised to buy the flush mounting box in advance and commission a building company to do the masonry for you, for example. The mounting box also helps you put your intercom exactly in the vertical position.

Caution

- Make sure that the diameter of the dowel holes is accurate to avoid falling out of the dowels! Use the mounting glue to secure the dowels if necessary.
- Make sure that the depth of the dowel holes is accurate!
- Do not use low-quality dowels to avoid falling out of the dowels of the wall!
- Having removed the front panel, make sure that no dirt gets inside the product (especially onto the sealing surface).
- Never turn an assembly of **2N® Access Unit** devices after mounting. Make sure that the flush mounting boxes have been installed accurately.
- Check the plasterboard wall and room interior pressure values. If the difference between the values is too great (as a result, e.g., of overpressure ventilation), separate the intercom using, for example, the mounting box enclosed and seal the cable passage.
- Surface mounting may cause problems on places exposed to potential vandalism (such as public garages, etc.). In this case, use steel anchoring elements instead of the dowels and screws included in the delivery.
- The wall mounting surface must be flat with the maximum inequality of 0.5 mm (e.g. prefabricated boards, glass, cut stone, etc.). If the surface is uneven, use flush mounting and a backplate, **Part Nos. 9155061 - 9155062**, or equalise the wall surface.



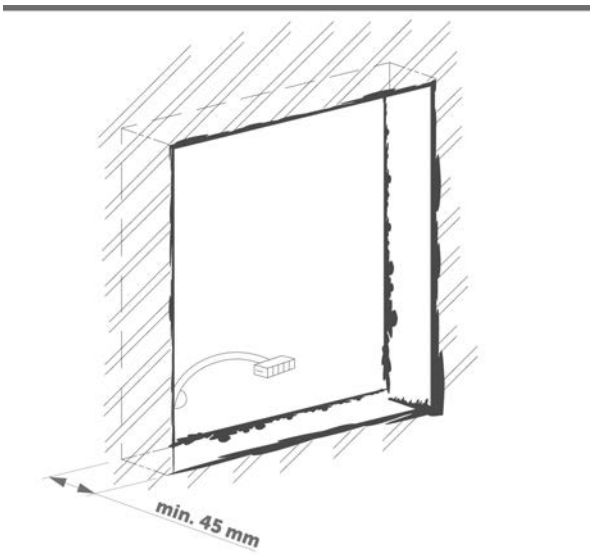
Risk of personal injury

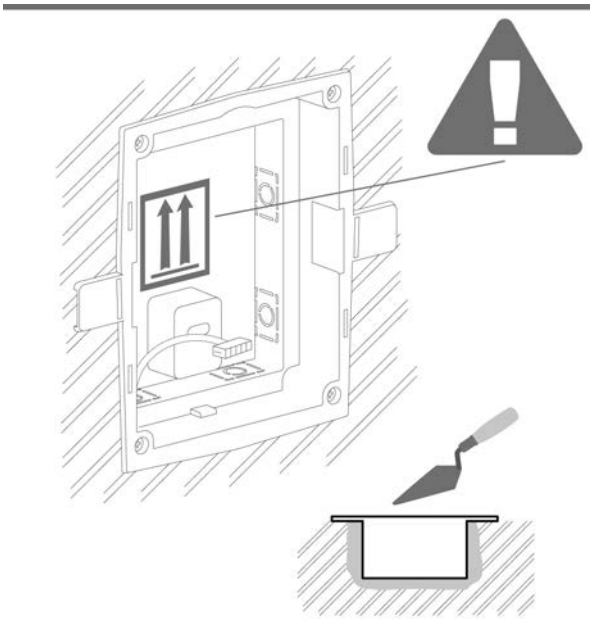
- Eliminate the risk of personal injury! Wall mounting is not recommended for narrow passages or places where people's attention is distracted by something else. The manufacturer shall not be liable for injuries in such cases!

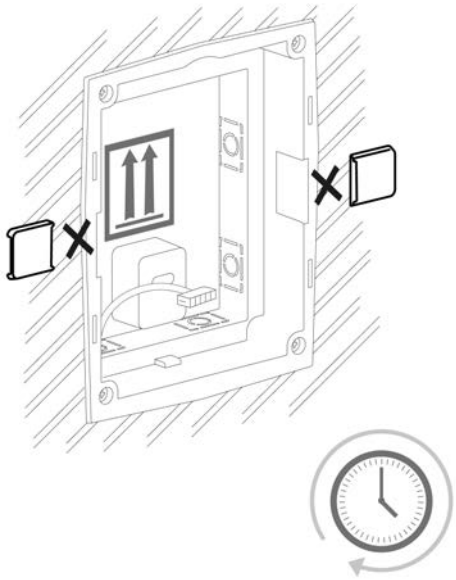
Module Installation

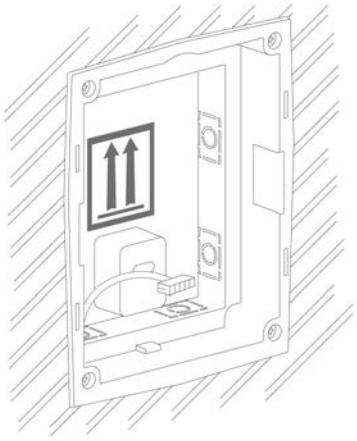
2.2.1 One Module Box

Flush mounting - classic bricks

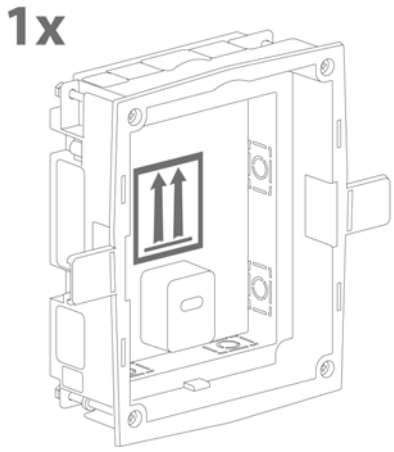


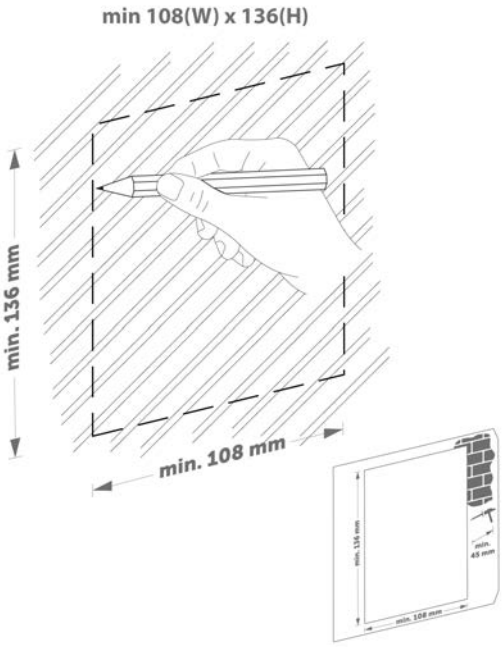


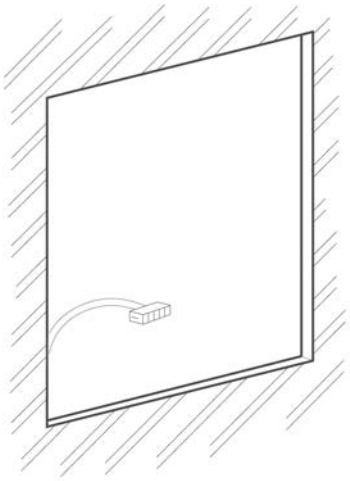


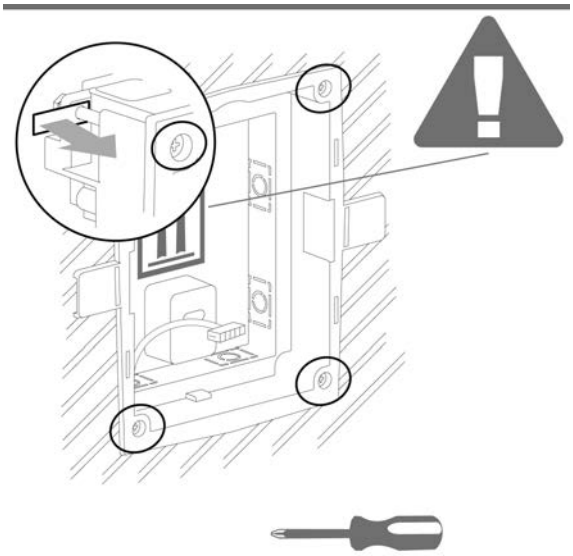


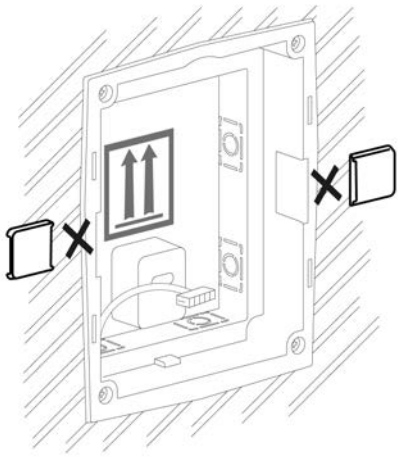
Flush mounting - plasterboard

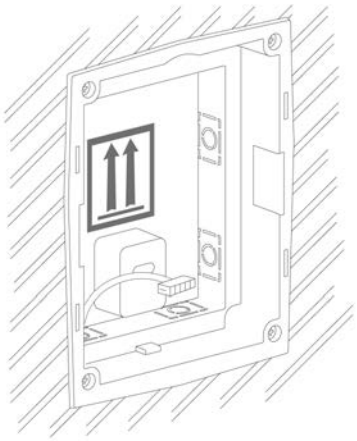




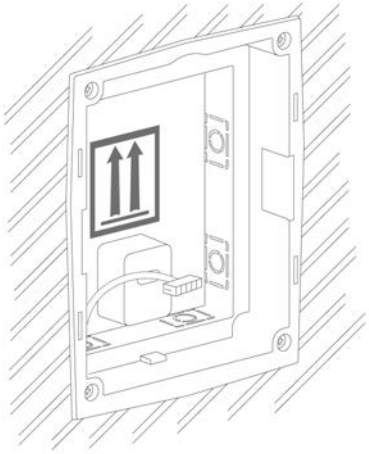


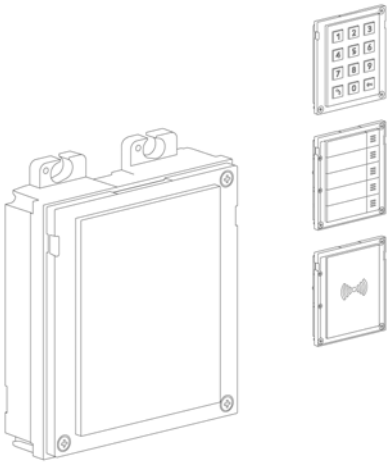


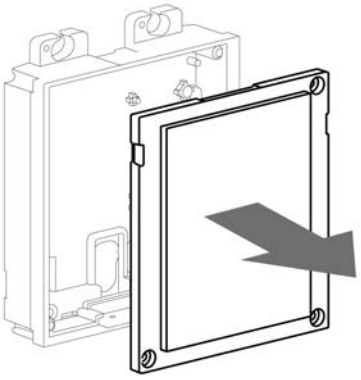


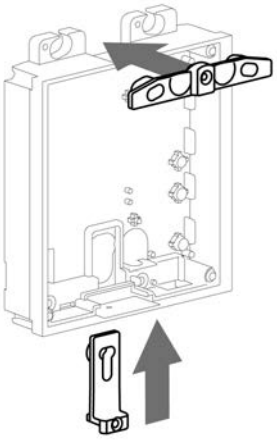


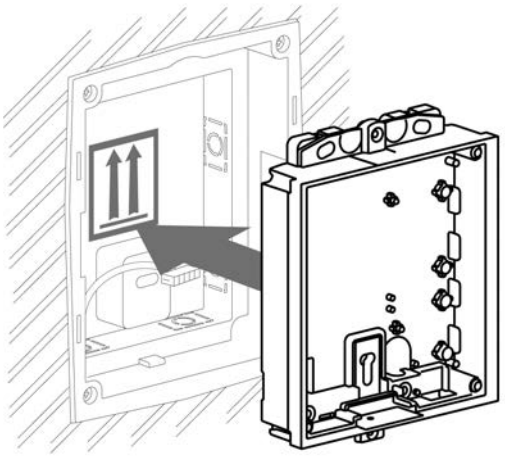
Module flush mounting

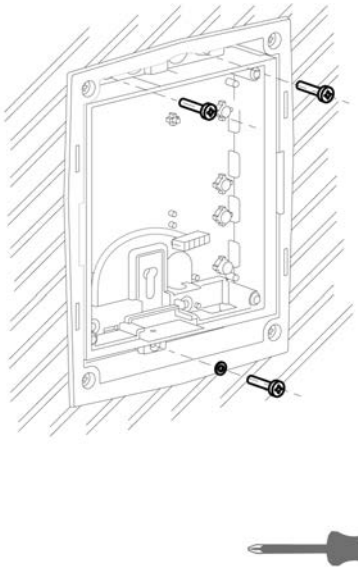


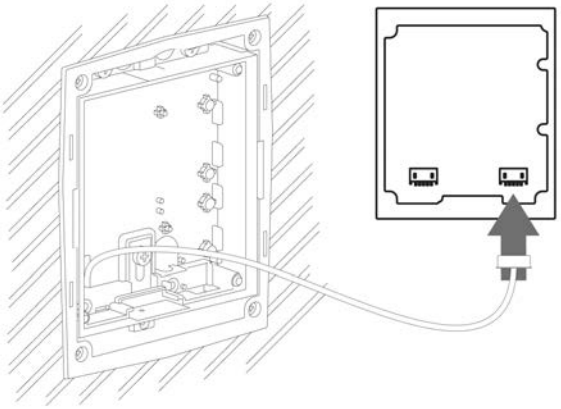


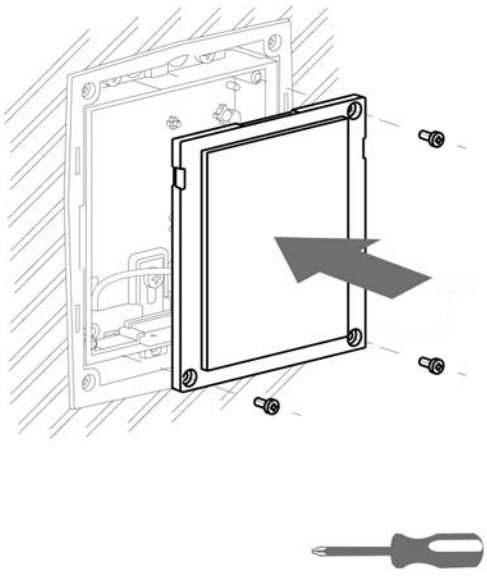


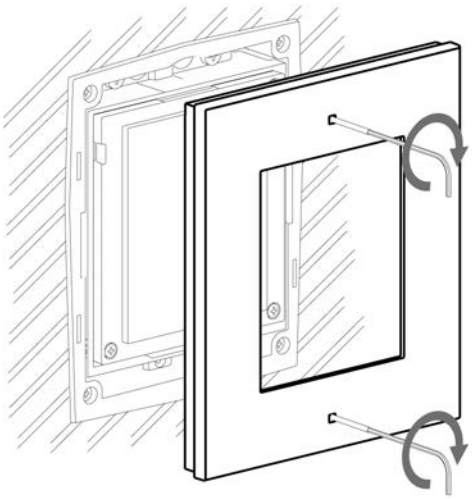


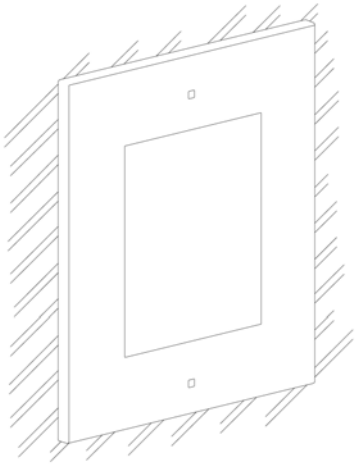




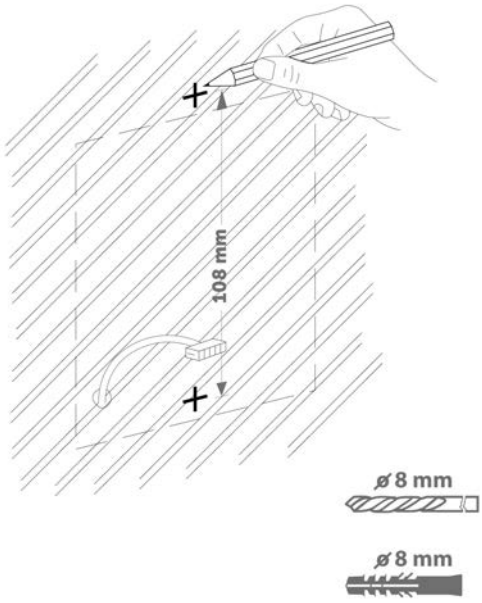


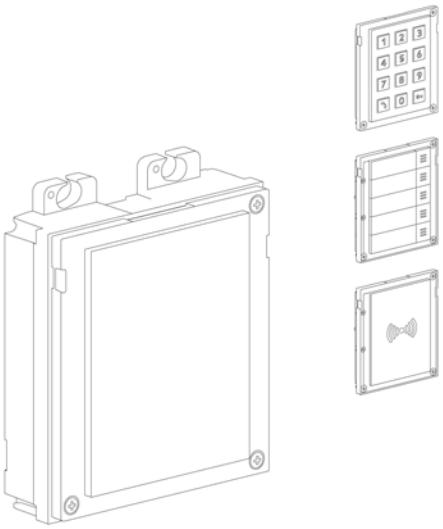


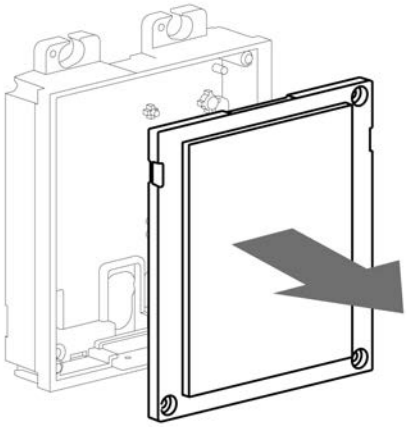


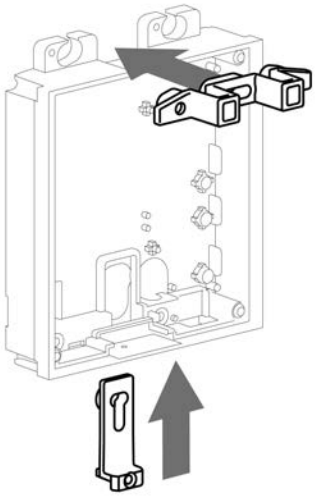


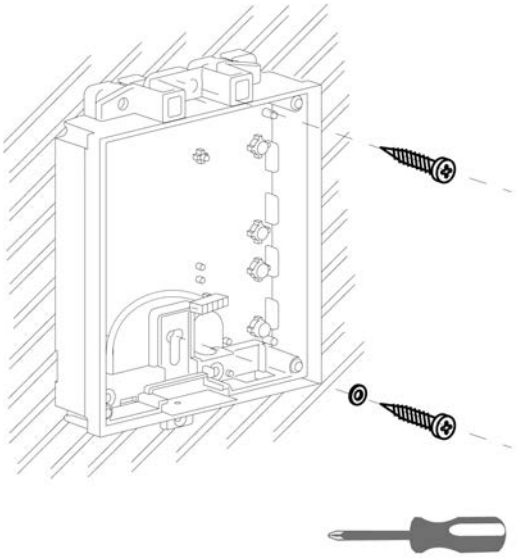
Wall (surface) mounting

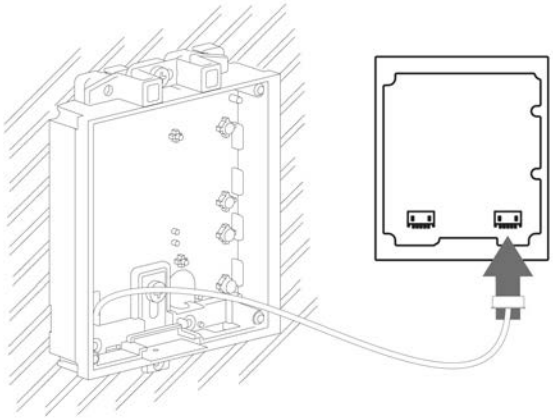


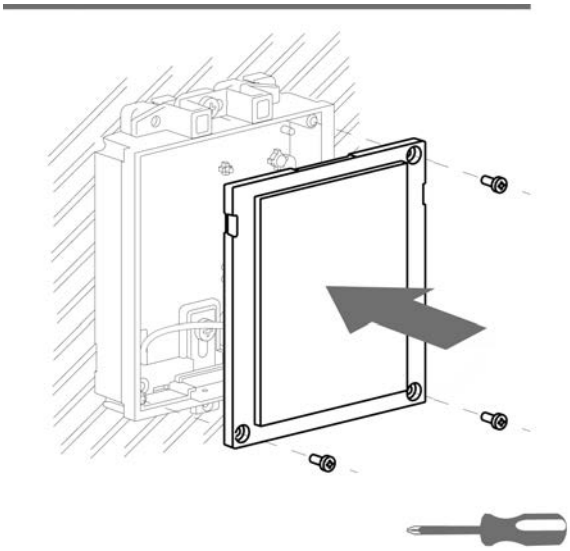


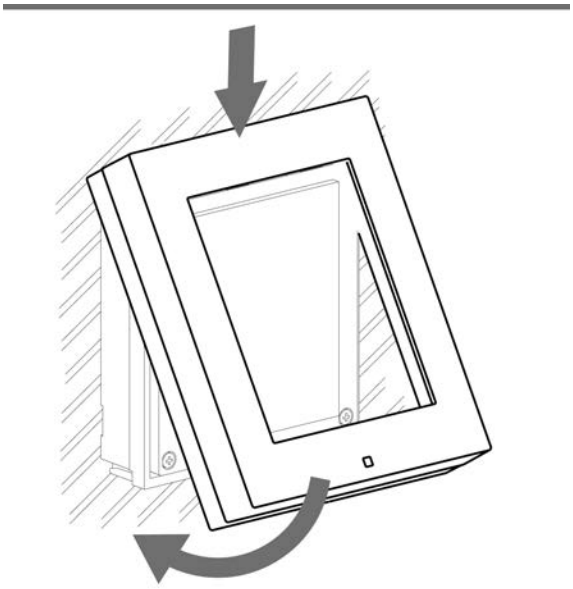


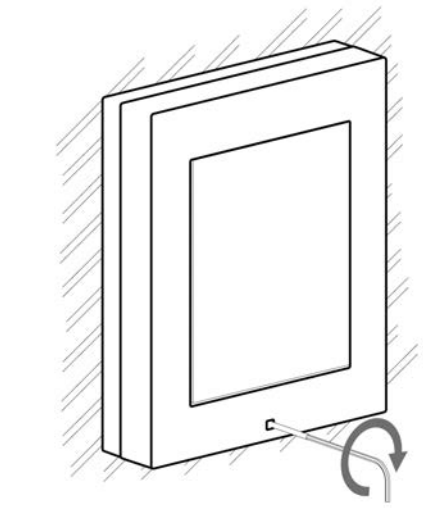


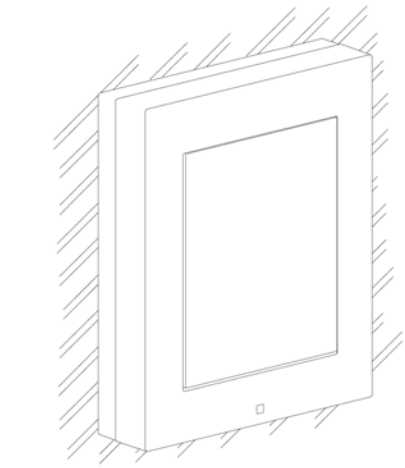






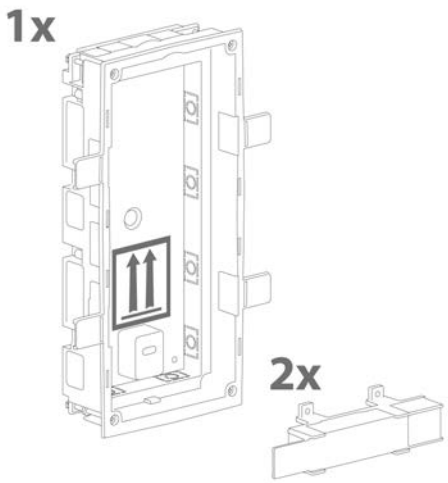


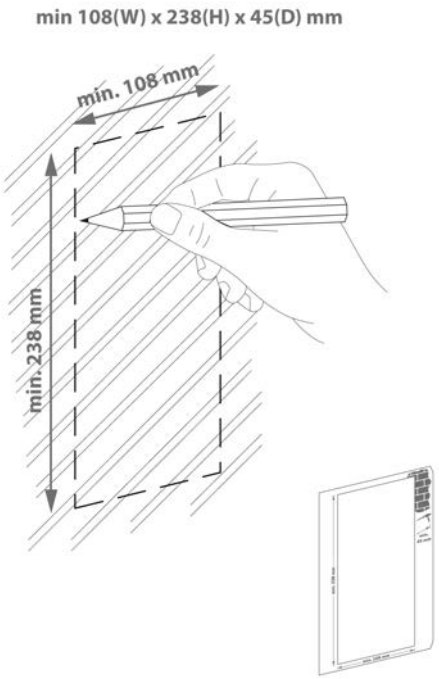


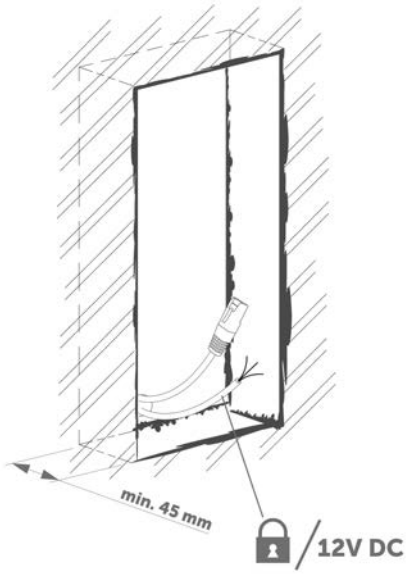


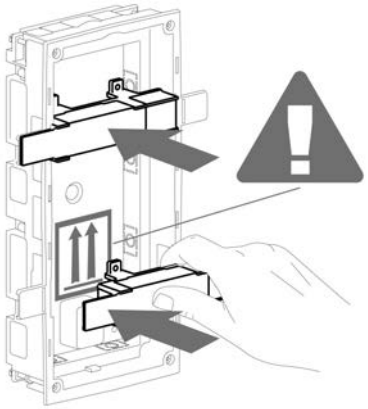
2.2.2 Two Module Box

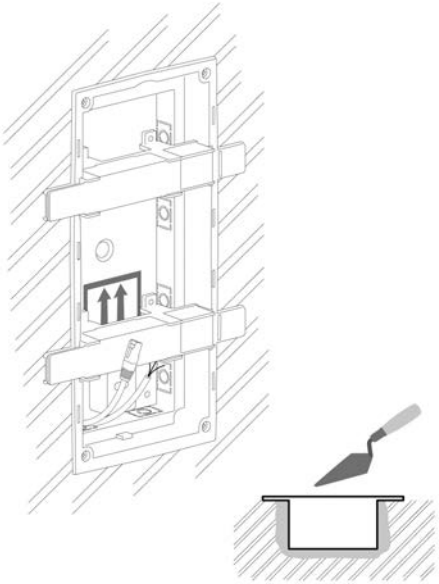
Flush mounting - classic bricks

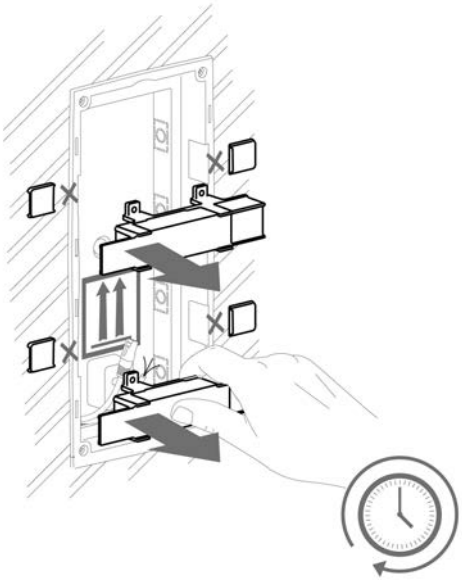


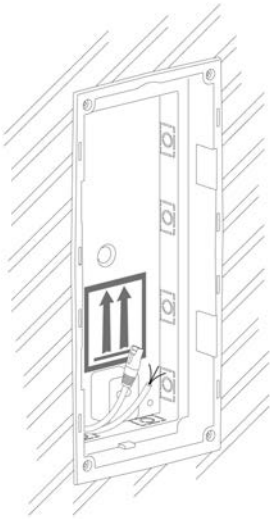




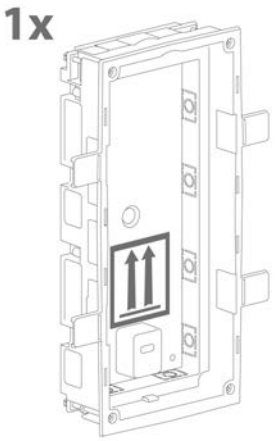


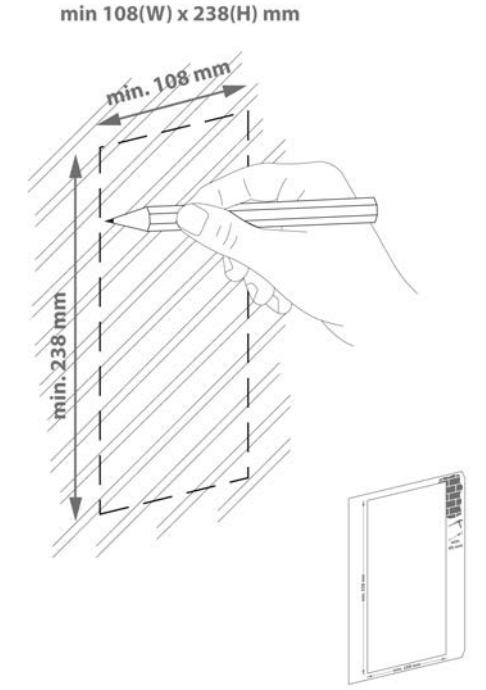


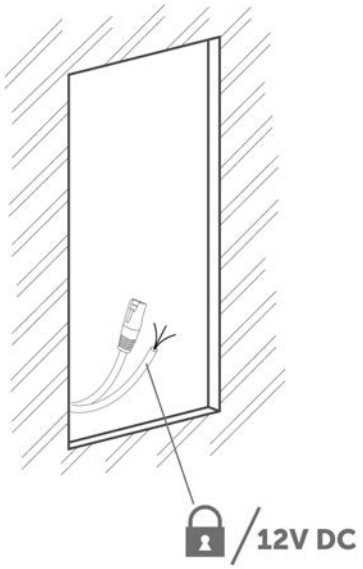


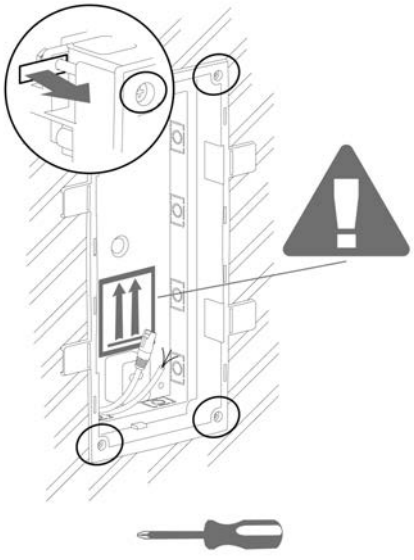


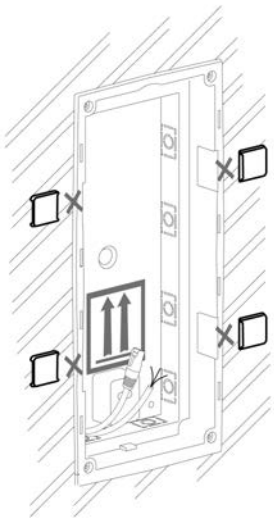
Flush mounting - plasterboard

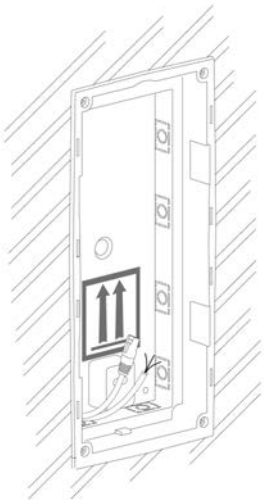




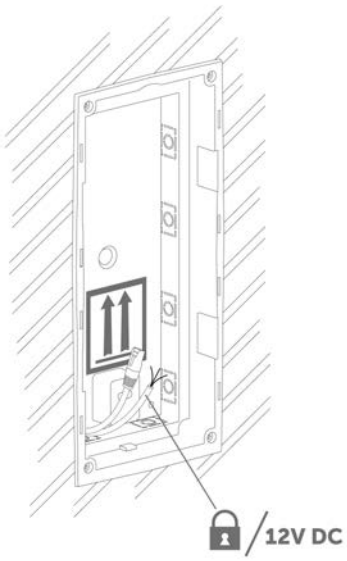


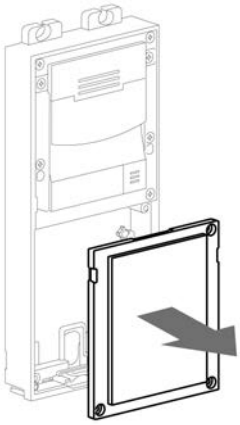


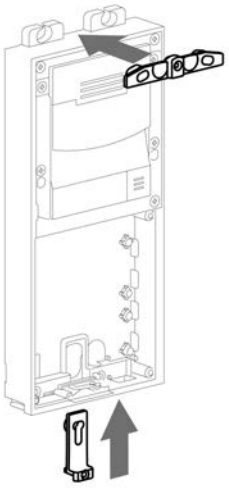


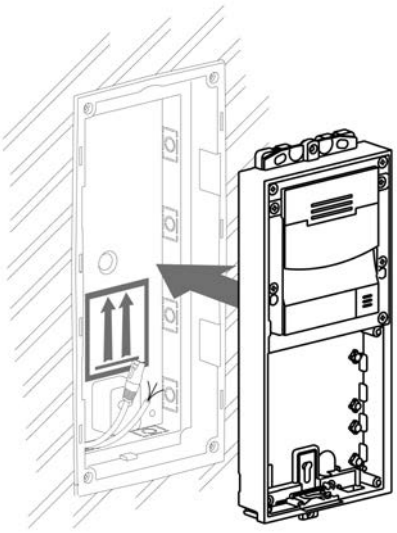


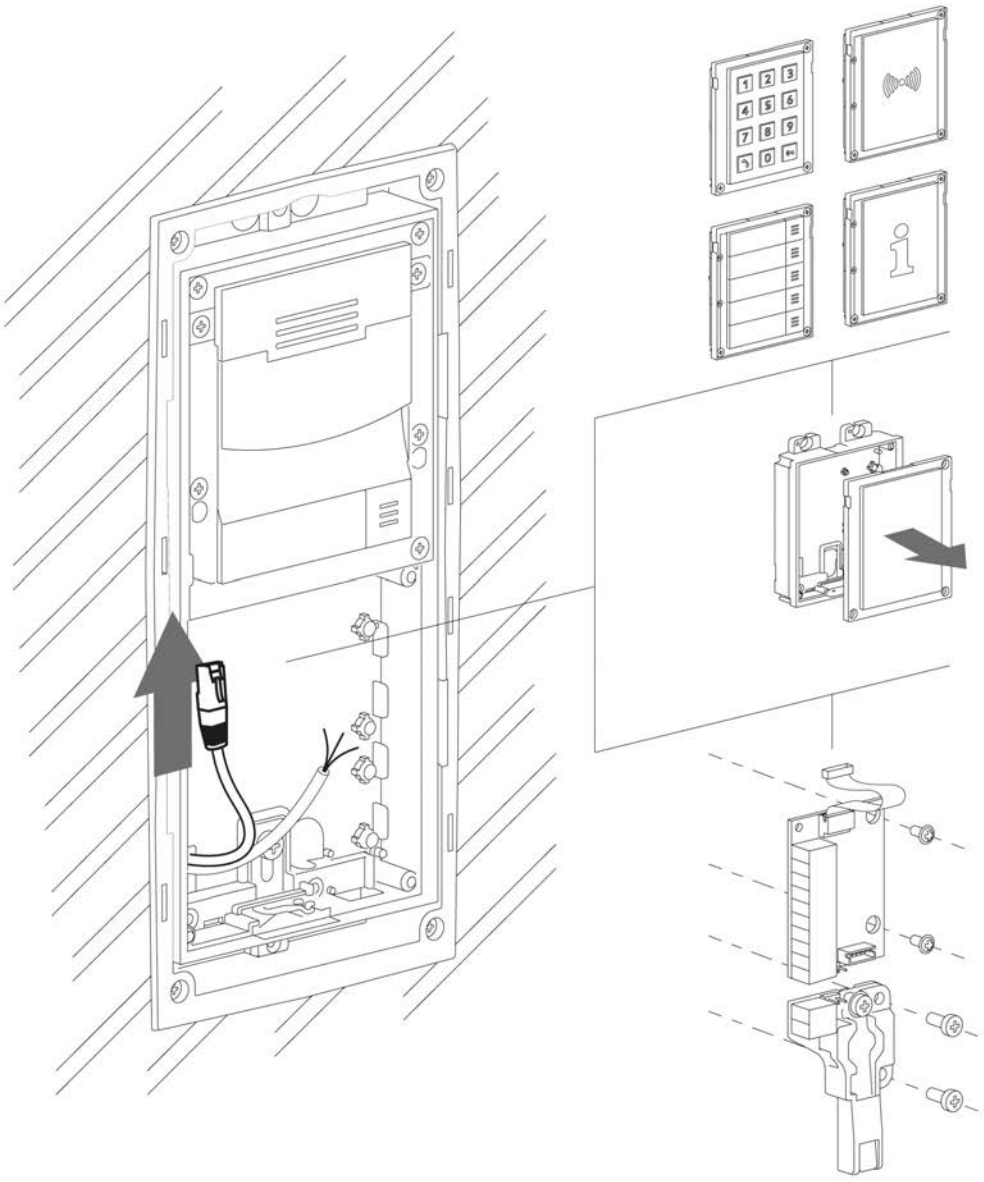
Module flush mounting

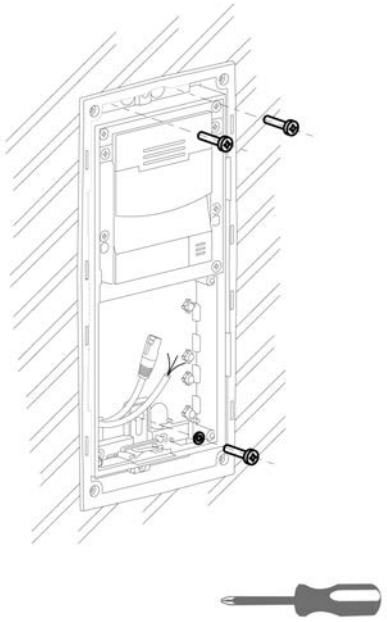


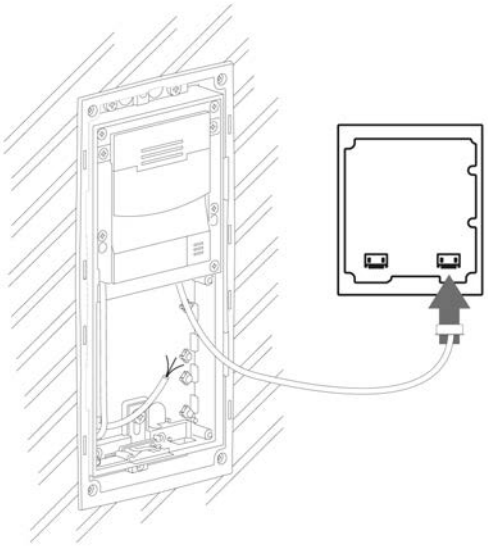


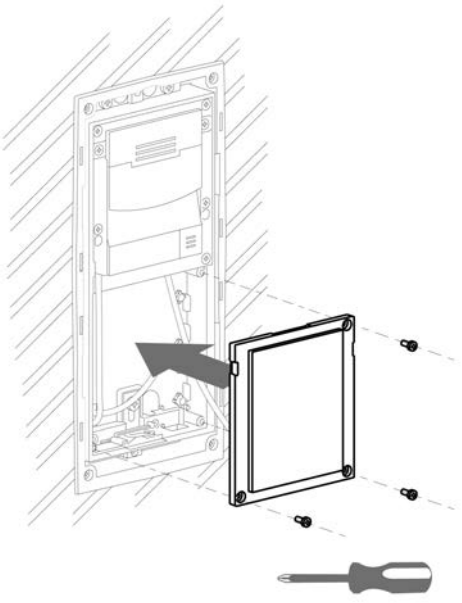


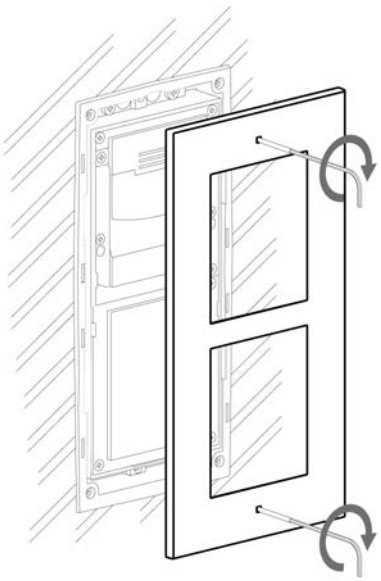


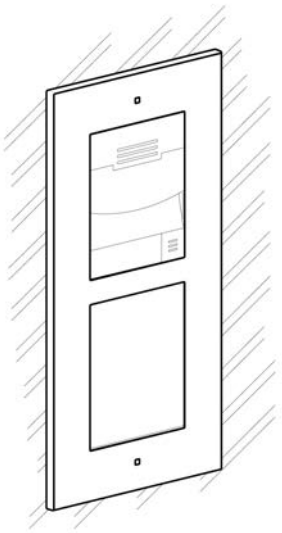




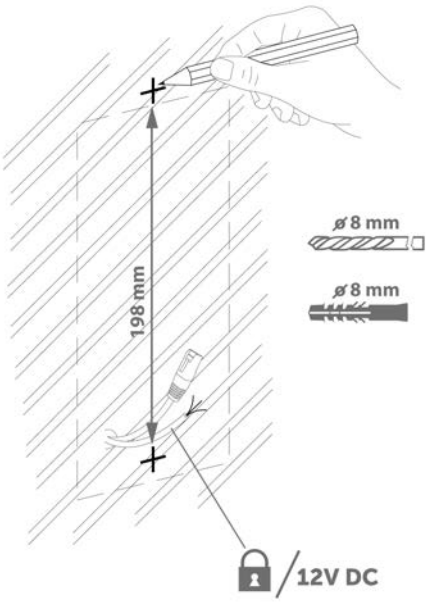


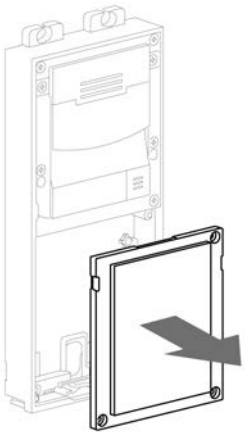


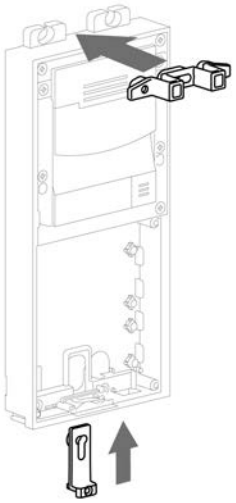


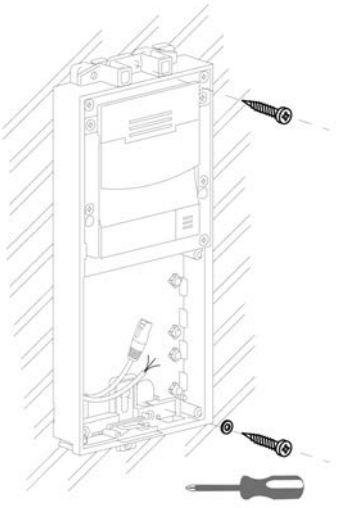


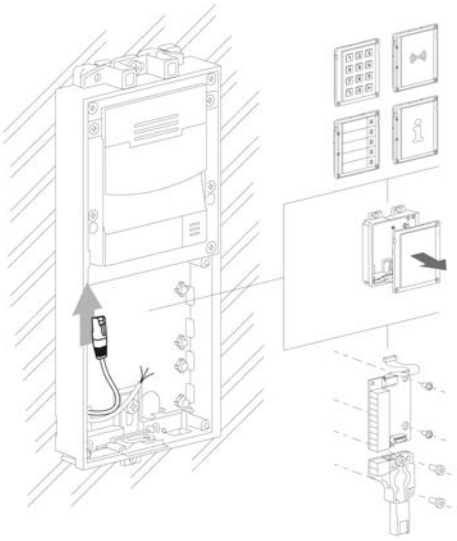
Wall (surface) mounting

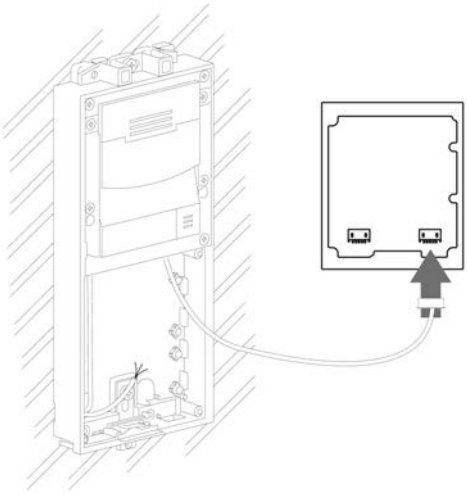


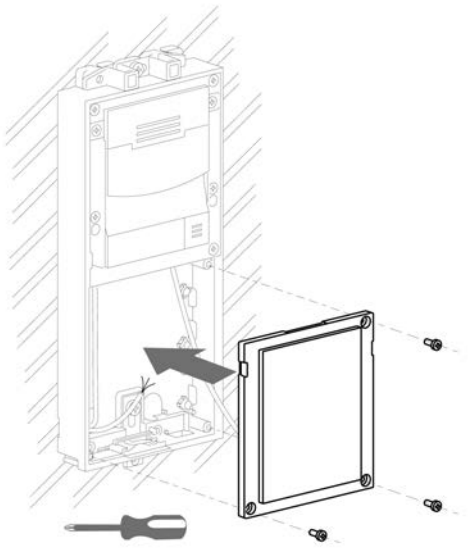


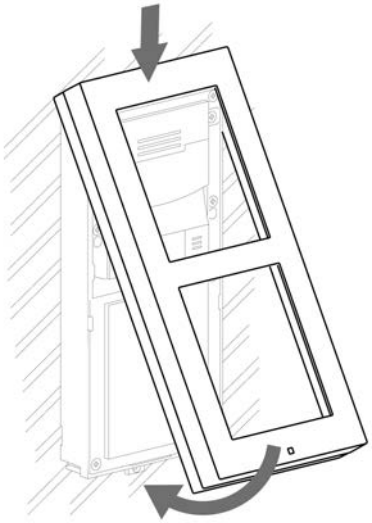


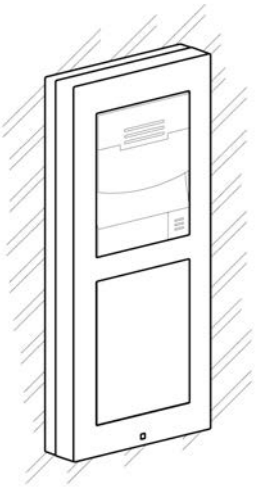












2.3 Electric Installation

This subsection describes how to install the modules and connect the**2N® Access Unit** to the power supply and LAN and how to connect other elements.

Version A - Stand-alone access unit

1. Place the**2N®Access Unit** on the flush mounting box / pre-drilled holes with dowels and pull the cables through the bottom holes. Pull the Ethernet cable through the bottom hole to the left if necessary.
2. Insert the metal fitting elements up and down and screw the access unit tight. You can level the unit slightly in this mounting type.

Version B - Access unit with an additional module

1. Unscrew the upper part of the additional base - keypad, RFID reader, etc.
2. Use a flat screwdriver to take the upper part out.
3. Slide the additional module to the access unit. Secure its position with small side wedges and screws.
4. Place the assembled modules on the flush mounting box / predrilled holes with dowels and pull the cables through the access unit bottom holes. Feed the Ethernet cable without the connector from the additional module to the access unit base if necessary.

2N®Access Unit

Power Supply Connection

2N® Access Unit can be powered either from an external 12V/2A DC source or directly from the LAN equipped with PoE 802.3af supporting network elements.

External power supply

For reliability reasons, use a 12V ±15% SELV supply dimensioned to the current consumption as required for feeding of the access unit and connected modules.

Current consumption [A]	Part No.	Available power output [W]
2	91341481E	24
3		36

PoE power supply

2N® Access Unit is compatible with the PoE 802.3af (Class 0 – 12.95 W) technology and can be fed directly from the LAN via the compatible network elements. If your LAN does not support this technology, insert a PoE injector, Part No. 91378100, between **2N® Access Unit** and the nearest network element. This power supply provides **2N® Access Unit** with 12 W for feeding of itself and the connected modules.

Combined power supply

2N® Access Unit can be fed from an external power supply and PoE at the same time. In this configuration, the maximum power for the connected modules is available.

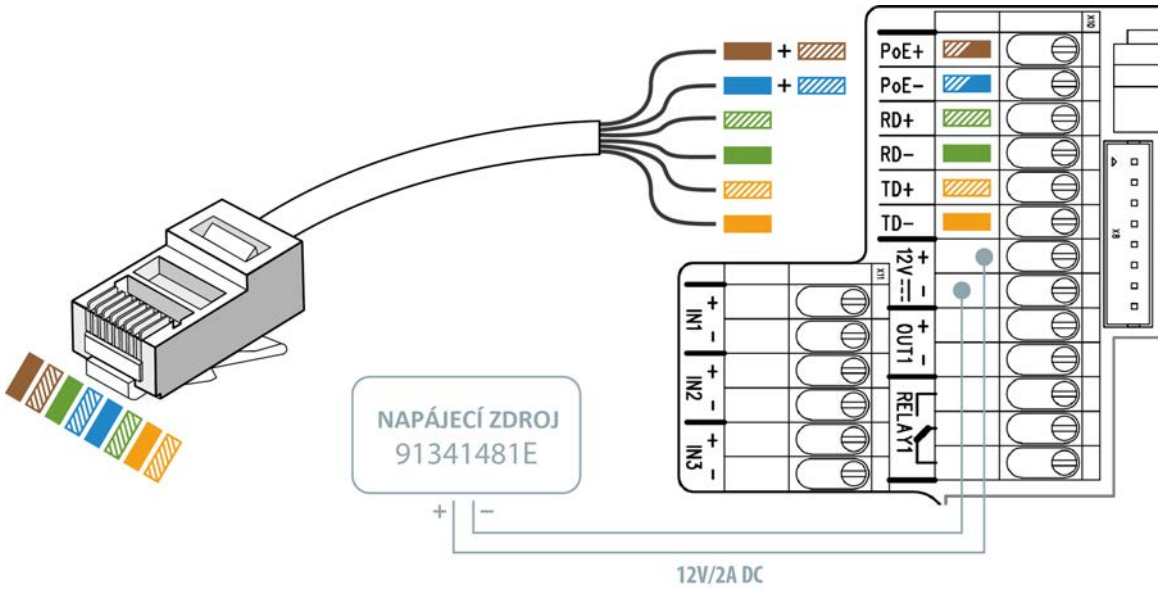
LAN Connection

2N® Access Unit is connected to the Local Area Network (LAN) via the UTP/STP cable (Cat 5e or higher) terminated with a terminal board as shown in the figure below. As the device is equipped with the Auto-MDIX function, either the straight or crossed cable can be used.

Caution

- We recommend the use of a LAN surge protection.

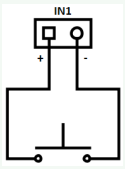
UTP Cable Connection to Access Unit Terminal Board



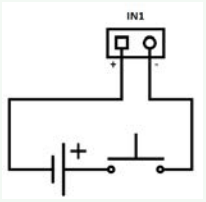
Legend to the figure	
PoE, RD, TD	LAN (PoE according to 802.1af) terminals
IN1, IN2, IN3	IN1, IN2 and IN3 terminals used as an input in the passive/active mode (−30 V to +30 V DC) for departure button, open door sensor, ESS etc. connection ▪ OFF = open OR U_{IN}> 1.5 V ▪ ON = closed contact OR U_{IN}< 1.5 V
OUT1	OUT1 active output terminals for connection of **2N®Helios IP Security Relay**or electric lock:8 up to 12 V DC depending on power supply (PoE: 10 V; adapter: power supply voltage minus 2 V), up to 400 mA
RELAY1	RELAY1 terminals with accessible 30V / 1A AC/DC NO/NC contact
12V/2A	External supply terminals for **2N®Access Unit** - 12 V / 2 A DC (3 A for multiple modules)
RESET	RESET / FACTORY RESET button
RJ-45	RJ-45 adapter connector - no need to use the PoE, RD and TD terminals for this connector

Tip

- Wiring diagram of IN1, IN2 and IN3 terminals in active mode



- Wiring diagram of IN1, IN2 and IN3 terminals in passive mode

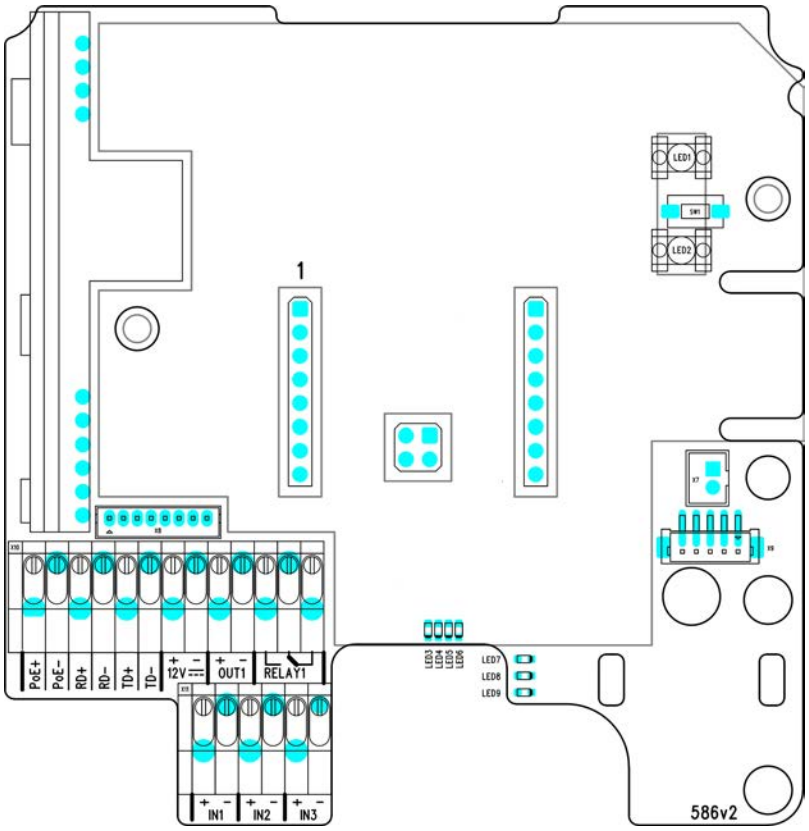


Device Restart

Press the RESET button (between the LED indicators in the right-hand upper part) shortly to restart the device.

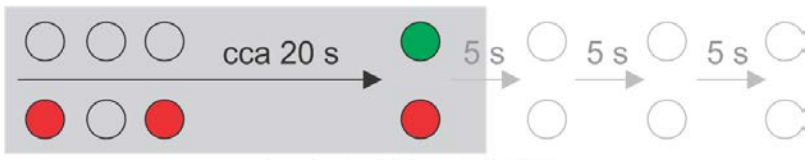
Factory Reset

2N® Access Unit is equipped with a **RESET button**, which is **located between the LED indicators**(LED1 and LED2 as shown in the figure below)**in the right-hand upper part of the unit**. Press the button shortly (< 1 s) to restart the system without changing configuration.



To**get the current IP address,** follow the instructions below:

- Press and hold the RESET button.
- Wait for approx. 20 s until**the red and green LEDs in the right-hand bottom part of the motherboard shine simultaneously**(LED8 and LED9 in the figure above).
- Release the RESET button.
- The device announces the current IP address via the speaker automatically.



Držte tlačítko RESET

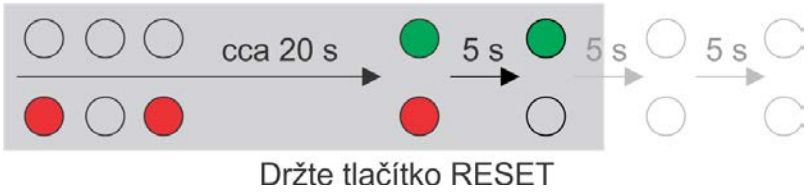
To switch on the **static IP address mode**(DHCP OFF), follow the instructions below:

- Press and hold the RESET button.

- Wait until**the red and green LEDs in the right-hand bottom part of the motherboard shine simultaneously**(approx. 20 s).
- Wait until the red LED goes off (approx. 5 s).
- Release the RESET button.

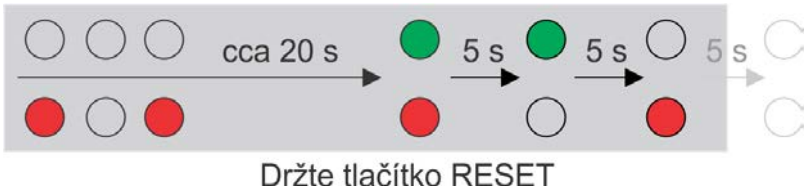
The following network parameters will be set after restart:

- IP address: 192.168.1.100
- Network mask: 255.255.255.0
- Default gateway: 192.168.1.1



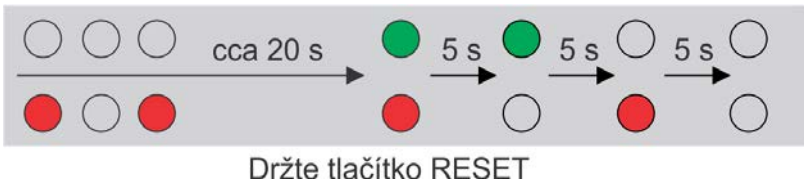
To switch on the **dynamic IP address mode** (DHCP ON), follow the instructions below:

- Press the RESET button.
- Wait until**the red and green LEDs in the right-hand bottom part of the motherboard shine simultaneously**(approx. 20 s).
- Wait until the red LED goes off (approx. 5 s).
- Wait until the green LED goes off and the red LED comes on again (another 5 s).
- Release the RESET button.



To reset **the factory values,** follow the instructions below:

- Press the RESET button.
- Wait until**the red and green LEDs in the right-hand bottom part of the motherboard shine simultaneously**(approx. 20 s).
- Wait until the red LED goes off (approx. 5 s).
- Wait until the green LED goes off and the red LED comes on again (another 5 s).
- Wait until the red LED goes off (approx. 5 s).
- Release the RESET button.



Available Switches

Location	Name	Description
Basic unit	Relay 1	**Passive switch:**NO/NC contact, up to 30 V / 1 A AC/DC
	Output 1	**Active switch output:**8 up to 12 V DC depending on power supply (PoE: 10 V; adapter: power supply voltage minus 2 V), up to 400 mA

Warning

When you connect a device containing a coil, such as a relay or an electromagnetic lock, it is necessary to protect the intercom output againstvolta ge peak while switching off the induction load. For this way of protection we recommend a 1A / 1000V diode (e.g., 1N4007, 1N5407, 1N5408) connected antiparallel to the device.

2.4 Extending Module Connection

2N® Access Unit allows to connect following extending modules:

- Infopanel
- Klávesnice
- 125kHz RFID card reader
- 13.56MHz RFID card reader
- I/O modul
- Electronic buttons
- Wiegand modul
- Security relay

Module Bus Interconnection

All the modules that can be connected to **2N® Access Unit** are interconnected via a bus. The bus starts on the basic unit and goes over all the modules. The order of modules on the bus is irrelevant. And it also irrelevant which bus connector on the module is used as the input and which is used as the output.

The modules include a 220 mm long bus interconnecting cable; **Part No. 9155037**Wie gand modules and**Part No. 9155034**I/O modules include an 80 mm long bus cable.

You can order a separate 1 m long bus cable (**Part Nos. 9155050**,**9155054**, **9155055**) of the length of 1 m, 3 m or 5 m for remote module installation. Typically, it helps install an RFID card reader on the opposite side of the wall on which the**2N® Access Unit** is installed. This long cable can only be used once on the bus.

The modules can be combined in each base as follows:

Module	Externally mounted (visible module)	Internally mounted (invisible module)
Infopanel	X	
Klávesnice	X	
125kHz RFID card reader	X	
13.56MHz RFID card reader	X	
I/O modul		X
Wiegand modul		X

Module Power Supply

All the modules connected to**2N® Access Unit** , except for the Tamper Switch, are powered from the bus. The available bus power output depends on the power supply type. The basic unit can use a 2A power supply to increase the bus power available to the modules connected.

Power supply	Specification	Available power output
External supply	12 V ±15% / 2 A (3 A)	24 W (36 W)
PoE	802.3af (Class 0 – 12.95 W)	12 W
Combined	External supply + PoE	30 W (42 W)

The count of modules on the bus is limited by the available power supply output. The maximum count of the modules on the bus is 30.

Basic unit (571v3)	Consumption [W] (Maximum value)
At relax	1.2
OUT 1	4.8
Total	**6**

Module	Idle consumption [W] (Minimum value)	Full load [W] (Maximum value)	Special elements[W]
Basic unit (571v3)	1.2	6	
Infopanel(version 2)	0.17	0.64	
Klávesnice(579v2)	0.20	1.55	
125kHz RFID card reader (584v2)			
13.56MHz RFID card reader (583v2)	0.42	0.89	
I/O modul(577v2)	0.35	0.66	Closed relay 0.13
Wiegand modul(581v1)			

Specimen configuration consumption computation:

Module	Minimum consumption [W]	Maximum consumption [W]
Basic unit	1.2	6
13.56MHz RFID card reader (583v2)	0.42	0.89
I/O modul(577v2)	0.35	0.66
Tamper switch	0	0
Wiegand modul(581v1)	x	x
Total	**2.07**	**7.55**

It is obvious from the specimen configuration that all the modules have sufficient outputs when an external power supply is used. When a PoE supply is used, the power output is insufficient for all the modules, which results in automatic decrease in backlight level, active output current supply, volume and LED intensity.

Some modules need a specific power output for their specific activities: the I/O module, e.g., requires 0.13 W for relay closing (not included in the minimum consumption).

Keypad Module

The Keypad module (**Part No. 9155031**) is one of the **2N® Access Unit** elements and is used for a numeric access to the system.

- The module contains two bus connectors for**2N® Access Unit**
- These two connectors are fully interchangeable and can be used either as inputs from the basic unit or outputs to other modules.
- If this module is the last one on the bus, one of the connectors remains unconnected.
- The module package includes a 220 mm long interconnecting cable.

125kHz RFID Card Reader Module

The 125kHz RFID card reader module (**Part No. 9155032**) is one of the **2N® Access Unit** elements and is used for reading RFID card Ids in the 125 kHz band.

- The module contains two bus connectors for**2N® Access Unit**
- These two connectors are fully interchangeable and can be used either as inputs from the basic unit or outputs to other modules.
- If this module is the last one on the bus, one of the connectors remains unconnected.
- The module package includes a 220 mm long interconnecting cable.

The following RFID cards can be read:

- EM4100, EM4102, HID Proximity

13.56MHz RFID Card Reader Module

The 13.56MHz RFID card reader module (**Part No. 9155033**) is one of the **2N® Access Unit** elements and is used for reading RFID card Ids in the 13.56 MHz band.

- The module contains two bus connectors for**2N® Access Unit**
- These two connectors are fully interchangeable and can be used either as inputs from the basic unit or outputs to other modules.
- If this module is the last one on the bus, one of the connectors remains unconnected.
- The module package includes a 220 mm long interconnecting cable.

The following RFID cards can be read:

- ISO 14443A

  Mifare Classic 1k & 4k, DESFire EV1, Mini, Plus S&X, Ultralight, Ultralight C
- ISO 14443B

  CEPAS, HID iCLASS
- JIS X 6319

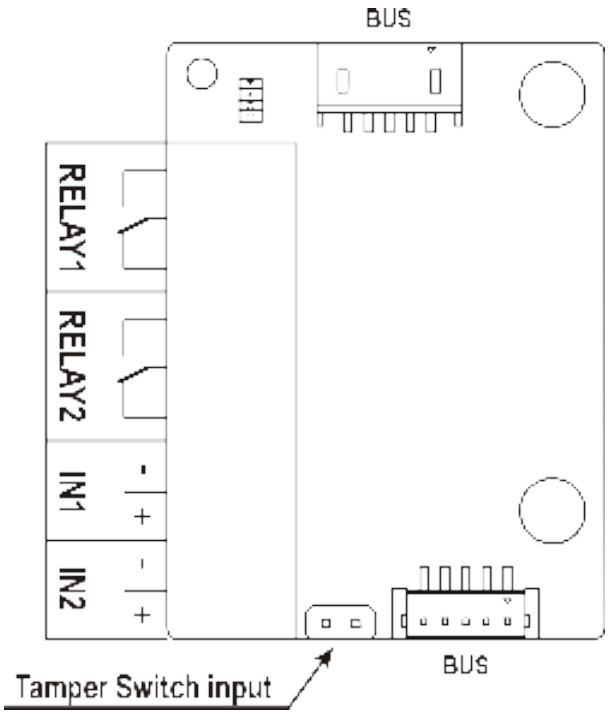
  Felica

I/O Module

The I/O module (**Part No. 9155034**) is one of the **2N® Access Unit** elements and is used for extending of the number of inputs and outputs.

- The module contains two bus connectors for**2N® Access Unit**
- These two connectors are fully interchangeable and can be used either as inputs from the basic unit or outputs to other modules.
- If this module is the last one on the bus, one of the connectors remains unconnected.
- The module package includes an 80 mm long interconnecting cable.
- The inputs / outputs are addressed as follows: **<module_name>.<input/output_name>**, e.g. module5.relay1. Configure the

module name in the Module name parameter in the Hardware / Extenders menu.



RELAY1	RELAY1 terminals with accessible 30 V / 1 A AC/DC NO/NC contact
RELAY2	RELAY2 terminals with accessible 30 V / 1 A AC/DC NO/NC contact
IN1	IN1 terminals for input in passive/ active mode (−30 V to +30 V DC) OFF = open or U_{IN}> 1.5 V ON = short-circuit or U_{IN}< 1.5 V
IN2	IN2 terminals for input in passive/active mode (−30 V to +30 V DC) OFF = open or U_{IN}> 1.5 V ON = short-circuit or U_{IN}< 1.5 V
TAMPER	Tamper switch input,Part No.**9155038**

Infopanel Module

The Infopanel module (**Part No. 9155030**) is one of the **2N® Access Unit** elements and is used for inserting and backlighting of printed information.

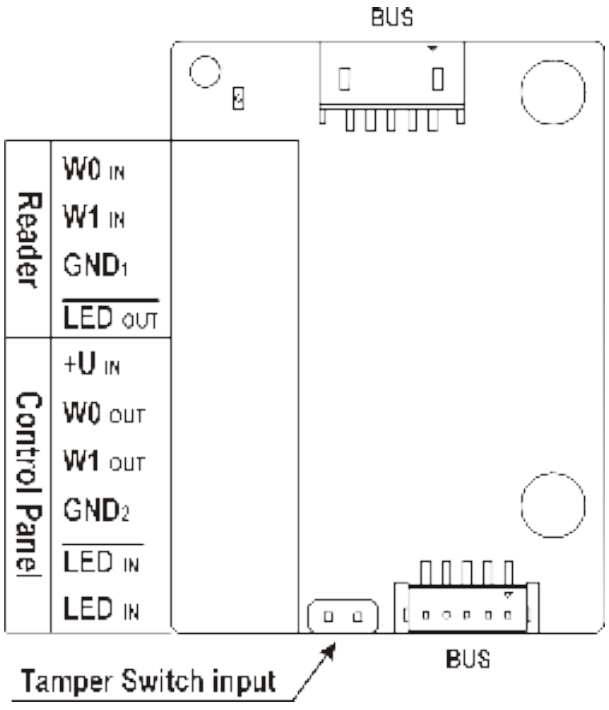
- The module contains two bus connectors for**2N® Access Unit**
- These two connectors are fully interchangeable and can be used either as inputs from the basic unit or outputs to other modules.
- If this module is the last one on the bus, one of the connectors remains

unconnected.
- The module package includes a 220 mm long interconnecting cable.
- Name tag dimensions: 69.2 (W) x 86.7 (H) mm (dimensional tolerance: +0; -0.5 mm).
- For the printing template refer to www.2n.cz

Wiegand Module

The Wiegand module (**Part No. 9155037**) is one of the **2N® Access Unit** elements and helps connect an external Wiegand device (RFID card reader, fingerprint or other biometric data reader) and/or connect **2N® Access Unit** to an external security exchange. All the inputs and outputs are galvanically isolated from **2N® Access Unit** wi th the insulation strength of 500 V DC.

- The module contains two bus connectors for **2N® Access Unit**
- These two connectors are fully interchangeable and can be used either as inputs from the basic unit or outputs to other modules.
- If this module is the last one on the bus, one of the connectors remains unconnected.
- The module package includes an 80 mm long interconnecting cable.
- Configure the module name in the Module name parameter in the Hardware / Extenders menu.
  - The LED IN input is addressed as follows: **<module_name>.<input1>**, e.g. module2.input1.
  - The Tamper input is addressed as follows: **<module_name>.<tamper>**, e.g. module2.tamper.
  - The LED OUT (negated)output is addressed as follows: **<module_name>.<output1>**, e.g. module2.output1.



Reader	W0IN, W1 IN, GND1	Isolated 2-wire WIEGAND IN
	LED0UT	Isolated open LED OUT switched against GND1(up to 24 V / 50 mA)
Control Panel	+UIN	+U (5 to 15 V DC) WIEGAND OUT power supply input
	W0OUT, W1 OUT, GND2	Isolated 2-wire WIEGAND OUT
	LEDIN (negated)	Isolated input for open LED IN, input activated by GND_2
	LEDIN	Isolated input for open LED IN, input activated by +U
	G	active supply LED indicator +UINWIEGAND OUT
	TAMPER	Tamper switch input, Part No.**9155038**

Security Relay

The Security relay(**Part No. 9159010**) is used for enhancing security between the access unit and the connected electric lock. It significantly enhances security of the connected electric lock as it prevents unlocking by forced opening of**2N®Access Unit** i s installed.

Function:

The Security relayis a device installed between the access unit (outside the secured area) and an electric lock (inside the secured area). **The Security relay**includes a relay that can only be activated if the valid opening code is received from the access unit.

Specifications:

- Passive switch: NO and NC contacts, up to 30 V / 1 A AC / DC
- Active switch output: 9 to 13 V DC according to power source (PoE: 9 V; adapter: power supply voltage minus 1 V), up to 700 mA
- Dimensions: (56 × 31 × 24) mm
- Weight: 20 g

Installation:

The Security relayis installed onto a two-wire cable between the access unit and the electric lock inside the area to be secured (typically behind the door). The device is powered and controlled via this two-wire cable and so can be added to an existing installation. Thanks to its compact dimensions, the device can be installed into a standard mounting box.

Connection:

Connect**the Security relay**the access unit as follows:

- To the active output (OUT1 or OUT2) , or
- To the relay output (RELAY1 or RELAY 2) in series with a 12 V DC external power supply.

Connect the electric lock to**the Security relay**as follows:

- To the active 12 V / 700 mA DC output, or
- To the passive output in series with an external power supply.

The device also supports a Departure button connected between the 'PB' and '-HeliosIP' terminals. Press the Departure button to activate the output for 5 seconds.

Status signalling

Green LED	Red LED	Status
flashing	off	Operational mode
on	off	Activated output
flashing	flashing	Programming mode – waiting for initialisation
on	flashing	Error – wrong code received

Configuration:

- Connect**the Security relay**to the properly set access unit security output. For settings refer to the**2N® Access Unit Configuration Manual**is installed. Make sure that one LED at least is on or flashing.
- Press and hold**the Security relay**Reset button for 5 seconds to put the device in the programming mode (both the red and green LEDs are flashing).
- Activate the output switch using the keypad, telephone, etc. The first code sent from the intercom will be stored in the memory and considered valid. After code initialisation,**the Security relay**will pass into the operational mode (green LED flashing).

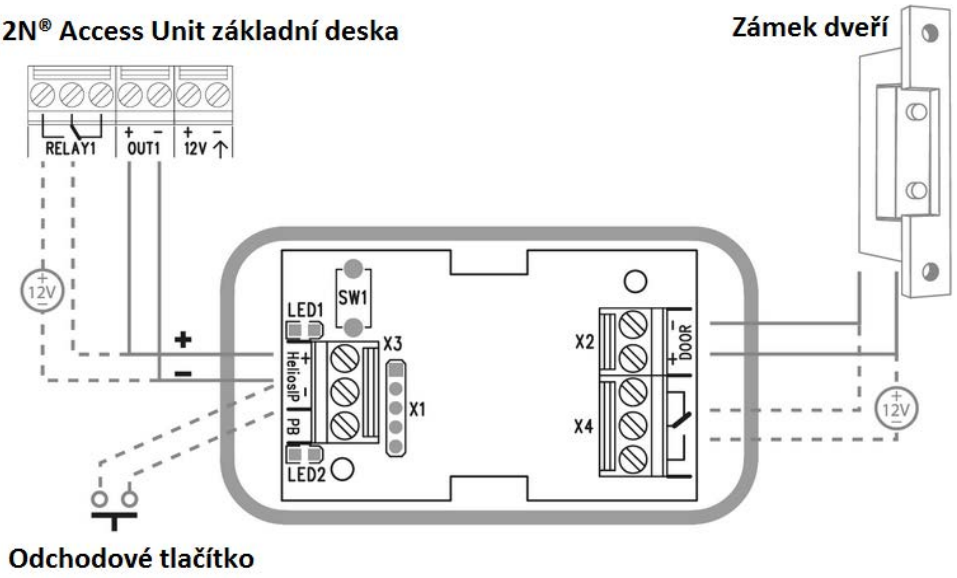
Tip

- FAQ:2N®device description and use with 2N®Helios IP

Tip

- Video TutorialDoor intercoms 2N®Helios IP - Security Relay

Connection:


2N® Access Unit základní deska
Zámek dveří
RELAY1
OUT1
12V
LED1
SW1
X3
X1
X2
X4
DOOR
PB
LED2
Odchodové tlačítko

2.5 Mounting Completion

Mounting Completion

Check the connection of all wires and the RJ-45 plug to the pigtail (adapter) connected to the motherboard.

Caution

- Make sure that the terminals of all the unused connectors are tightened properly to avoid sound vibrations.

Frame Mounting

Check the frame sealing before fitting the frame.

Version A

Screw the flush mounting frame in the upper and bottom parts.

Version B

Hang the wall mounting frame on the hook in the upper part and then screw it tight in the bottom part.

Caution

- Improper mounting may deteriorate the **2N® Access Unit** waterproofness. Water infiltration may damage the electronic part.
- Make sure that all the holes are filled with some waterproof material – the top part, around the cables and the screws.
- Use silicone or some other sealant to seal the box against the wall if uneven to avoid water leakage and wall damping.

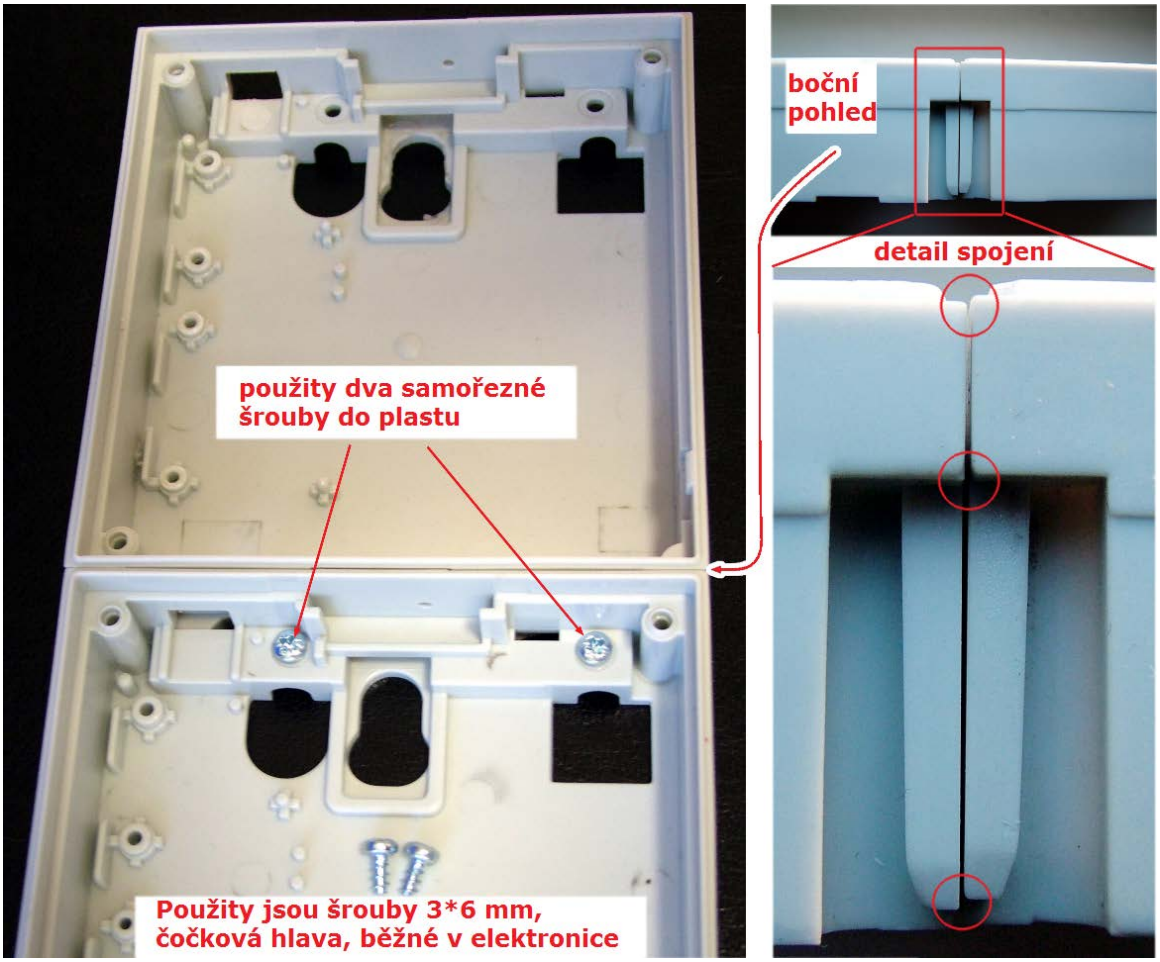
Most Frequent Mounting Errors

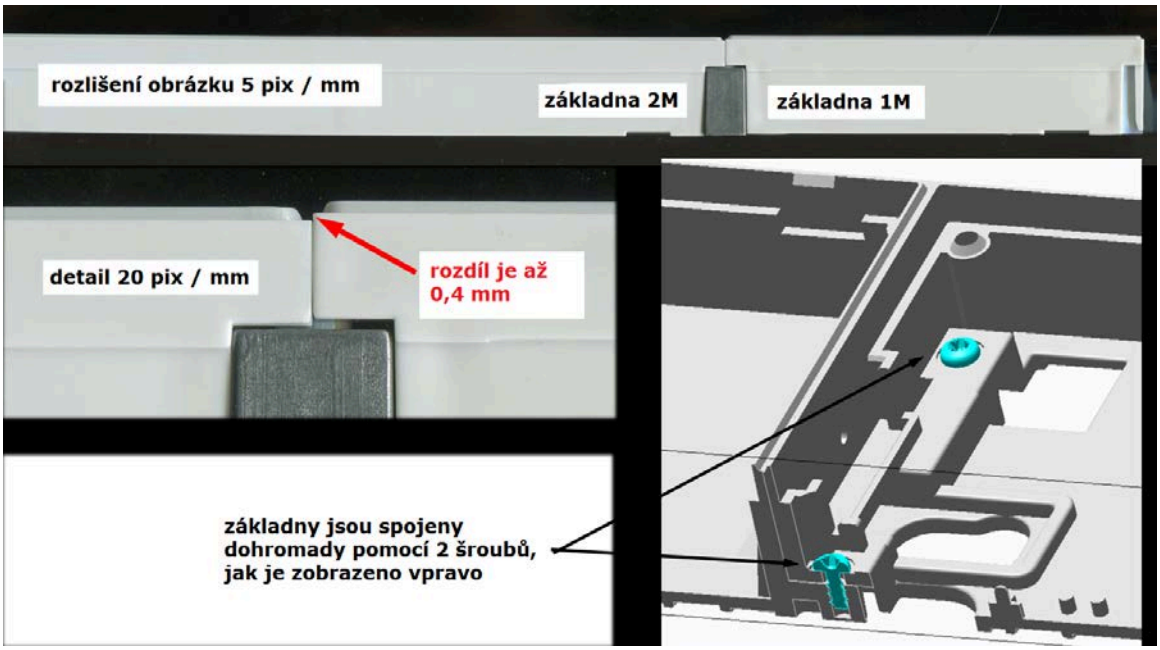
At first, mount the metal bolts, level the bases on an even surface and tighten the screws.

Caution

- Make sure that the bases are levelled properly to avoid water leakage and electronic damage.

The examples in the figures below show incorrectly assembled bases. This happens, in particular, where the screws are tightened first.


použity dva samořezné
šrouby do plastu
Použity jsou šrouby 3*6 mm,
čočková hlava, běžné v elektronice
boční
pohled
detail spojení


rozlišení obrázku 5 pix / mm
základna 2M
základna 1M
detail 20 pix / mm
rozdíl je až
0,4 mm
základny jsou spojeny
dohromady pomocí 2 šroubů,
jak je zobrazeno vpravo

3. Maintenance

Cleaning

If used frequently, the device surface, the keypad in particular, gets dirty. Use a piece of soft cloth moistened with clean water to clean the device. You are recommended to follow the principles below while cleaning:

- Do not use aggressive detergents (such as abrasives or strong disinfectants).
- Use suitable cleaning agents for glass lens cleaning (cleaners for glasses, optical devices, screens, etc.).
- Alcohol-based cleaners may be applied.
- Clean the device in dry weather in order to make waste water evaporate quickly.
- We recommend you to use cleaning wipes designed for IT / electronic items.

Warning

- Prevent water from getting inside the access unit.

4. Technical Parameters

Audio

- **Speaker:**0.8 W / 8 Ω

Interface

- **Power supply:**12 V ±15% / 2 A DC (3 A if there is a larger number of modules) and/or PoE
- **PoE:**PoE 802.3af (Class 0 - 12.95W)
- **LAN::**10/100BASE-TX with Auto-MDIX, RJ-45, connecting block or pigtail RJ-45
- **Recommended cabling:**Cat-5e or higher
- **Supported protocols:**DHCP opt. 66, SMTP, 802.1x, TFTP, HTTP, HTTPS, Syslog
- **Passive switch:**make and break contact, up to 30 V / 1 A AC/DC
- **Active switch output:**8 to 12 V DC according to power supply (PoE: 10 V; adapter: source voltage minus 2 V), up to 400 mA
- **Tamper switch**is part of the**2N®Access Unit**
- **Inputs: passive / active mode (-30 V to +30 V DC)**

  OFF = open or U_{in}> 1.5 V

  ON = short-circuit or U_{in}< 1.5 V

RFID card reader

- **Frequency:**13.56MHz & 125kHz
- **Supported 13.56MHz cards:(card serial number is only read)**
  - ISO14443A: Mifare Classic 1k & 4k, DESFire EV1, Mini, Plus S&X, SmartMX, Ultralight, Ultralight C, SLE44R35, my-d move (SLE66Rxx), PayPass, Legic Advant
  - ISO14443B: Calypso, CEPAS, Moneo, SRI512, SRT512, SRI4K, SRIX4K, PicoPass, HID iCLASS
  - JIS X 6319: Felica
  - ISO 18092 (NFC support): SmartPhone with NFC/HCE support, Android version 4.3 and higher
- **Supported 125kHz cards:**EM4100, EM4102, HID Prox

Mechanical properties

- **Cover:**Robust zinc cast with surface finish
- **Operating temperature:**-40°C to 60°C
- **Operating relative humidity:**10%-95% (non-condensing)
- **Storage temperature:**-40°C to 70°C
- **Dimensions:**
  - Wall (surface) mounting frame:
    - 1 module: 107 (W) x 130 (H) x 28 (D) mm
    - 2 modules: 107 (W) x 234 (H) x 28 (D) mm
  - Flush mounting frame:
    - 1 module: 130 (W) x 153 (H) x 5 (D) mm
    - 2 modules: 130 (W) x 257 (H) x 5 (D) mm
  - Flush mounting box (minimum hole dimensions):
    - 1 module: 108 (W) x 131 (H) x 45 (D) mm
    - 2 modules: 108 (W) x 238 (H) x 45 (D) mm
- **Weight:**Max net weight: 2 kg / max gross weight: 0.5 kg - based on configuration
- **Cover rating:**IP54

5. Supplementary Information

Here is what you can find in this section:

5.1 Troubleshooting

For the most frequently asked questions refer to faq.2n.cz.

5.2 Directives, Laws and Regulations

Europe

2N® Access Unit conforms to the following directives and regulations:

Directive 1999/5/EC of the European Parliament and of the Council, of 9 March 1999 – on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity

Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits

Directive 2004/108/EC of the Council of 15 December 2004 on the harmonisation of the laws of Member States relating to electromagnetic compatibility

Commission Regulation (EC) No. 1275/2008, of 17 December 2008, implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment

Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

Directive 2012/19/EC of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment.

Industry Canada

This Class B digital apparatus complies with Canadian ICES-003. / Cet appareil numérique de la classe B est conforme a la norme NMB-003 du Canada.

FCC

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.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

5.3 General Instructions and Cautions

Please read this User Manual carefully before using the product. Follow all instructions and recommendations included herein.

Any use of the product that is in contradiction with the instructions provided herein may result in malfunction, damage or destruction of the product.

The manufacturer shall not be liable and responsible for any damage incurred as a result of a use of the product other than that included herein, namely undue application and disobedience of the recommendations and warnings in contradiction herewith.

Any use or connection of the product other than those included herein shall be considered undue and the manufacturer shall not be liable for any consequences arisen as a result of such misconduct.

Moreover, the manufacturer shall not be liable for any damage or destruction of the product incurred as a result of misplacement, incompetent installation and/or undue operation and use of the product in contradiction herewith.

The manufacturer assumes no responsibility for any malfunction, damage or destruction of the product caused by incompetent replacement of parts or due to the use of reproduction parts or components.

The manufacturer shall not be liable and responsible for any loss or damage incurred as a result of a natural disaster or any other unfavourable natural condition.

The manufacturer shall not be held liable for any damage of the product arising during the shipping thereof.

The manufacturer shall not make any warrant with regard to data loss or damage.

The manufacturer shall not be liable and responsible for any direct or indirect damage incurred as a result of a use of the product in contradiction herewith or a failure of the product due to a use in contradiction herewith.

All applicable legal regulations concerning the product installation and use as well as provisions of technical standards on electric installations have to be obeyed. The manufacturer shall not be liable and responsible for damage or destruction of the product or damage incurred by the consumer in case the product is used and handled contrary to the said regulations and provisions.

The consumer shall, at its own expense, obtain software protection of the product. The manufacturer shall not be held liable and responsible for any damage incurred as a result of the use of deficient or substandard security software.

The consumer shall, without delay, change the access password for the product after installation. The manufacturer shall not be held liable or responsible for any damage incurred by the consumer in connection with the use of the original password.

The manufacturer also assumes no responsibility for additional costs incurred by the consumer as a result of making calls using a line with an increased tariff.

Electric Waste and Used Battery Pack Handling

Do not place used electric devices and battery packs into municipal waste containers. An undue disposal thereof might impair the environment!

Deliver your expired electric appliances and battery packs removed from them to dedicated dumpsites or containers or give them back to the dealer or manufacturer for environmental-friendly disposal. The dealer or manufacturer shall take the product back free of charge and without requiring another purchase. Make sure that the devices to be disposed of are complete.

Do not throw battery packs into fire. Battery packs may not be taken into parts or short-circuited either.

2N TELEKOMUNIKACE a.s.
Modřanská 621, 143 01 Prague 4, Czech Republic
Phone: +420 261 301 500, Fax: +420 261 301 599
E-mail: sales@2n.cz
Web: www.2n.cz

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