

## 1. Notes on these installation and maintenance instructions

These instructions are intended to facilitate the safe mounting and installation of the WTC 200 controller (referred to throughout this document as “the controller”) as well as the WRU 200 and WRU 220 wall readers (referred to throughout this document as “the readers”) as part of an access control system.

The instructions are part of the system and must be kept in the immediate vicinity of the system and be accessible for the personnel at all times.

The personnel must read and understand these instructions carefully before starting any work. A basic requirement for safe work is the observance of all safety notes and handling indications specified in these instructions.

Furthermore, the local health and safety regulations and general safety regulations for the area of application of the system apply.

### Associated documents

In addition to these installation instructions, the following documents are valid for the access control system:

- Supplier documentation of the power supply
- Dialock 2.0 user manual or updated version

### 1.1 Contents and target group of the installation and maintenance instructions

It is essential to pay attention to these installation and maintenance instructions in order to install the product successfully and safely. Please pay attention to all of the specified installation steps, instructions and notes!

These **installation and maintenance instructions** are intended for:

- the **operator** of the product
- the **installer** of the product

In addition to these **installation and maintenance instructions**, both groups of people must also have read the DIALOCK — software manual in full before handling the product.

In case of use in software-controlled systems, separate instructions are enclosed with the relevant system components.

### 1.2 Obligations of the installer

The installer has the following obligations:

- All notes and specifications in the installation and maintenance instructions must be complied with. The installation steps must not be deviated from or varied.
- Only the supplied original parts must be installed.
- The installation and maintenance instructions must be handed to the operator after installation has taken place.

### 1.3 Obligations of the operator

The operator has the following obligations:

- The installation requirements must be adhered to.
- The product may only be installed and started up by qualified experts.
- The installation and maintenance instructions must be kept until the product is disposed of, and handed to the new operator in the event of a change of operator.

## 2. Safety

### 2.1 Safety notes and symbols in these instructions

#### Safety notes

Safety notes in these instructions follow a uniform structure. They are introduced by a signal word that indicates the extent of the hazard. This is followed by the source of the danger and measures to avoid them.

The following risk levels are distinguished:

#### **DANGER**

This combination of symbol and signal word indicates an immediately dangerous situation causing death or serious injury if not avoided.

#### **WARNING**

This combination of symbol and signal word indicates a potentially dangerous situation that may cause death or serious injury if not avoided.

#### **CAUTION**

This combination of symbol and signal word indicates a potentially dangerous situation that may cause minor or light injury if not avoided.

#### **NOTE**

The note is used to point out dangerous situations which could lead to potential property damage/consequential damage to the product or damage to the environment. Notes are also used to provide important additional information.

#### Safety notes in handling indications

Safety notes may relate to certain individual handling indications. Such safety notes are incorporated into the handling indication as to not interrupt the flow of reading when carrying out the action. The signal words described above are used.

#### Examples

1. Loosen screws.
2. Connect leads.

#### **CAUTION**



##### **Risk of leads being trapped by the cover!**

Watch the position of the leads. Close cover carefully.

3. Tighten screws.

**Special safety notes**

To draw attention to special risks, the following symbols are used in the safety notes:

Warning sign	Type of risk
	Warning of dangerous electrical voltage
	Warning of a hazardous area



This symbol highlights useful tips and recommendations and information for efficient and problem-free operation.

**Other markings**

The following markings are used in these instructions to highlight action instructions, results, lists, references and other elements:

1.>, 2.>, 3.>	Step-by-step action instructions
⇒	Results of action steps
•	Lists without a defined order
[push button]	Controls (e.g. push buttons, switches), display elements (e.g. signal lamps)
“Display”	Screen elements (e.g. buttons, assignment of function keys)

**2.2 Correct purpose of use**

The WTC 200 controller, the WRU 200 and WRU 220 readers, and the add-on modules (WTX 200 I/O module and WTX 201 8-way relay module) may only be used within an access control system.

Correct purpose of use also includes observing all specifications contained in these instructions.

Any use beyond or other than the correct purpose of use shall be deemed improper use.

 **WARNING**

**Danger in case of improper use!**

Improper use of the reader, the controller and the add-on modules can result in dangerous situations.

- Never install the reader, controller or add-on modules in ambient conditions other than those permitted.

**2.3 Safety symbols**

The following stickers are located on one or more components of the access control system. They relate to the immediate environment of where they are located.

**Electric voltage**



Only qualified electricians are permitted to work on such marked components.

Unauthorised persons may not open the such marked cabinet.

## Crossed-out dustbin



This image indicates that the respective component must not be disposed of with residential waste.

## Do not touch



Components with this marking could be damaged by touching.

## Lead



The circuit board does not contain lead.

## 2.4 Residual risks

The components have been designed according to the latest state of technology and current safety requirements.

However, there remain residual risks that require careful handling. Below the residual risks and the resulting behaviours and actions are listed.

### Electric current



#### DANGER

#### Risk of fatal injury from electrical current!

In case of contact with live parts, there is immediate danger to life by electrocution.

Damage to the insulation or individual components can be dangerous to life.

- Work on the electrical system may only be performed by trained electricians.
- In case of damage to the insulation, switch off voltage supply immediately and promptly initiate repairs.
- Before starting work on live parts of electrical systems and operating materials, it must be ensured that the equipment is de-energised for the duration of the work. Observe the 5 safety rules:
  - Disconnect.
  - Secure against reconnection.
  - Ensure that there is no voltage.
  - Earth and short circuit.
  - Neighbouring parts that are live must be covered up or fenced off.
- Never bypass or disable fuses. The correct amperage must be used when replacing fuses.
- Keep moisture away from live parts. It may cause short circuits.

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## 2.5 Safety notes and dangers

The product has been built in accordance with the latest state of technology and the recognised technical safety regulations. Nevertheless, danger to persons or damage to product or other property could occur during installation and use.

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### WARNING

#### **Risk of fatality due to lack of emergency opening facility!**

If the product is installed without an emergency opening facility, it may not be possible to open the door from the outside in the event of fault. If emergencies occur inside the room during the fault, rescue work will be hindered.

- The operator must ensure that doors to which this product is fitted have an emergency opening facility in the event of faults.
- Häfele is not liable for damage that is attributable to failure to install an emergency opening facility.



### WARNING

#### **Risk of fatality due to failures or faults in electromagnetically sensitive devices!**

The electromagnetic radiation of the product can cause faults in sensitive parts (e.g. in medical equipment). The functionality thereof will be adversely affected.

- Do not place product close to electromagnetically sensitive devices.
- Pay attention to the safety instructions for the electromagnetically sensitive devices.
- If you have any doubts regarding compatibility, please contact the manufacturer.



### WARNING

#### **Danger in case of improper use!**

Improper use of the reader, the controller and the add-on modules can result in dangerous situations.

- Never install the reader, controller or add-on modules in potentially explosive areas.

### NOTE

#### **Damage to product due to damaged wires!**

Damaged wires affect the functionality of the product.

- Do not trap or damage wires during installation.
- Never start up and use the product if any wires have been damaged.

## 2.6 Obligations of the operator

Operator is the person who operates the access control system for commercial or economic purposes or allows a third party for use thereof and bears the legal product responsibility for the protection of the user, the personnel, or third parties during operation.

### Operator's obligations

The access control system is commonly used in the commercial sector. The operator of the access control system is therefore subject to statutory occupational safety obligations.

In addition to the safety notes in these instructions, safety, work safety, and environmental regulations valid for the area of application of the access control system must be followed.

Here, in particular:

- The operator must ensure that escape routes and emergency exit doors are accessible for all people in case of danger.
- The operator must be aware of the applicable occupational safety regulations and determine other hazards in a hazard assessment that may arise from the special working conditions at the place of use of the access control system. They must be implemented for the operation of the access control system in the form of operating instructions.
- During the entire operating time of the access control system, the operator must verify that the operating instructions created correspond to the current state of the regulations and, if necessary, adapt them.
- The operator must clearly regulate and specify the responsibilities for installation, operation, troubleshooting, maintenance, and cleaning.
- The operator must ensure that all persons handling the access control system have read and understood these instructions. In addition, the operator must train the personnel at regular intervals and inform them about the risks.

Furthermore, the operator is responsible for ensuring that the access control system is always in perfect technical condition. The following therefore applies:

- The operator must ensure that the maintenance intervals specified in these instructions are followed.
- The operator must have all safety devices inspected regularly for function and completeness.

### NOTE

#### Damage to product due to computer viruses!

Since the SD card of the WTC 200 is recognised and treated as mass storage by every PC it is connected to, there is the risk that computer viruses may spread via the SD card.

- For this reason, the system operator must ensure that all relevant PCs are tested for computer viruses at regular intervals and protected with up-to-date anti-virus programs.

## 2.7 Personnel requirements

### Essential requirements

Only those persons are authorised as personnel who can be expected to carry out their work reliably.

Persons who are under the influence of drugs, alcohol or medicines that affect reactions must not install or start up the equipment.

In the selection of personnel, observe appropriate training as well as the applicable occupation-specific regulations.

These instructions describe the qualifications listed below for the personnel for the various work areas:

#### Qualified electrician

Qualified electricians are capable of working on electrical systems and recognise potential hazards and avoid them due to their professional training, knowledge, experience as well as knowledge of pertinent standards and provisions.

Qualified electricians have been specifically trained for the working environment in which they operate and know the relevant standards and regulations.

#### Installation and start-up personnel

Installation and initial start-up may only be carried out by trained experts. Knowledge of the following is a prerequisite:

- National accident prevention regulations
- National fire prevention regulations
- Expert electro-technical knowledge

If the installation and start-up personnel do not have these qualifications, a specialist installation company must be commissioned to do the work.

Personnel who are being trained may only install and start up the product under supervision or after being authorised to do so by someone with experience.

The operator and the installer are personally responsible for compliance with the VDE regulations (and the national electrotechnical and electronics regulations).

#### Unauthorised persons



#### WARNING

##### **Danger to life for unauthorised persons due to hazards in the danger zone and working area!**

Unauthorised persons who do not meet the requirements described herein will not be aware of the occupational hazards. Therefore, unauthorised persons are subject to risks of serious injury or death.

- Keep unauthorised persons away from the danger zone and working area.
- When in doubt, approach persons and have them clear the danger zone and working area.
- Interrupt the work until unauthorised persons have left the danger zone and working area.

## 2.8 Environmental protection

### NOTE

#### **Risk to the environment due to improper handling of environmentally hazardous substances!**

Improper handling of environmentally hazardous substances, particularly improper disposal, can cause significant damage to the environment.

- Always follow the notes below for handling environmentally hazardous substances and their disposal.
- If environmentally hazardous substances are accidentally released into the environment, immediately take appropriate action. When in doubt, notify the appropriate local authority of the damage and check for appropriate measures to be taken.

#### **The following environmentally hazardous substances are used:**

##### **Batteries**

Batteries contain toxic heavy metals. They are subject to special waste treatment and must be handed into municipal collection points or disposed of by a specialist company.

##### **Electric and electronic components**

Electric and electronic components may contain toxic materials. These components must be collected separately and be deposited at municipal collection points or disposed of by a specialist company.

## 3. Overview of the access control system

### 3.1 Short description

The reader and controller combine to form the corresponding wall terminal set (WT 200/WT 220) and create an access control system in conjunction with the separate power supply unit (not supplied) and other additional components.

The controller and power supply unit are intended to be mounted on a top hat rail (Fig. 1).

Together with the WTX 200 I/O board and WTX 201 8-way relay module, 2 optional modules are available to expand the connection options of the controller.



**WRU 200 reader with WTC 200 controller and power supply unit  
(sold separately) without housing on top hat rails**

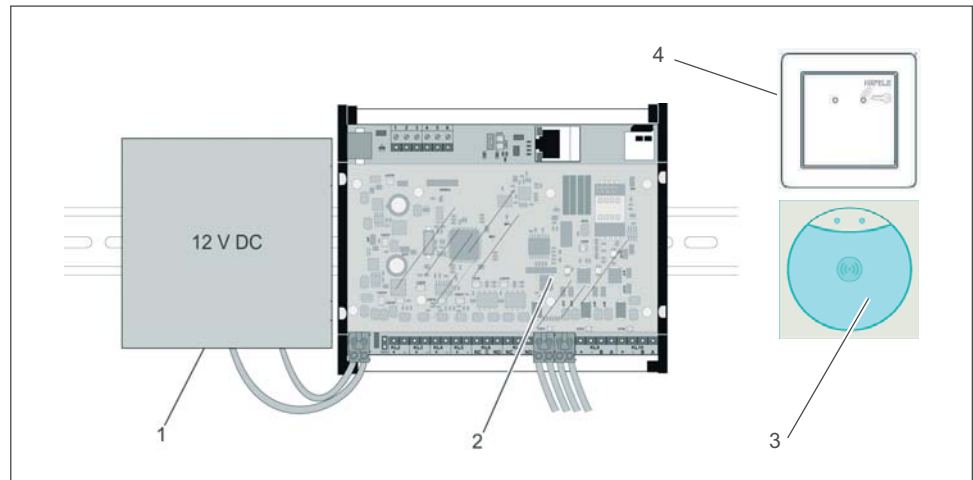


Fig. 1: Controller without housing with reader and power supply unit (sold separately)

- 1 Power supply unit, illustrative (sold separately)
- 2 WTC 200 controller  
(See chapter “4.2.1 WTC 200 controller” on page 70)
- 3 WRU 200 reader  
(See chapter “4.2.2 WRU 200/WRU 220 readers” on page 71)
- 4 The WRU 220 reader head can be used as an alternative to the WRU 200. This is a reader for integration into modules with a switch design from third-party suppliers  
(See chapter “4.2.2 WRU 200/WRU 220 readers” on page 71)

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**4. Description of functions**

**4.1 Function of the access control system**

The access control system consists of the WTC 200 controller (with power supply unit), the WRU 200 and WRU 220 readers, and the configuration software.

The WTC 200 controller transfers the information between the reader and the configuration software. The communication between software and controller takes place by means of the encrypted configuration data saved on a Micro SD card. Operation without a constant server connection is possible with the aid of the data stored on this Micro SD card.

Various other components – including door signalling contacts, external signal generators, electric strikes and door release buttons – are also connected to the controller, and these can also be configured via the software. This makes it possible to accommodate various installation options.



Various installation options with circuit diagrams  
(See chapter “11. Appendix” on page 105)

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4.2 Function of the components

4.2.1 WTC 200 controller

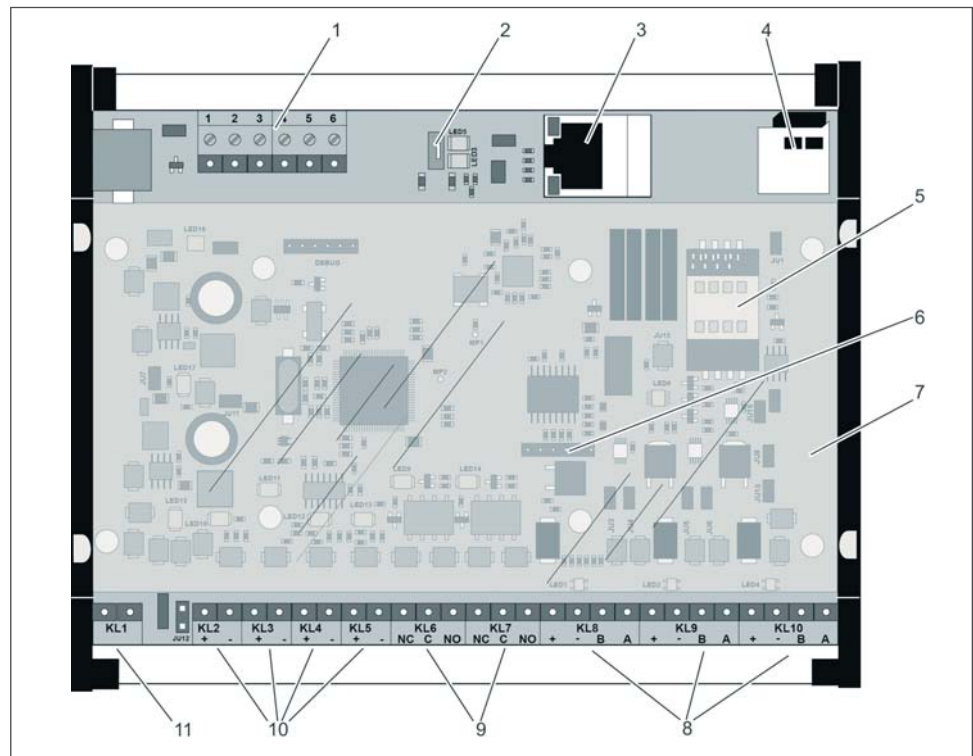


Fig. 2: Controller overview

- |   |  |      |  |
|---|--|------|--|
| 1 | Connections for the WTX200 I/O board     | 8    | RS-485 connections (terminals 8, 9, 10)  |
| 2 | Mini USB connection (without function)   | 9    | Relay output ports (terminals 6 and 7)   |
| 3 | RJ45 network connection with status LEDs | 10   | Analogue/digital inputs (terminals 2–5)  |
| 4 | Holder for Micro SD card                 | 11   | Connection of external power supply (terminal 1)                                     |
| 5 | Holder for SIM card (without function)   | LEDs | Status displays and error messages (See chapter “5.5 After installation” on page 90) |
| 6 | Pins for attaching the WTX 200 I/O board |      |  |
| 7 | Removable cover                          |      |  |

Up to four WRU 200 or WRU 220 readers can be connected to the three RS-485 connections (terminals 8–10). In this case, the readers must have different addresses. Please observe the technical instructions on “**Einstellung der Adresse bei DIALOCK Leseköpfen**” [Setting addresses for DIALOCK reader heads] in this regard.

Use and function of the connections and interfaces

Interfaces/ Connection	Terminal	Usage
RS-485	8, 9, 10	Connection of readers (A to A; B to B) and extensions (power supply of extensions max. 0.6 A; Power supply of extensions: voltage at terminal 1 (item 11) less approx. 1 V)
Relay output ports	6, 7	For example: Connection of electric strikes (depending on electric strike: NO and C or NC and C), external signal generators (NO and C)
Analogue/digital input ports	2–5	For example: Connection of door signalling contacts
RJ45 network connection		Network connection for communicating with the server and configuration software.

4.2.2 WRU 200/WRU 220 readers

The WRU 200/WRU 220 readers are reader units for connecting to the Dialock WTC 200 controller. This is compatible with the Mifare Classic, Mifare-DESfire, Legic Advant and Tag-It RFID technologies. These are installed near the door and connected to the controller. As soon as the corresponding passes are presented to the readers, the readers forward the data to the controller. The controller compares the access data and, where applicable, forwards the signal for opening the door to the electric strike.

WRU 200

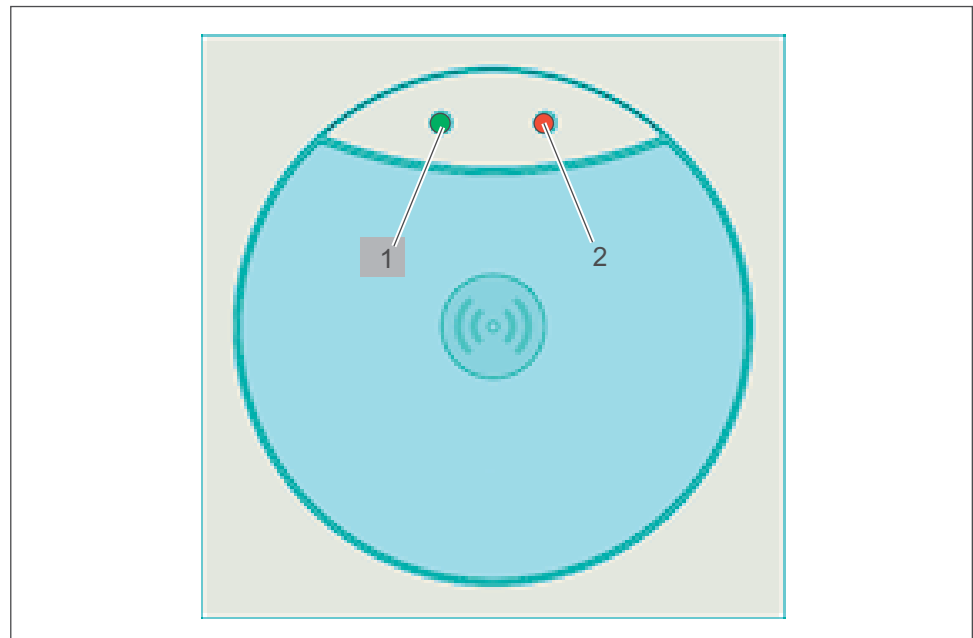


Fig. 3: Front of WRU 200 reader

- 1 LED – illuminates in green if access is granted.
- 2 LED – illuminates in red if the reader is in operation.

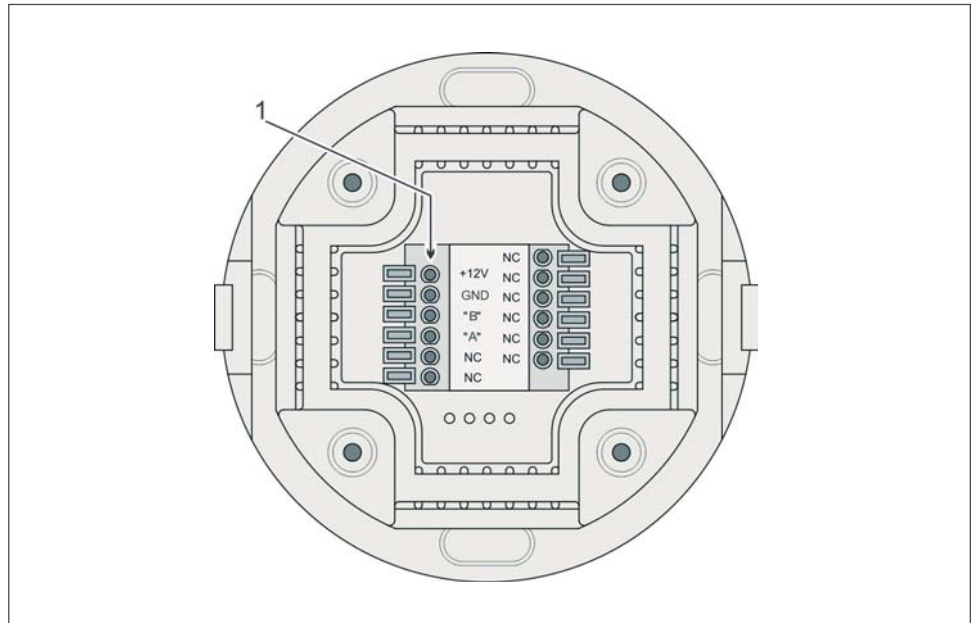


Fig. 4: Back of WRU 200 reader

- 1 Clips for attaching the connecting cable to the controller  
(The terminals labelled “NC” are not needed.)

**WRU 220**

The WRU 220 is designed for the switch ranges manufactured by GIRA and JUNG/BERKER with a 55 mm cover.

Installation in a Siedle intercom is also possible in combination with a suitable blind module. The LEDs cannot be seen in this case.

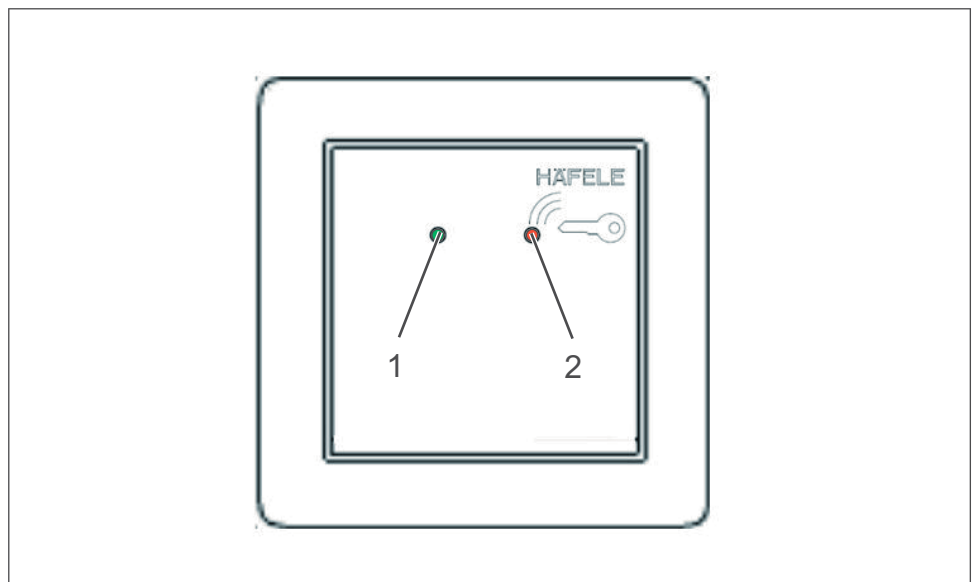


Fig. 5: Front of WRU 220 reader

- 1 LED – illuminates in green if access is granted.
- 2 LED – illuminates in red if the reader is in operation.

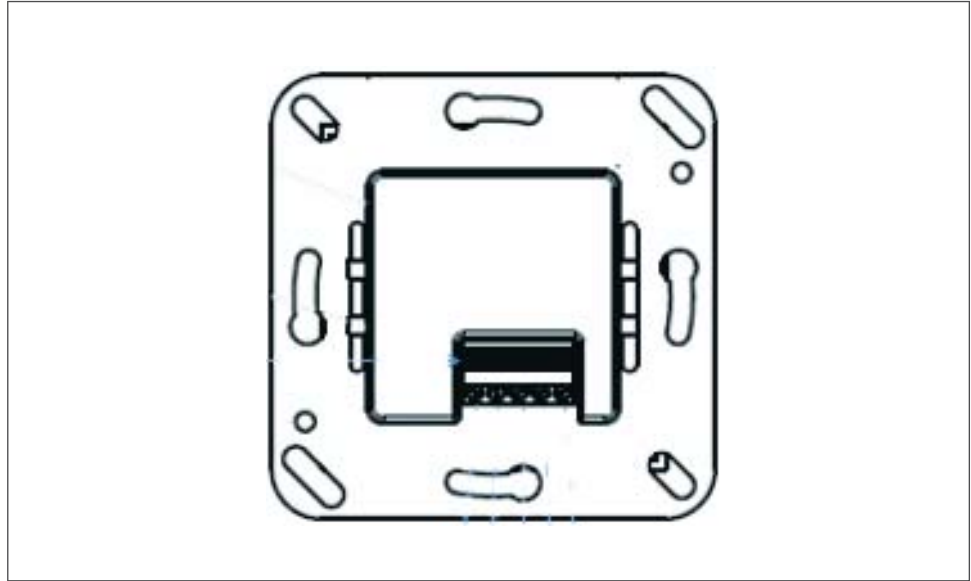


Fig. 6: Back of WRU 220 reader

4.3 Optional extensions

4.3.1 WTX 200 I/O board (optional)

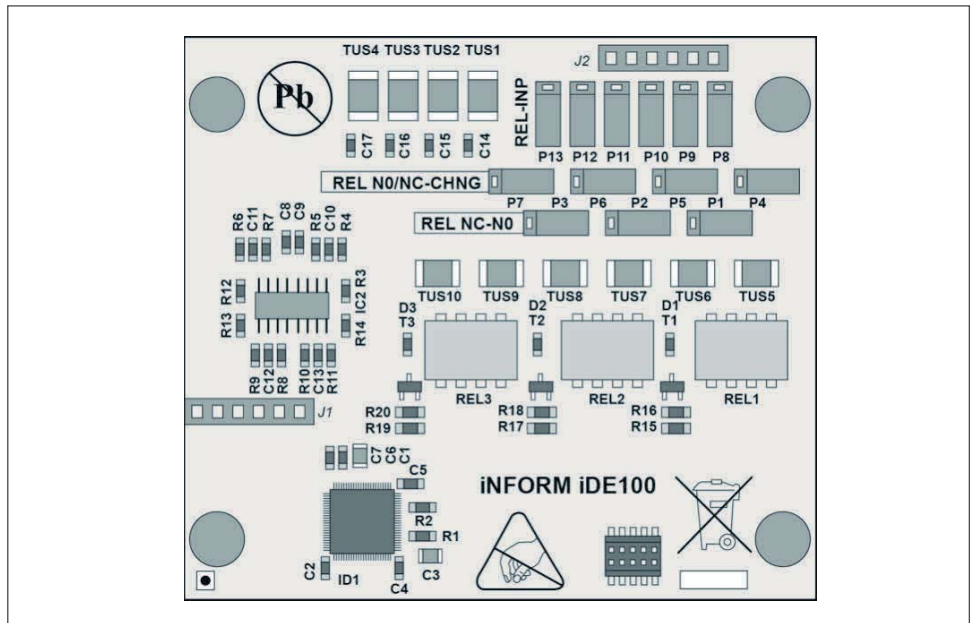


Fig. 7: WTX 200 I/O board add-on module

The controller can be extended by up to 3 relay ports and 4 analogue input ports using the WTC 200 I/O board. However, only 6 connections to the controller screw terminals can be used (Fig. 8/2). These can be configured as input or output ports as required using the corresponding jumper setting.

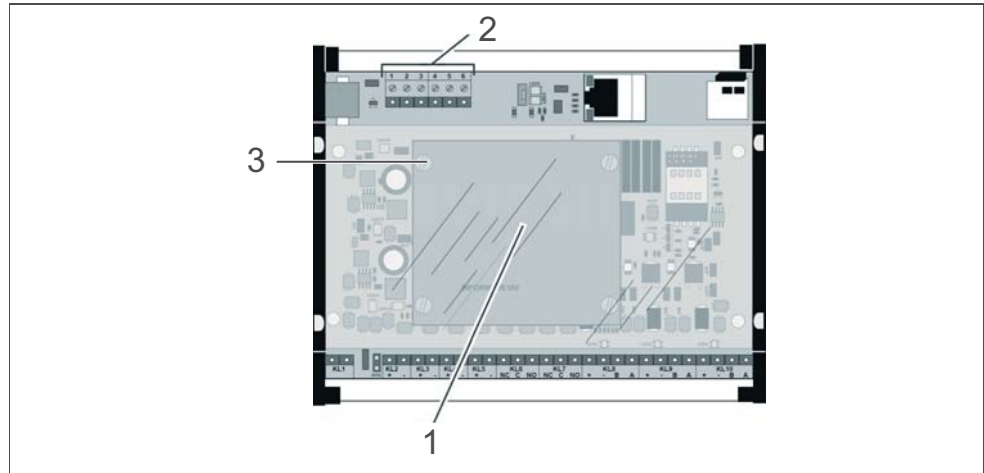


Fig. 8: WTX 200 I/O board connected to controller

The WTX 200 I/O board (Fig. 8/1) is connected to the controller using spacers (Fig. 8/3) and has space under the cover.

#### 4.3.2 WTX 201 8-way relay module (optional)

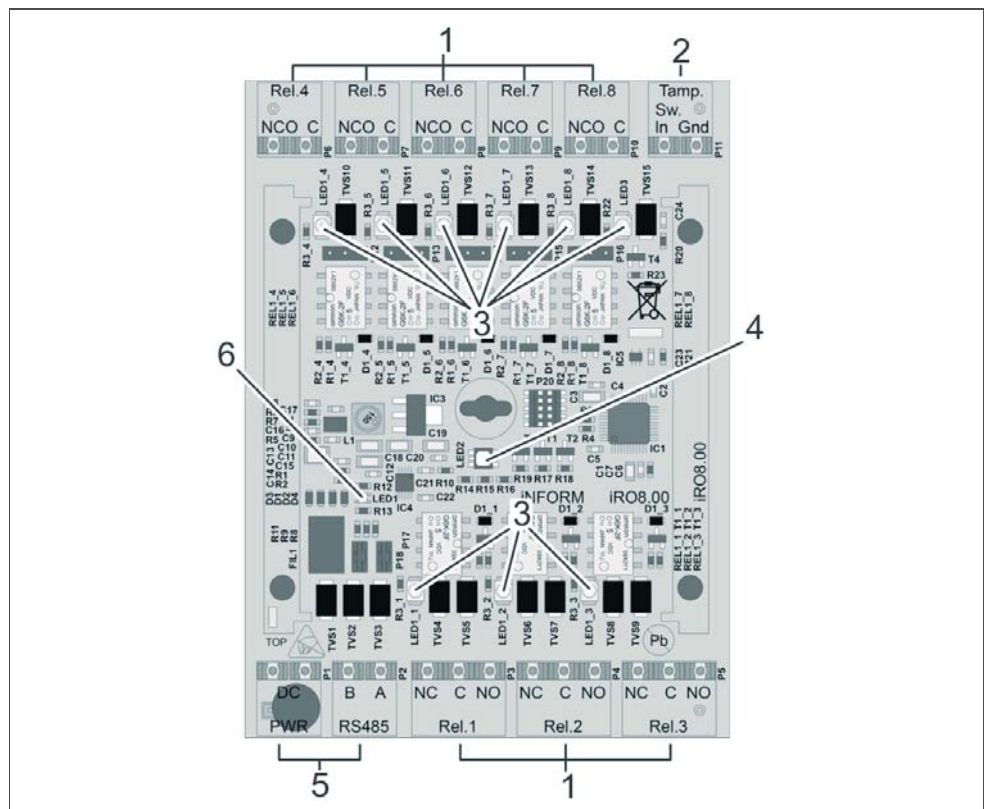


Fig. 9: 8-way relay module without cover/housing

- 1 Relay output ports (for example, for connection of electric strikes or external signal generators)
- 2 Analogue/digital input ports (for example, for connection of door signalling contacts)
- 3 LEDs for relay output ports
- 4 LED 2
- 5 RS-485 interface (power supply and connection to controller)
- 6 LED 1

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The WTC 200 controller can be extended by 8 relay output ports with the WTX 201 8-way relay module. The relay output ports can be used to connect items such as control units for lifts. The 8-way relay module also has an analogue/digital input port. The 8-way relay module is connected to the controller via an RS-485 interface. Up to four 8-way relay modules can be connected to a controller. The 8-way relay module is attached to a "TS 35" top hat rail in accordance with EN 50022.



Details on connecting and setting the jumpers See chapter "A.A 8-way relay module connection diagram" on page 106.

LED	Status	Meaning
LED 1_1 to LED 1_8	Yellow	Relay is controlled.
LED 1	Green	Interface communication is OK.
	Red	Communication is not possible.
	Orange	Communication is OK; data missing.
LED 2	Blue	Module is not initialised.
	Rapid green flashing	Reset is carried out.
	Red flashing, X times (after reset)	Bus address displayed, e.g. 3x flashing = address 3.

## 5. Mounting and installation

### 5.1 Requirements for installation locations

- The environmental conditions must be adhered to (See chapter “8.1 WTC 200” on page 94).
- Connection leads for connecting the various components must be present.
- When mounting on a top hat rail: It is essential to use a “TS 35” top hat rail in accordance with EN 50022.
- The on-site power supply must have its own electric circuit.
- The voltage of the on site power supply must meet the requirements of the power supply unit used. See operating instructions of the power supply unit.
- The lead thickness of the on-site power supply must be 2.5 mm.

### 5.2 Mounting and installation of the controller and power supply unit on a top hat rail

**Personnel:** qualified electrician



The controller can be connected to any power supply unit that meets the following requirements:

- 12–24 V DC output voltage
- Output: in accordance with the configuration of the system (min. 11 W)

#### **WARNING**

##### **Risk of fire!**

If the external power supply unit has a capacity of over 15 VA, installation on a top hat rail poses a risk of fire.

- In this case, install the power supply unit in a separate sheet steel housing unit.

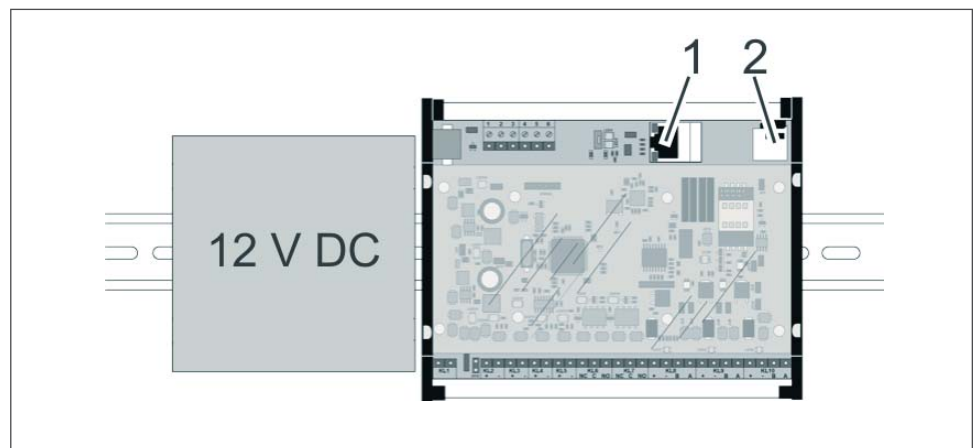


Fig. 10: Assignment of controller and power supply unit to a top hat rail (illustrative)

#### **DANGER**

##### **Risk of fatal injury from electrical current!**

- Before installation, please ensure that the on-site power supply is switched off.



1. Mount the controller and power supply unit on the top hat rail. It is essential to ensure that the power supply unit and controller snap audibly into place on the top hat rail.



The network connection Fig. 10/1) and SD card holder Fig. 10/2) for the controller must face upwards.

2. Assign the controller connection terminals (See chapter “4.2.1 WTC 200 controller” on page 70).

Interface/Connection	Terminal	Usage
RS-485	8, 9, 10	Connection of readers (A to A; B to B) and extensions (power supply of extensions max. 0.6 A; power supply of extensions: voltage at terminal 1 (Fig. 2/11) less approx. 1 V)
Relay output ports	6, 7	For example: Connection of electric strikes (depending on electric strike: NO and C or NC and C) and external signal generators (NO and C)
Analogue/digital input ports	2–5	For example: Connection of door signalling contacts
RJ45 network connection		Network connection for communicating with the server and configuration software



### Typical installation options

(See chapter “11. Appendix” on page 105)

3. Lay the connection lead through to the required components.

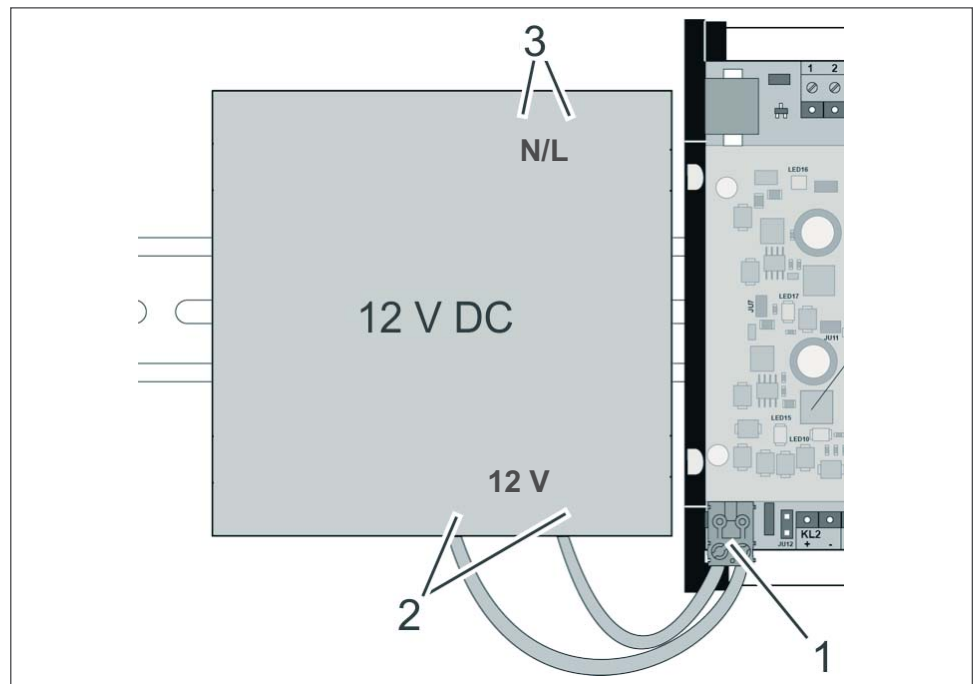


Fig. 11: Connection between power supply unit (illustrative) and controller

4. Connect controller terminal 1 (Fig. 11/1) to the 12 V voltage output port for the power supply unit (Fig. 11/2).
5. Connect the supply voltage input for the power supply unit (Fig. 11/3) to the on-site power supply.

### 5.3 Mounting and installing the reader

**Personnel:** qualified electrician

**Prerequisites:**

- At the desired installation location, a switch box according to DIN 49073 is pre-installed in the wall.
- The connection lead between controller and switch box has already been installed and connected to the controller.

#### 5.3.1 WRU 200 reader



**DANGER**

**Risk of fatal injury from electrical current!**

- Before installation, please ensure that the on-site power supply is switched off.

1. Disconnect the controller voltage supply.
2. Screw the frame of the reader to the pre-installed switch box. Ensure that the retaining rails for the reader are on the right and left (Fig. 12/1) and the black mark (Fig. 12/2) is at the top.

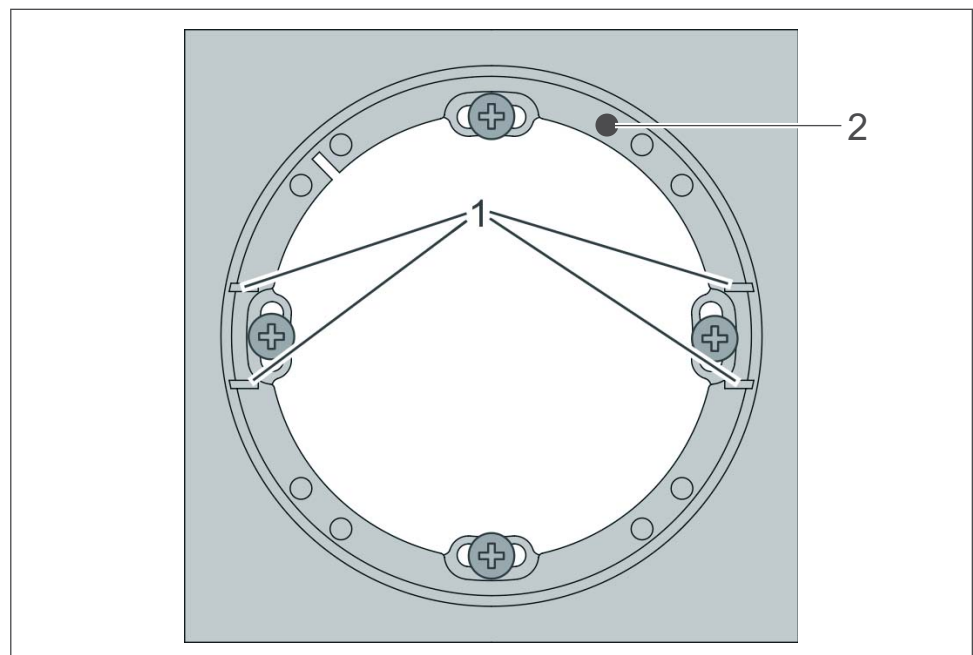


Fig. 12: Frame, WRU 200 reader

3. Connect the connection leads to the clips of the reader (Fig. 13/1).



It must be noted that the conductor which is connected to A at the controller is also connected to A at the reader. The same applies to the conductor which has been connected to B.

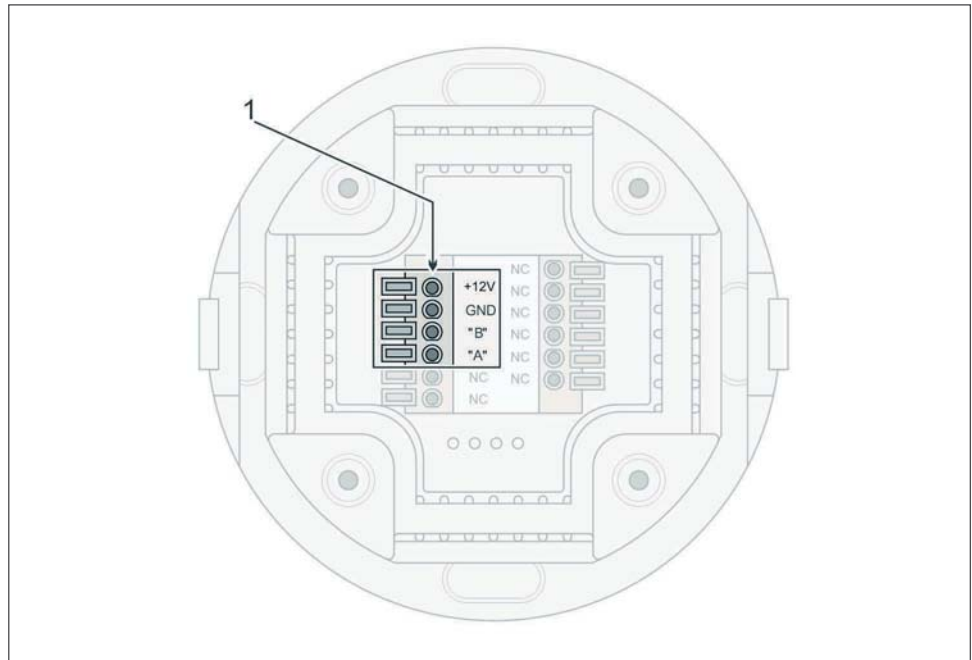


Fig. 13: Connections on the back of the WRU 200 reader

4. Screw the accompanying cover to the back of the reader (Fig. 14/1).  
Lead out the leads to the padded cable guides at the side (Fig. 14/2).

**NOTE**

**Risk of damage to the leads!**

- Carefully push the reader and leads into the switch box.
- Ensure that the leads are not trapped.

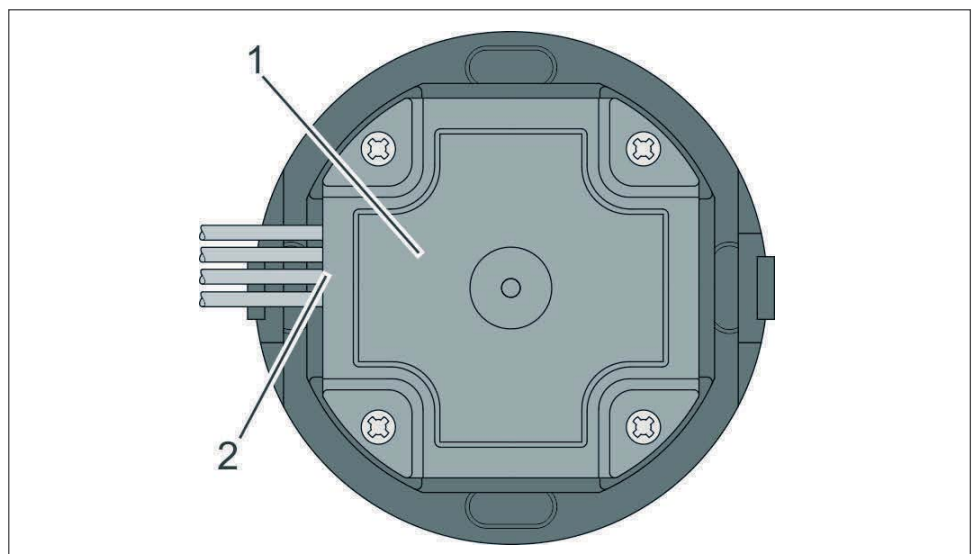


Fig. 14: Back of WR 200 reader with cable

5. Push the reader into the frame until it has engaged into the retaining rails at both sides.

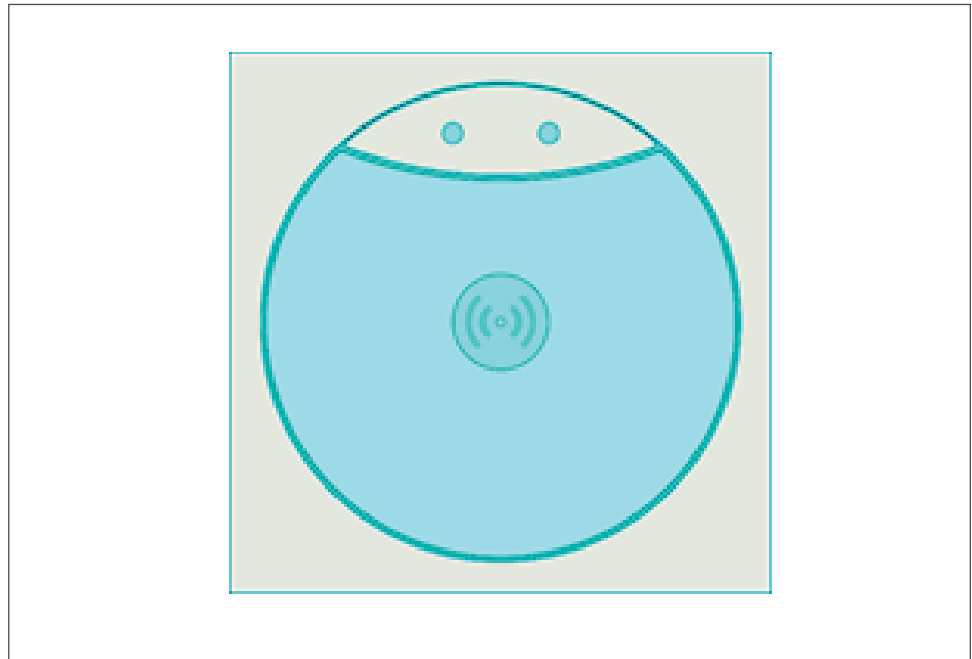


Fig. 15: WRU 200 reader with frame

6. Restore the voltage supply of the controller.

### 5.3.2 WRU 220 reader



#### DANGER

#### Risk of fatal injury from electrical current!

- Before installation, please ensure that the on-site power supply is switched off.

1. Disconnect the controller voltage supply.
2. Connect the connection leads to the clips of the reader (Fig. 39/p. 100).



It must be noted that the conductor which is connected to A at the controller is also connected to A at the reader. The same applies to the conductor which has been connected to B.

3. Install the reader in the pre-installed switch box (Fig. 16).

4. Fix the switch frame (Fig. 17/1) to the switch with the supplied cover (Fig. 17/2).

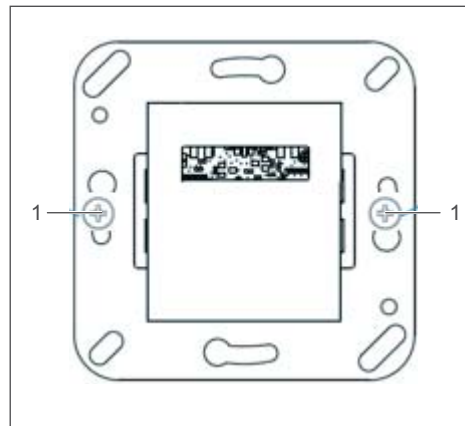


Fig. 16: Install the WRU 220 reader in the switch box

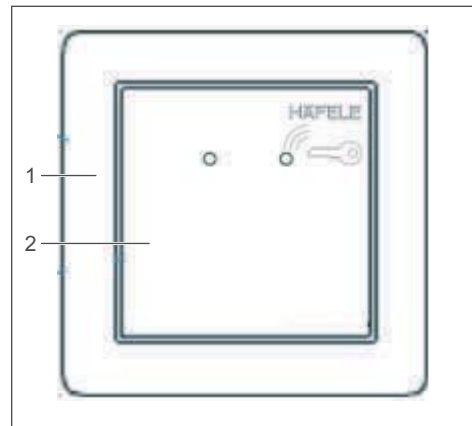


Fig. 17: WRU 220 reader with frame

**Installation in Siedle intercoms**

1. Release the clamping plate (Fig. 18/1) and remove it from the blind module (not supplied).

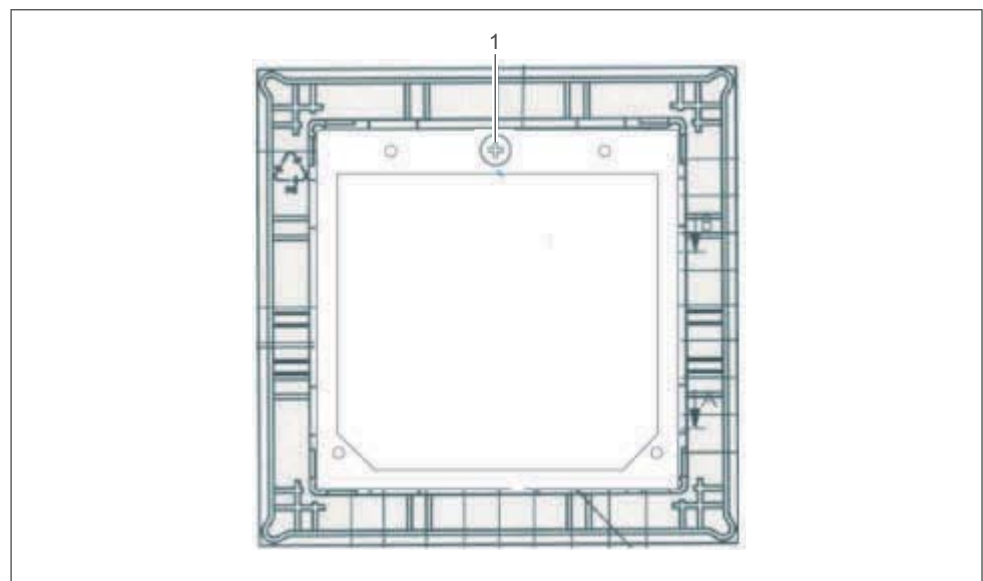


Fig. 18: Delivery condition of Siedle blind module (not supplied)

2. Insert the reader into the blind module FLUSH WITH THE TOP (Fig. 19/1).

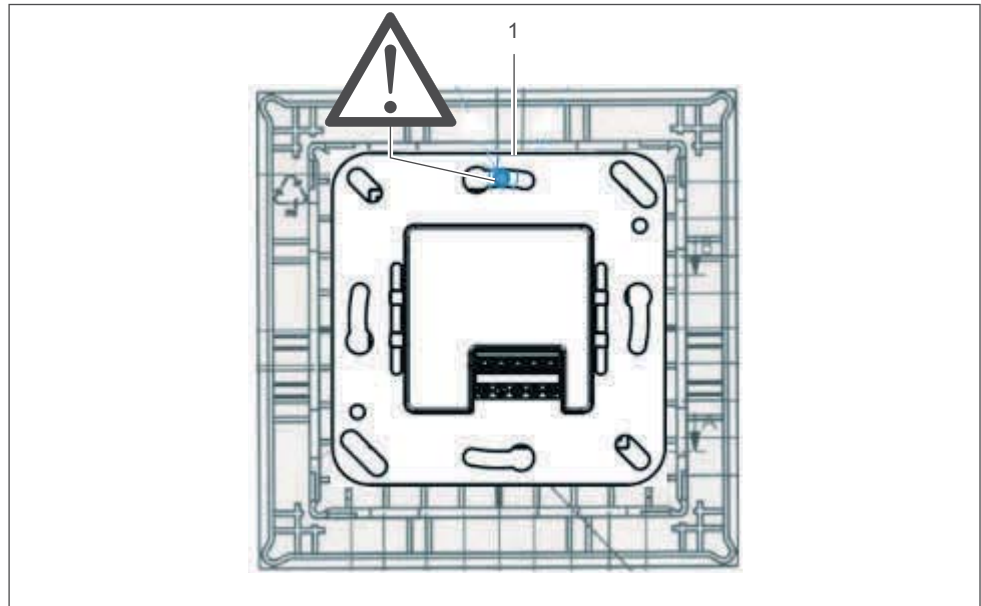


Fig. 19: Insert the WRU 220 reader into the blind module

3. Reinsert the clamping plate into the blind module and fix it (Fig. 20).

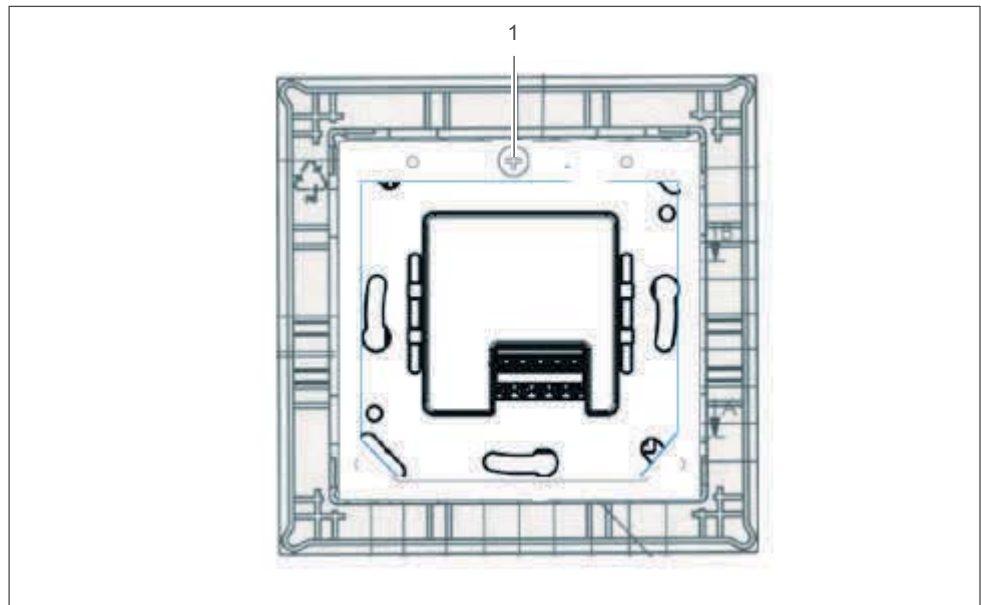


Fig. 20: Insert the mounting plate and fix it

4. Connect the connection leads to the clips of the reader (Fig. 39/p. 100).

5. Insert the cables into the housing and clip the blind cover with the reader onto the frame.

**NOTE**

**Risk of damage to the leads!**

- Carefully push the reader and leads into the switch box.
- Ensure that the leads are not trapped.

5.4 Mounting the WTX 200 I/O board add-on module

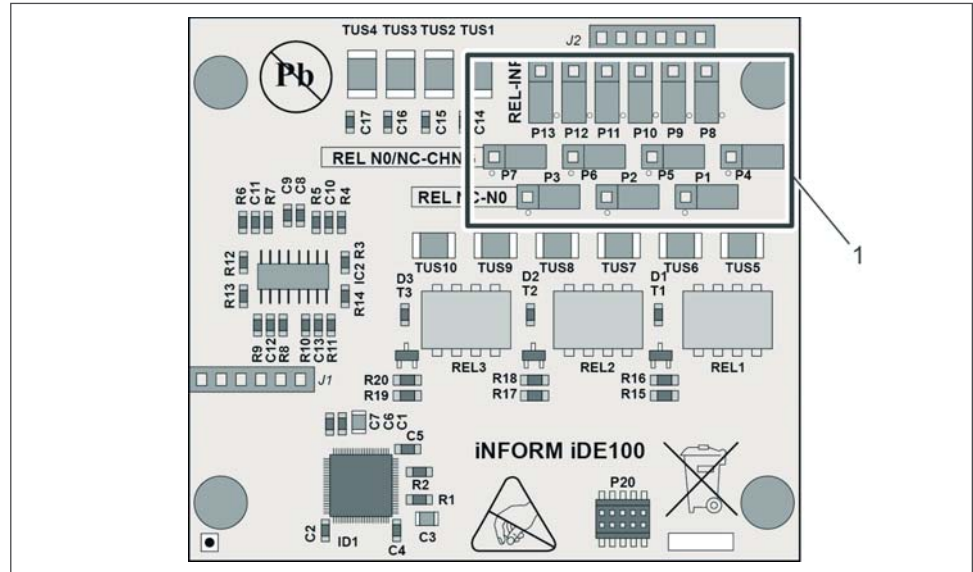


Fig. 21: Add-on module with jumpers

1. Place the jumper on the add-on module for installation option 5 (Fig. 47c/p. 118).



**Additional information and examples**

- See “Structure and pin assignment of the WTX 200 I/O board” on page 86.
- See “Assignment options for the additional connections at the 6 controller screw terminals” on page 87.
- See “Use of the add-on module for 4 additional analogue/digital input ports” on page 88.
- See “Use of the add-on module for 2 additional relay output ports and 1 additional analogue/digital input port” on page 89.

2. Attach the spacer to the controller (Fig. 22/1) on the add-on module (4x supplied).

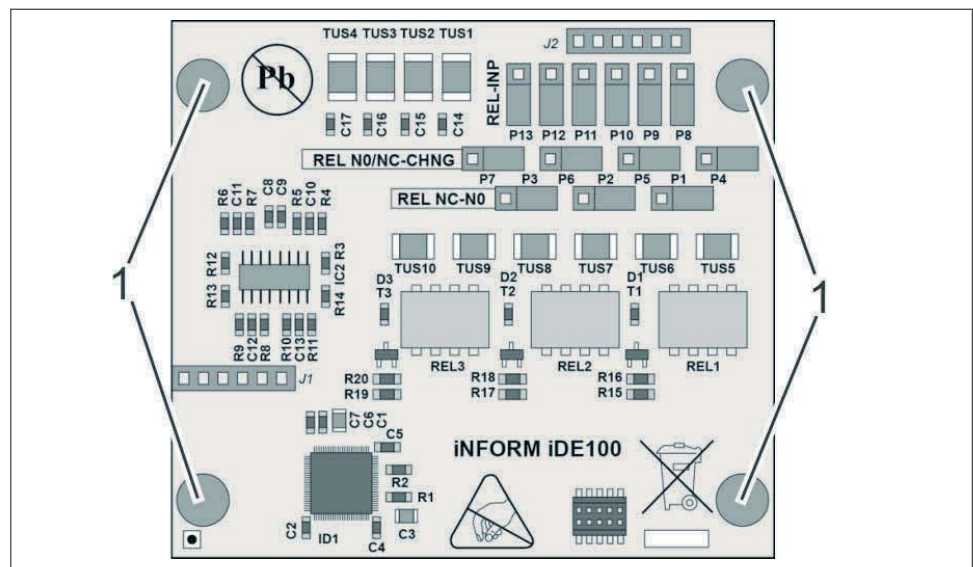


Fig. 22: I/O board spacer



3. Remove the cover on the controller.

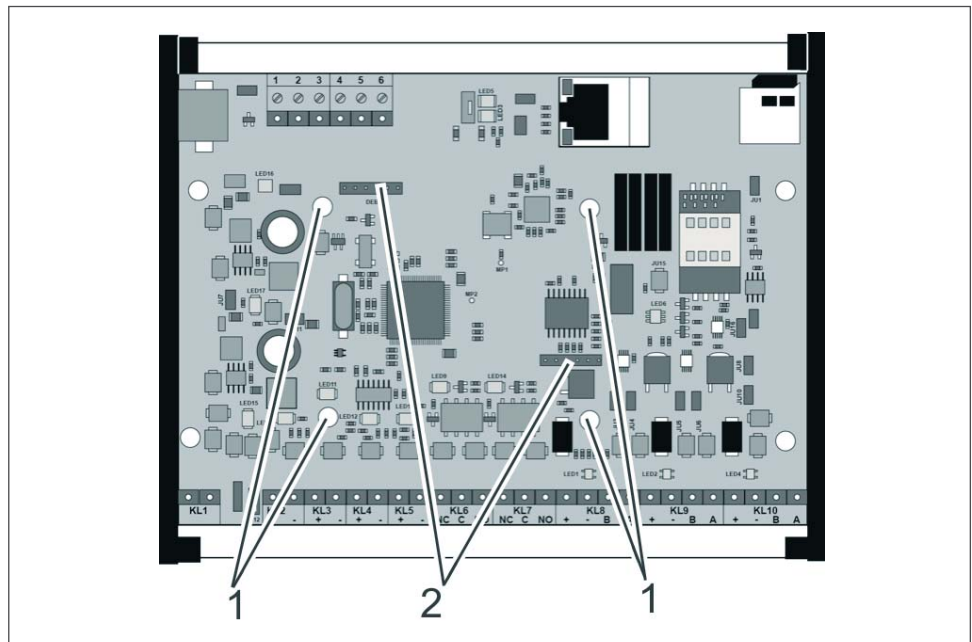


Fig. 23: WTC 200 controller without cover

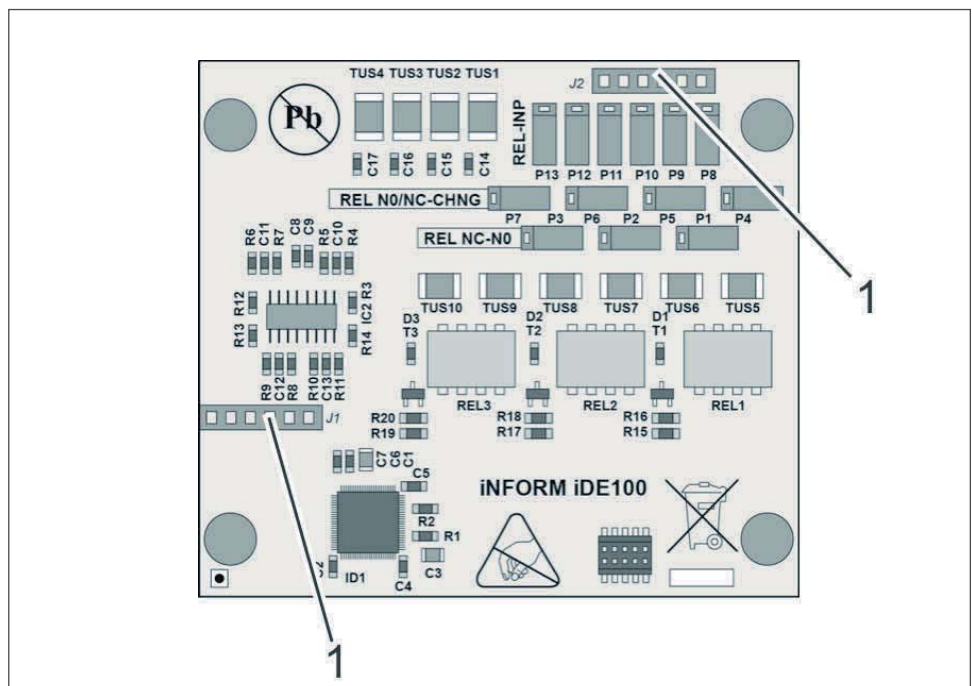


Fig. 24: Plug-in connections between controller and add-on module

4. Clip on add-on module.

**NOTE**

**Risk of damage to the controller and add-on module!**

- Proceed with caution when clipping the add-on module onto the controller.
- Push the module down without forcing it.





The spacers on the add-on module must fit inside the slots on the controller exactly (Fig. 23/1).



The plug-in connections on the add-on module (Fig. 24/1) must fit inside the plug-in connections on the controller (Fig. 23/2).

5. If the add-on module is not in the correct position, push it onto the spacers on the controller.
6. Reattach the cover on the controller.  
The 6 additional connection options (Fig. 25/2) are now available on the controller screw terminals.

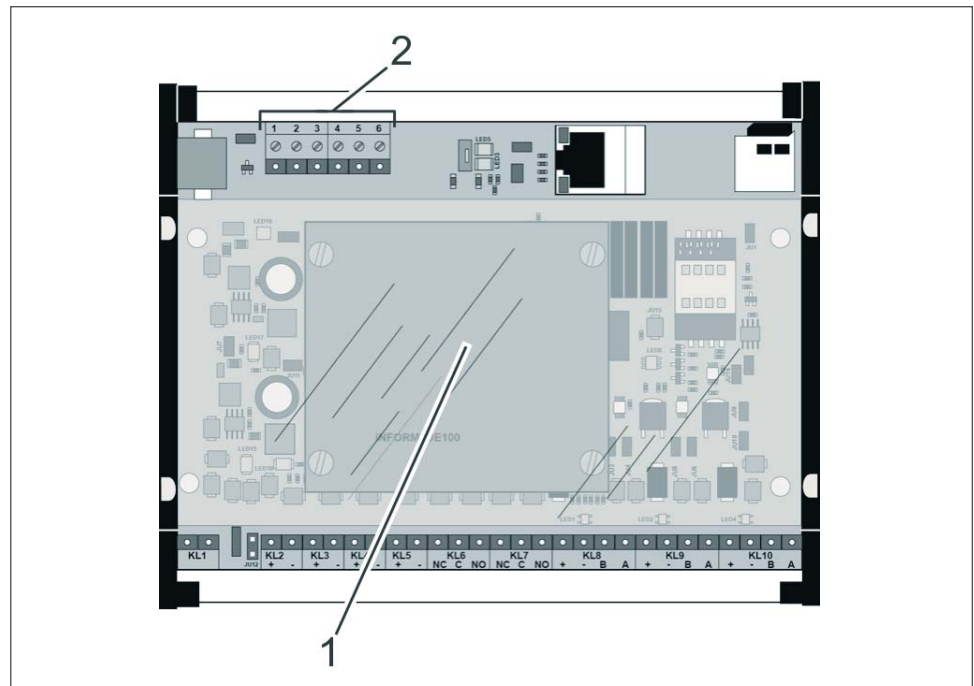


Fig. 25: I/O board add-on module connected to controller

**Structure and pin assignment of the WTX 200 I/O board**

Depending on how the jumpers are positioned on the “WTX 200 I/O board”, the additional connections also have another function. The following circuit diagram, table and examples show how the individual connections can be assigned by positioning the jumpers.

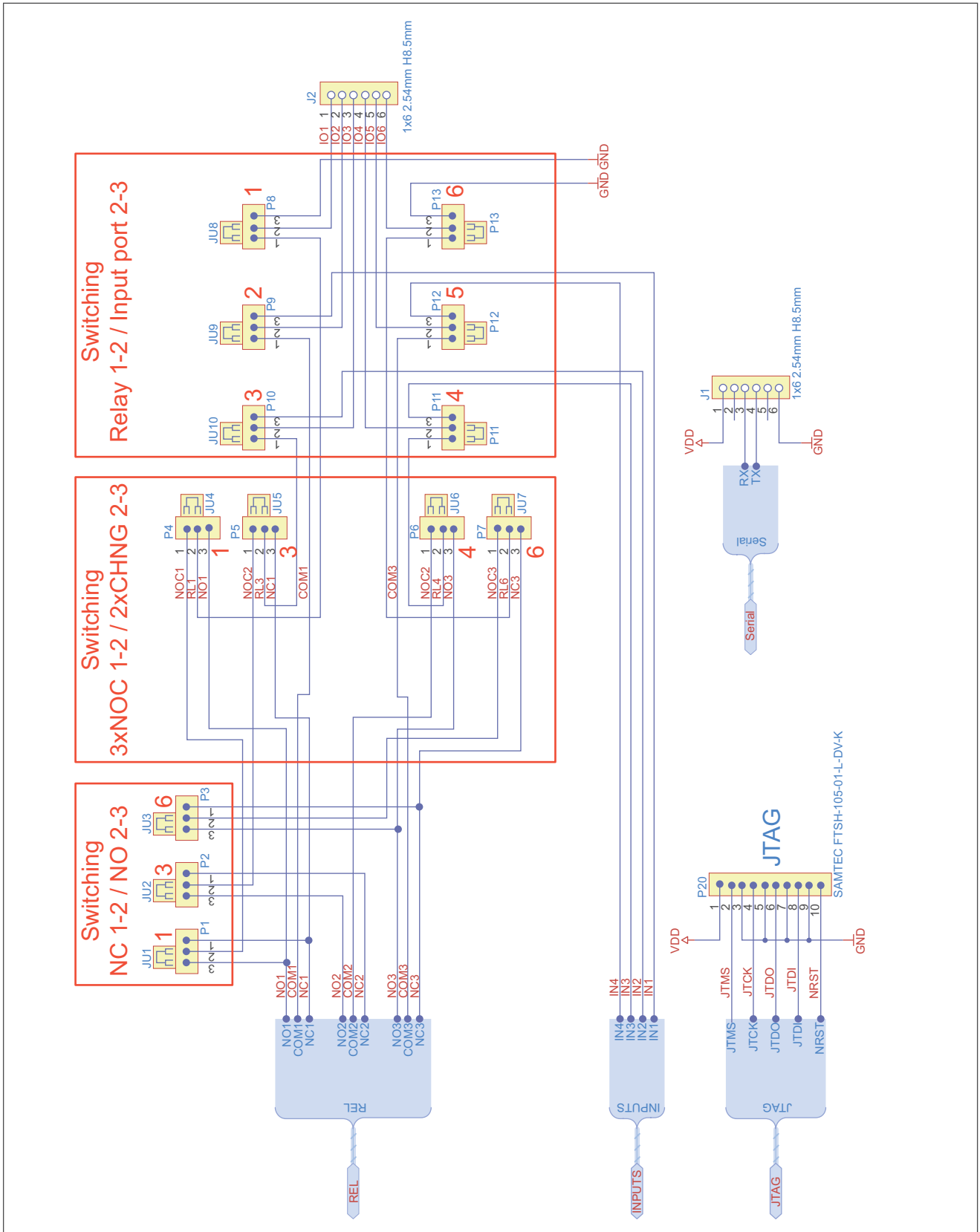


Fig. 26: I/O board add-on module 1 connected to controller

The 6 additional connection options (Fig. 25/2) are now available on the controller screw terminals.

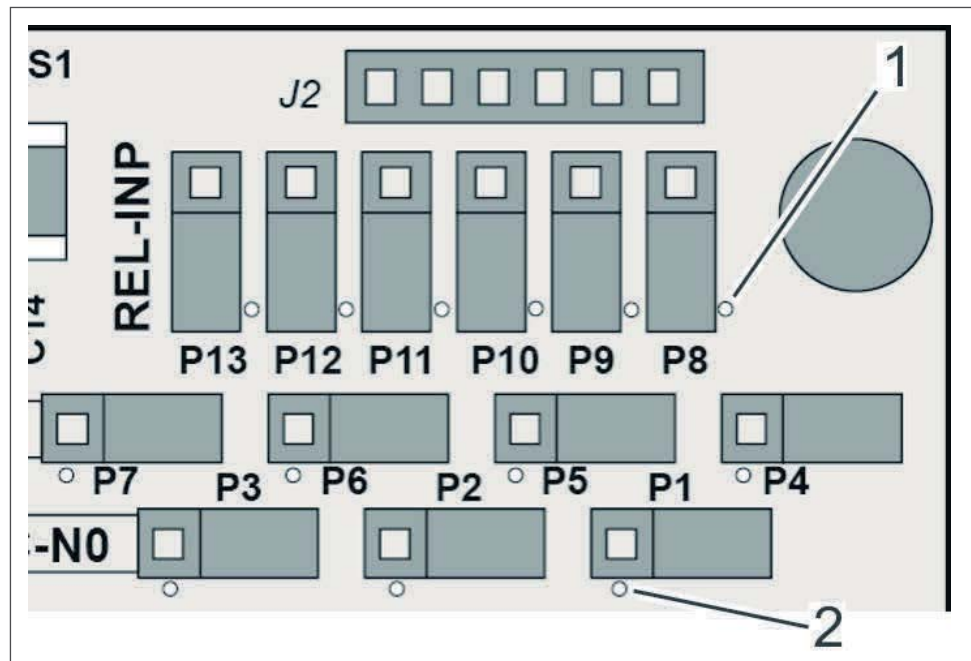


Fig. 27: Position connection no. 1 (white dot)

The white dot (Fig. 27/1 and 2) marks the respective connection position with the number 1 in the circuit diagram.

**Assignment options for the additional connections at the 6 controller screw terminals**

Controller screw terminals	3 relay ports (NO and C)	2 relay ports (NO and C) 1 input port	1 relay port (NO and C) 3 input ports	2 relay ports (NO, C and NC)	1 relay ports (NO, C and NC) 2 input ports
1	NO 1	NO 1	NO 1	NO 1	NO 1
2	C 1	C 1	C 1	C 1	C 1
3	NO 2	NO 2	IN 2	NC 1	NC 1
4	C 2	C 2	IN 3	NO 3	IN 3
5	NO 3	IN 4	IN 4	C 3	IN 4
6	C 3	GND	GND	NC 3	GND

Pin	1 input port	2 input ports	3 input ports	4 input ports
1				GND
2				IN 1
3			IN 2	IN 2
4		IN 3	IN 3	IN 3
5	IN 4	IN 4	IN 4	IN 4
6	GND	GND	GND	GND

Example:

Use of the add-on module for 4 additional analogue/digital input ports

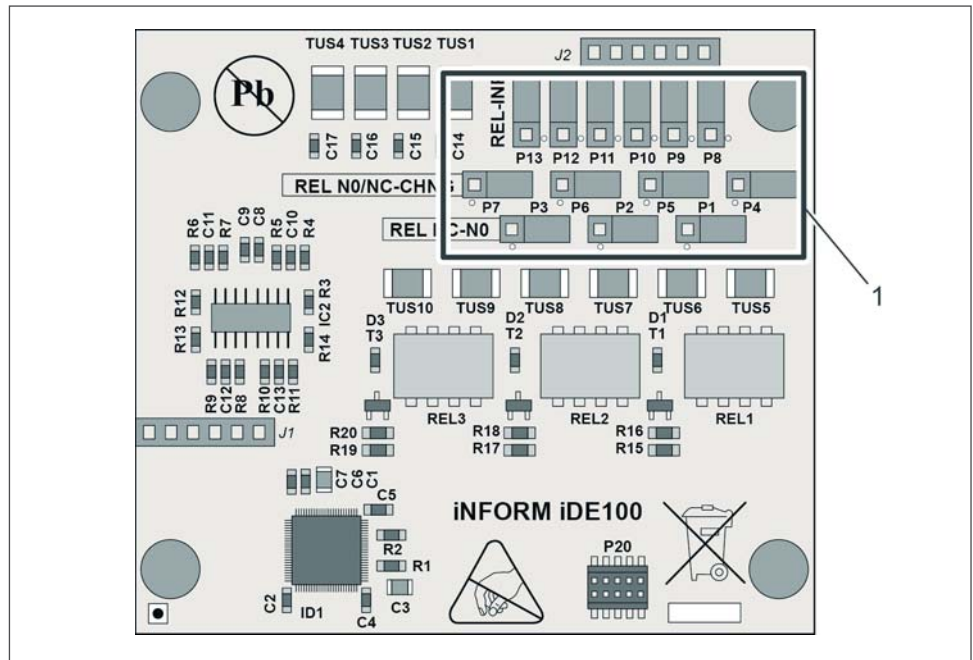


Fig. 28: Add-on module – Position of the jumpers when used for additional analogue/digital input ports

If the additional connection options (connection 1–6) are to be used for door signalling contacts, for example, the jumpers must be positioned as shown in Fig. 28/1.

Assignment of connections 1–6 if the jumpers have been positioned as shown in Fig. 28/1:

Controller screw terminals	1 input port
1	GND
2	IN 1 (INPUT PORT 1)
3	IN 2 (INPUT PORT 2)
4	IN 3 (INPUT PORT 3)
5	IN 4 (INPUT PORT 4)
6	GND

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Example:

**Use of the add-on module for 2 additional relay output ports and 1 additional analogue/digital input port**

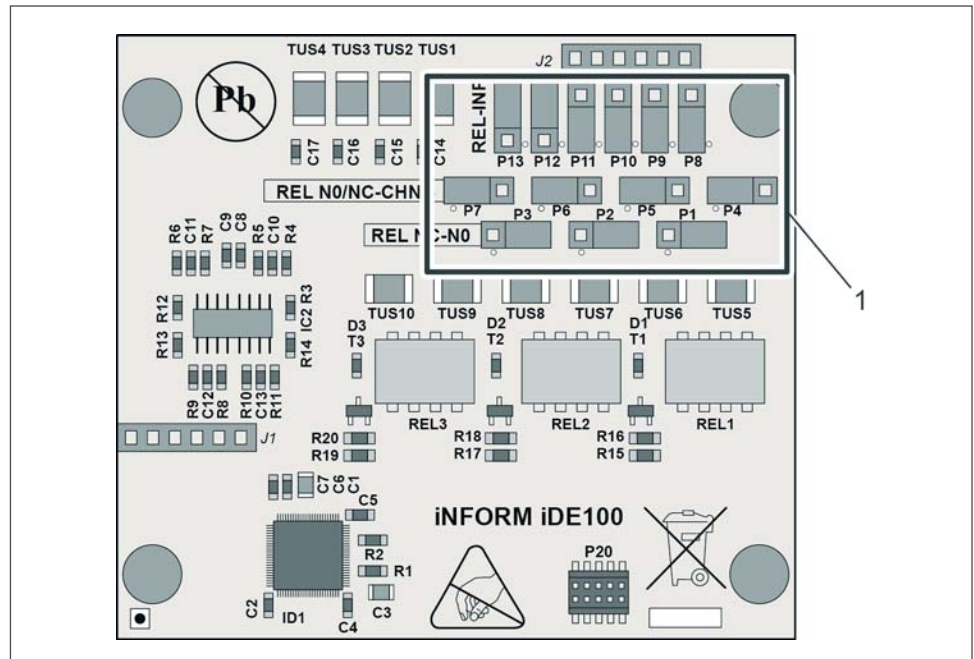


Fig. 29: Add-on module – Position of the jumpers when used for 2 relay output ports and 1 additional analogue/digital input port

If the additional connection options (connection 1–6) are to be used for 2 electric strikes and 1 door signalling contact, for example, the jumpers must be positioned as shown in Fig. 29/1.

Assignment of connections 1–6 if the jumpers have been positioned as shown in Fig. 29/1:

Controller screw terminals	Assignment
1	NO 1 (relay 1 normally open contact)
2	C 1 (or COM 1) (relay 1 central contact)
3	NO 2 (relay 2 normally open contact)
4	C 2 (or COM 2) (relay 2 central contact)
5	IN 4 (INPUT PORT 4)
6	GND

5.5 After installation

1. Establish the voltage supply.
2. Check function.



The installation was performed correctly, if the following is true:

Controller (for LEDs see Fig. 30):

- LEDs for power supply light up (LED 15, 16, 17).
- All LEDs for the open input contacts light up (LED 10, 11, 12, 13).
- The LEDs for the closed input contacts do not light up (LED 10, 11, 12, 13).
- The LEDs for the RS-485 interfaces do not flash (LED 1, 2, 4).
- The network connection LED lights up (yellow LED at network connection "A").



**Configuration and start-up**

The system configuration and the configuration of the Micro SD cards take place via the software and are carried out by the system supplier's customer service. The initial start-up of the access control system is also carried out by the system supplier's customer service.



More information about the start-up and configuration of the SD card and the overall system can be found in the Dialock 2.0 user manual.

LEDs on the WTC 200

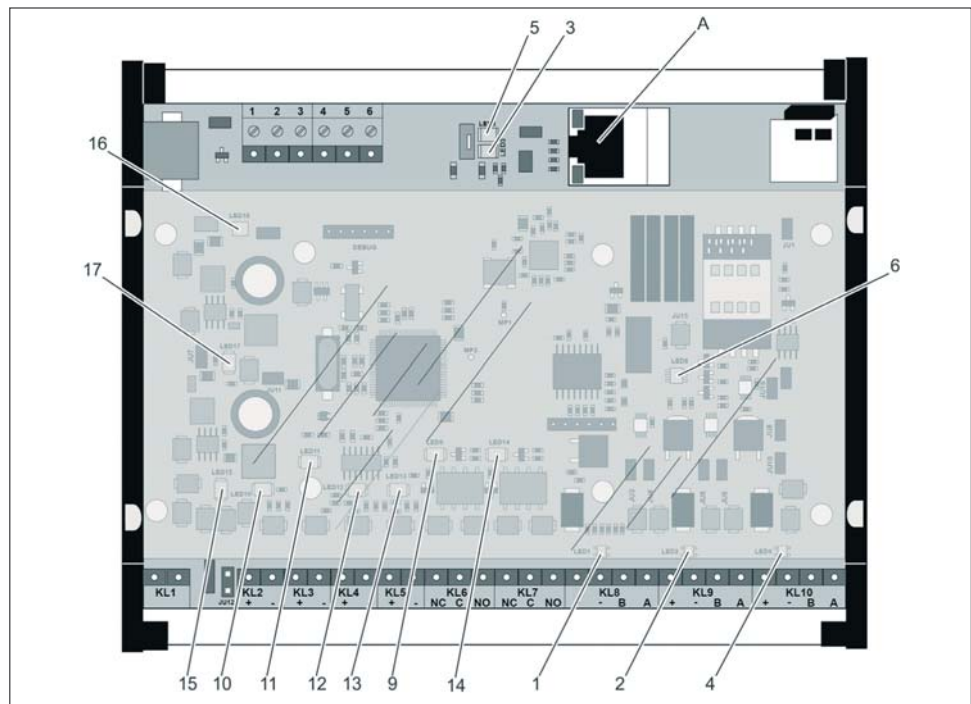


Fig. 30: Overview of LEDs on the WTC 200 controller

- 1-17 LED 1–17
- A Network connection

LED	Status	Meaning	Cause/Troubleshooting
LED 1	Green light.	Interface communication OK.	
LED 2 LED 4	Irregular green/red flashing.	Communication interrupted.	Check whether all configured devices are also connected. Pins A and B were mixed up when connecting a device. Check device connection and correct if necessary.
	Red light.	Communication not possible.	Check whether pins A and B on the controller are connected correctly. Overloading of the energy supply output ports. Possible causes include a short circuit in the wiring, a defective end consumer or the connection of an external device that requires too much energy.
	Rapidly alternating green/red flashing.	Interface power supply interrupted.	Check wiring for short circuit and remedy the issue if necessary. Check end consumer is functioning correctly and replace if necessary.  If the end consumer requires too much energy, power the end consumer with the help of an independent, on-site energy source.
LED 3 LED 5	No light.	Inactive.	
LED 6	Rapid red flashing.	No valid software in the controller.	Copy valid software to the Micro SD card. Notify the customer service of the system supplier.
	Rapid green flashing.	Wait for reset (Micro SD card is ignored, not available, or not readable).	Insert or replace the Micro SD card. Notify the customer service of the system supplier.
	Slow green flashing.	The Micro SD card does not belong to the device.	Insert the correct Micro SD card or use the software to validate the Micro SD card. Notify the customer service of the system supplier.
	Irregular blue flashing.	The Micro SD card is rewritten or deleted via the network connection and software.	
	Rapidly alternating green/red flashing.	No MAC address or no valid MAC address.	Send the controller to the customer service of the system supplier to be repaired.
LED 6	White/light-blue flashing.	Controller is not connected to the host.	Check network infrastructure.  Check IP address on the SD card.
	Purple flashing.	Communication is taking place between the controller and host.	

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LED	Status	Meaning	Cause/Troubleshooting
LED 9 LED 14	Yellow light.	Relay has power.	
LED 10 LED 11		Physical status of the connected input ports.	
LED 12	Green light.	Contacts are open.	
LED 13	No light.	Contacts are closed.	
LED 15	Green light.	Input voltage available.	
	No light.	No input voltage available or power consumption too high (PTC S1 fuse has tripped).	
LED 16	Green light.	Operating voltage (3.3 V) is OK.	
LED 17	Green light.	Operating voltage (5 V) is OK.	

LEDs at network connection RJ45 (Fig. 30/A)	Status	Meaning
Green LED at network connection RJ45.	Green light.	Network speed: 100 Mbit/s.
Green LED at network connection RJ45.	Off.	Network speed: 10 Mbit/s.
Yellow LED at network connection RJ45.	Yellow light.	Connection to network switch available.



## 6. Disassembly and disposal

### 6.1 Safety notes on disassembly and disposal

#### DANGER

##### **Risk of fatal injury from electrical current!**

Contact with live components can be fatal.

- Before starting disassembly, switch off and permanently disconnect the electrical power supply.



##### **SD card may contain sensitive data!**

- Prior to disposal, remove the SD card and destroy it if necessary.

### 6.2 Disassembly

Before starting disassembly:

- Physically disconnect the entire power supply and discharge stored residual energy.
- Disconnect interconnecting lead between the components.

### 6.3 Disposal

#### **NOTE**

##### **Risk to the environment due to improper disposal!**

Improper disposal may be hazardous to the environment.

- Have electronic waste, electronic components disposed of by authorised specialist companies.
- When in doubt, seek advice on environmentally responsible disposal from the local municipal authority or specialised disposal companies.

If no return or disposal agreement exist, recycle disassembled components:

- Scrap metals
- Recycle plastic components
- Dispose of other components sorted by nature of the material

## 7. Storage

### Storage of packages

Store packages under the following conditions:

- Do not store outdoors.
- Store in a dry and dust-free place.
- Do not expose to aggressive media.
- Protect against sun exposure.
- Avoid mechanical vibrations.
- Storage temperature of controller: -25 to +70°C.
- Storage temperature of separate power supply unit: -10°C to +60°C.
- Storage temperature of sheet steel housing with power supply unit: 0°C to +55°C.
- Relative humidity: max. 90 %, not condensed.



In some cases, instructions for storage may be located on the package, which go beyond the requirements listed here. Follow these instructions accordingly.

## 8. Technical data

### 8.1 WTC 200

#### Dimension sheet

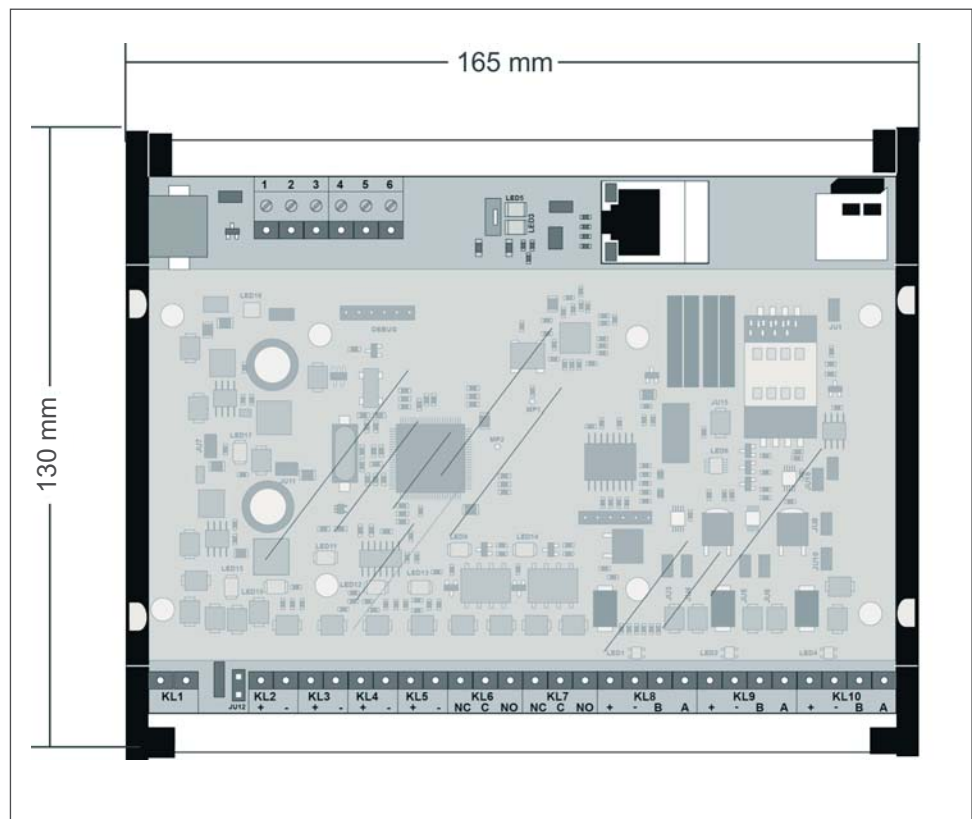


Fig. 31: Dimension sheet for WTC 200 controller

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## Dimensions and weight

Specification	Value	Unit
Weight	320	g
Length	165	mm
Width	130	mm
Height	65	mm

## Connection and power values

Specification	Value	Unit
Voltage	12–24	V DC
Tolerance	± 15	%
Current consumption, max.	0,125	A
Power consumption, max.	1,5	W
Safe-keeping	1,0	A

## Ambient conditions during operation

Specification	Value	Unit
Temperature range	-25–+70	°C
Relative humidity, maximum (not condensed)	10 - 95	%

## type plate

The controller type plate can be found on the back of the device and includes the following information:

- Manufacturer
- Type
- Year of manufacture
- Connection values

8.2 IP 65 wall housing



For further information, see the separate fitting instructions for the plastic housing with integrated power supply unit

Dimension sheet for plastic housing (larger wall housing on request)

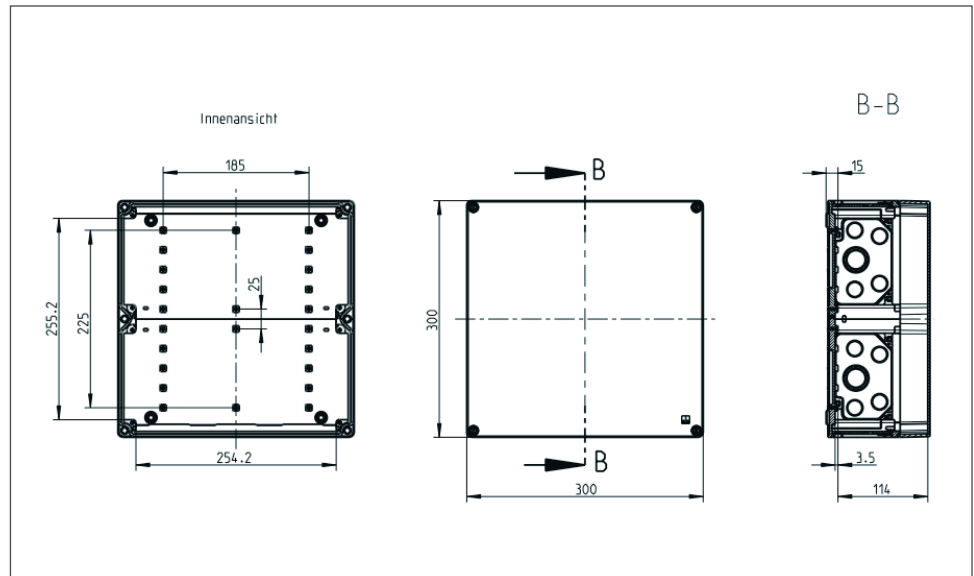


Fig. 32: Dimension sheet for plastic housing

Dimensions

Specification	Value	Unit
Length	300	mm
Width	300	mm
Height	132	mm

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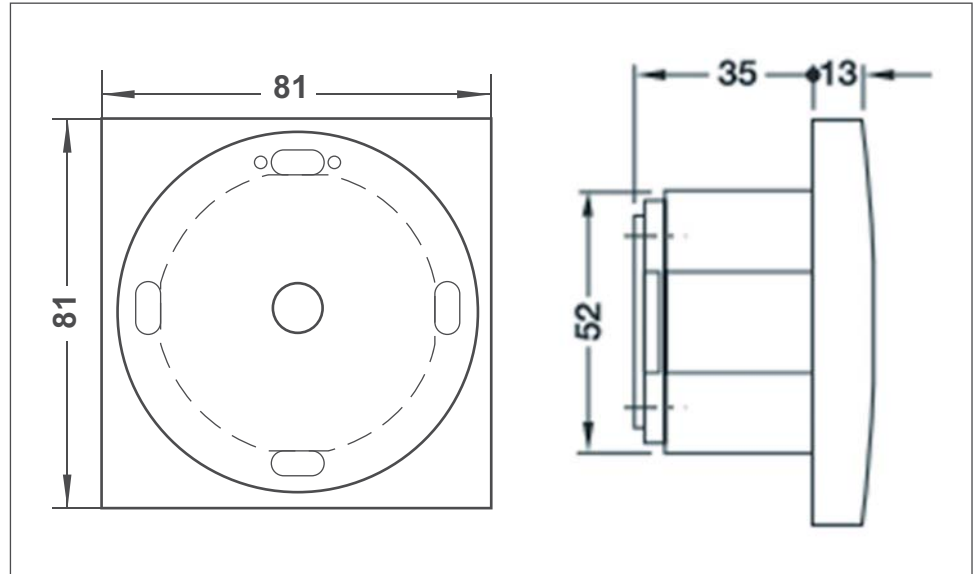


Fig. 33: Dimension sheet for WRU 200 reader with frame

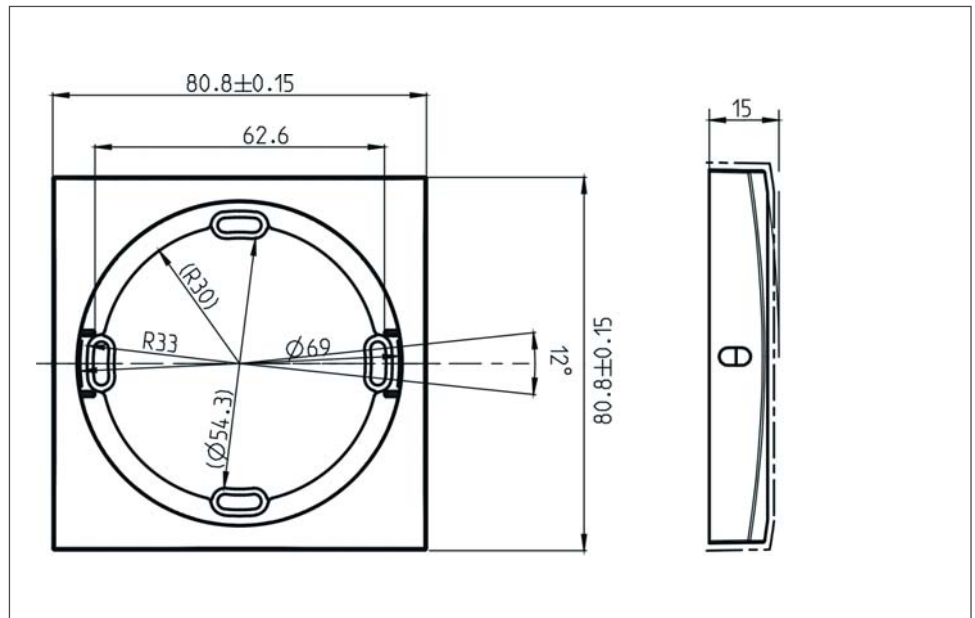


Fig. 34: Dimension sheet for WRU 200 reader frame (top view and side view)

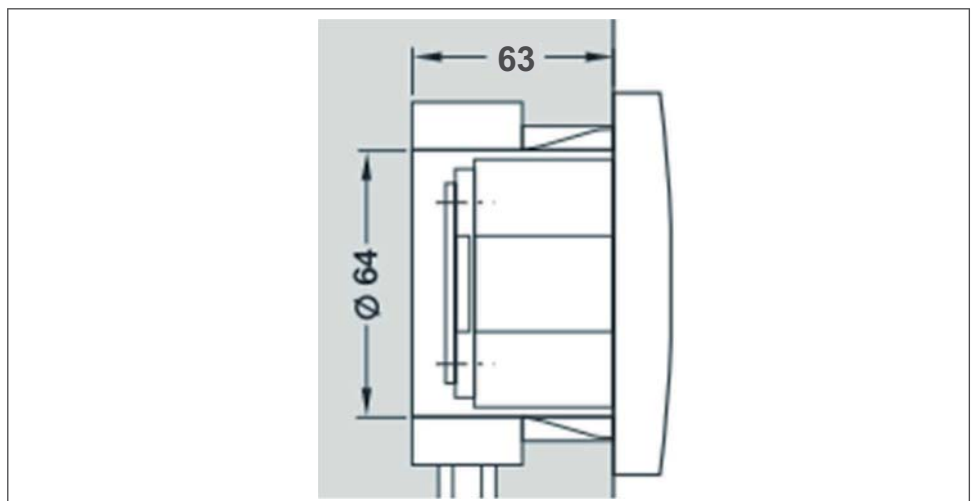


Fig. 35: Space requirement flush-mount socket

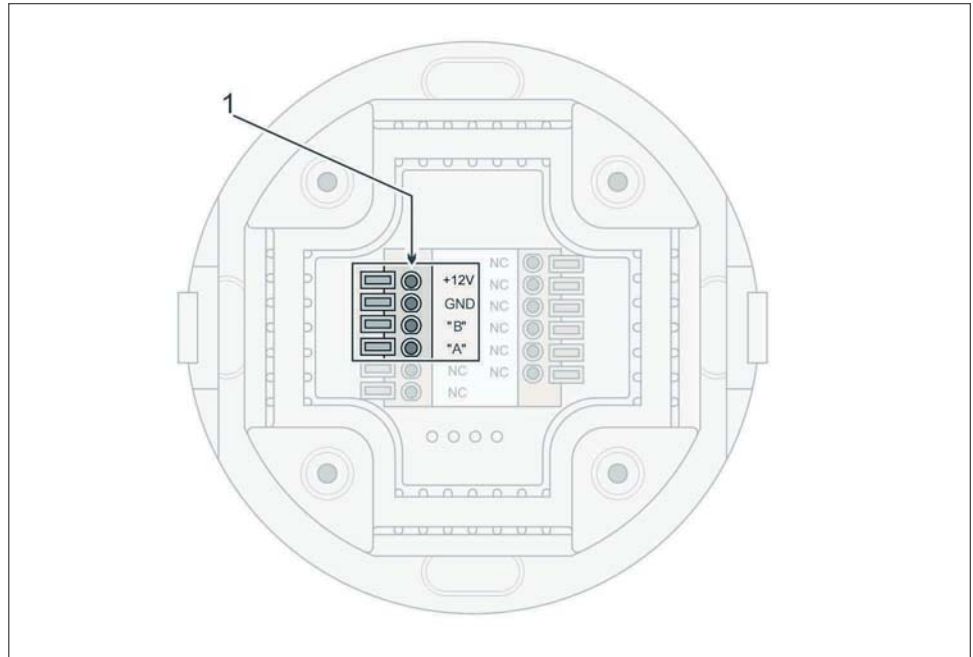


Fig. 36: Connections for WRU 200 reader

**Dimensions and weight**

Specification	Value	Unit
Weight with frame	85	g
Width	81	mm
Height	81	mm
Depth	15 + 35	mm

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**Connection and power values**

Specification	Value	Unit
Voltage	12–24	V
Current consumption, max. (at 12 V)	0,07	A
Power consumption, max.	0,8	W

**Ambient conditions during operation**

Specification	Value	Unit
Temperature range	-25–+70	°C
Relative humidity, maximum (not condensed)	10–95	%
Protection class, front	IP 65	
Protection class, rear	IP44	

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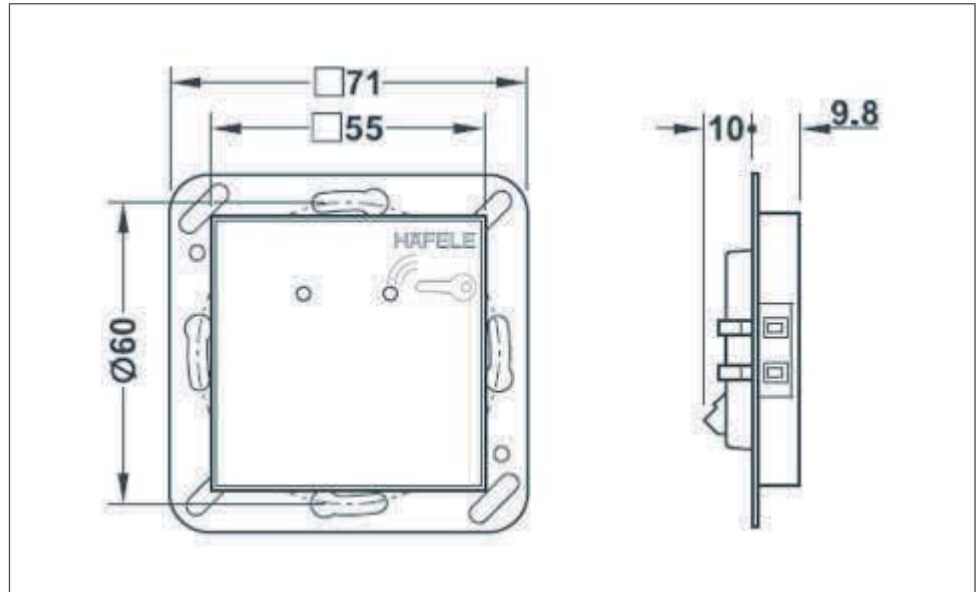


Fig. 37: Dimension sheet for WRU 220 reader

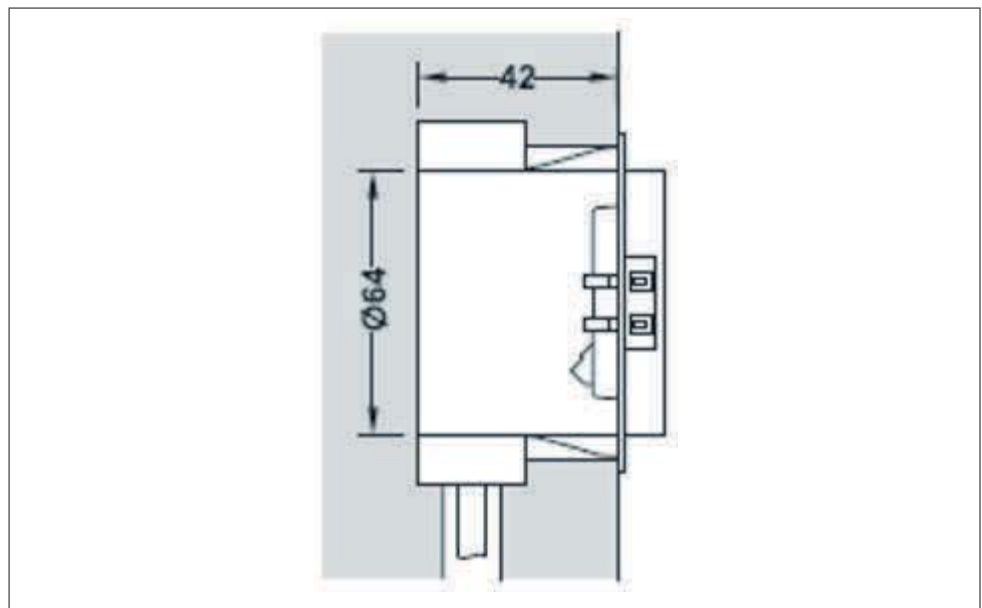


Fig. 38: Space requirement flush-mount socket

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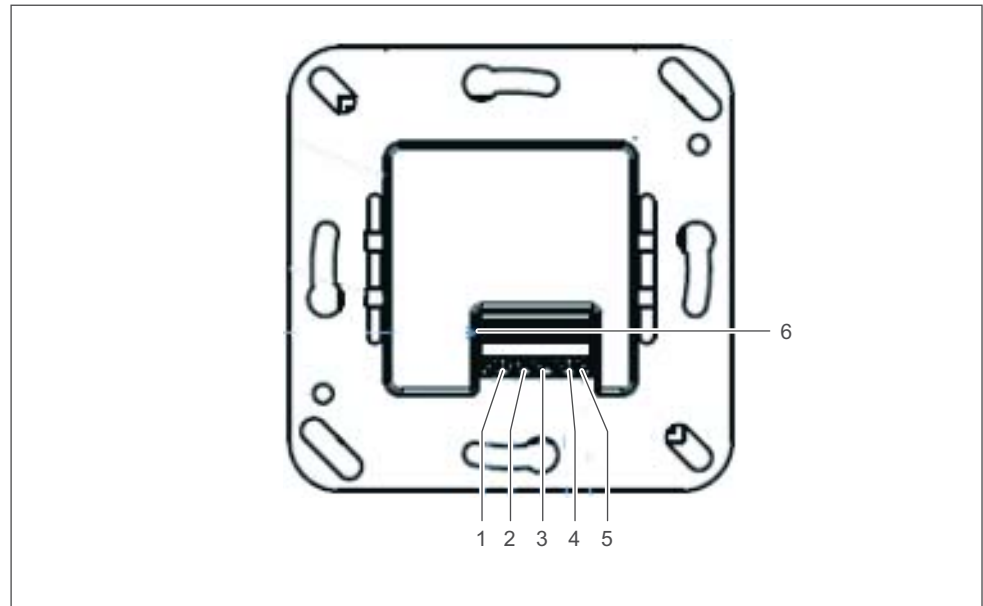


Fig. 39: Connections for WRU 220 reader

- 1 VDC + / 12–24 V
- 2 VDC –
- 3 GND
- 4 RS 485 A
- 5 RS 485 B
- 6 Connection terminal



**Interfaces**

Specification	Value	Unit
Communication interface	RS 485	
Possible wire thicknesses	0.09 - 1.3	mm <sup>2</sup>
	28 - 16	AWG
Visual signalling	1 x LED red	
	1 x LED green	
Acoustic signalling	Piezo	

**Dimensions and weights**

Specification	Value	Unit
Weight	36	g
width	71	mm
height	71	mm
depth	21	mm

**Connection and power values**

Specification	Value	Unit
Voltage	12–24 (±10%)	V DC
Current consumption, max. (at 12 V)	0,07	A
Power consumption, max.	0,8	W

**Ambient conditions during operation**

Specification	Value	Unit
Temperature range	-25–+65	°C
Relative humidity (not condensed)	10–95	%

**Protection classes**

Specification	Value
Wall reader without frame	IP00
Wall reader with Gira frame	IP20
Wall reader with Gira frame, TX 44 system	IP44
Wall reader with Siedle blind module	IP54

8.5 8-way relay module Dimension sheet

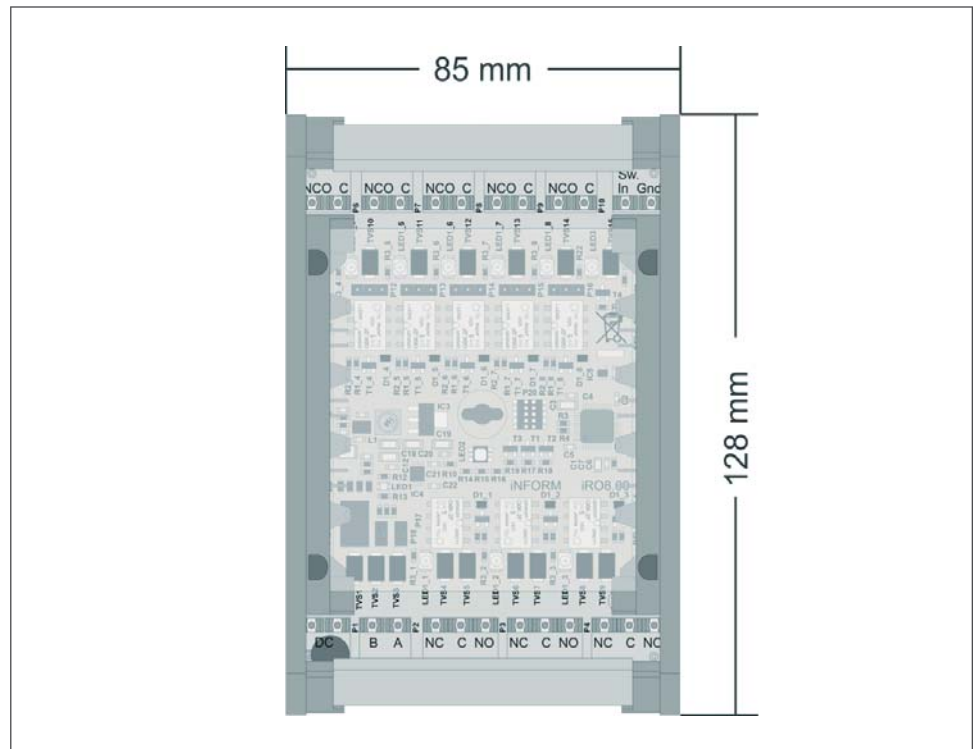


Fig. 40: Dimension sheet for 8-way relay module

Dimensions and weight

Specification	Value	Unit
Weight	180	g
Length	85	mm
Width	128	mm
Height	65	mm

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Connection and power values

Specification	Value	Unit
Voltage	12–24	V DC
Tolerance	± 15	%
Current consumption, max. (at 12 V)	0,14	A
Power consumption, max.	1,7	W

Ambient conditions during operation

Specification	Value	Unit
Temperature range	-25–+70	°C
Relative humidity (not condensed)	10 – 95	%

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## 9. EU Declaration of conformity

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Sphinx Electronics GmbH & Co KG hereby declares that the WRU 200/WRU 220 wall readers in connection with the WTC 200 controller and WTX 200/WTX 201 add-on modules are compliant with directives 2014/53/EU and 2011/65/EU. The complete text of the EU declaration of conformity can be found under the product at the following web site: [www.haeefe.de](http://www.haeefe.de)

## 10. Approval according to Part 15 of the FCC rules (only applicable for WRU 200 with WTC 200)

**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.

### NOTICE

**This device complies with Part 15 of the FCC Rules [and with Industry Canada licence-exempt RSS standard(s)].**

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.

### NOTICE

Changes or modifications made to this equipment not expressly approved by Haefele may void the FCC authorization to operate this equipment.

### NOTE

**Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:**

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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## 11. Appendix

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### **A Connection diagrams**

A.A 8-way relay module connection diagram

A.B Controller terminal assignment

### **Installation options with circuit diagrams**

#### **Installation option 1:**

A door with a reader, door signalling contact, electric strike, signal generator and controller

#### **Installation option 2:**

A door with a reader, door signalling contact, electric strike, signal generator, door release button and controller

#### **Installation option 3:**

A door with two readers (e.g. internal and external), electric strike and controller

#### **Installation option 4:**

Two doors with a reader/electric strike and a controller each

#### **Installation option 5:**

Four doors with a reader/electric strike and a controller each (including add-on module)

## A Connection diagrams

### A.A 8-way relay module connection diagram

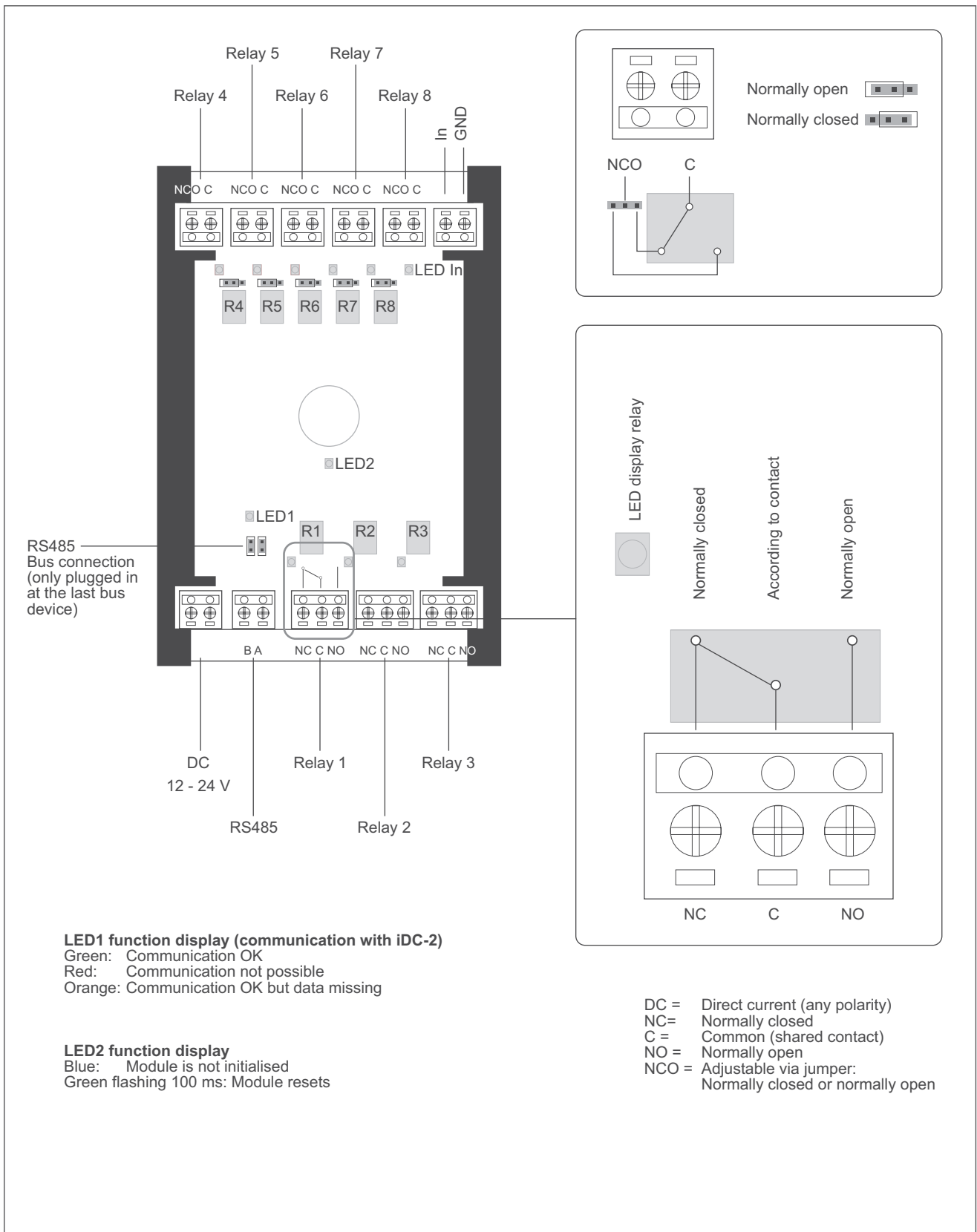


Fig. 41: 8-way relay module connection diagram

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A.B Controller terminal assignment

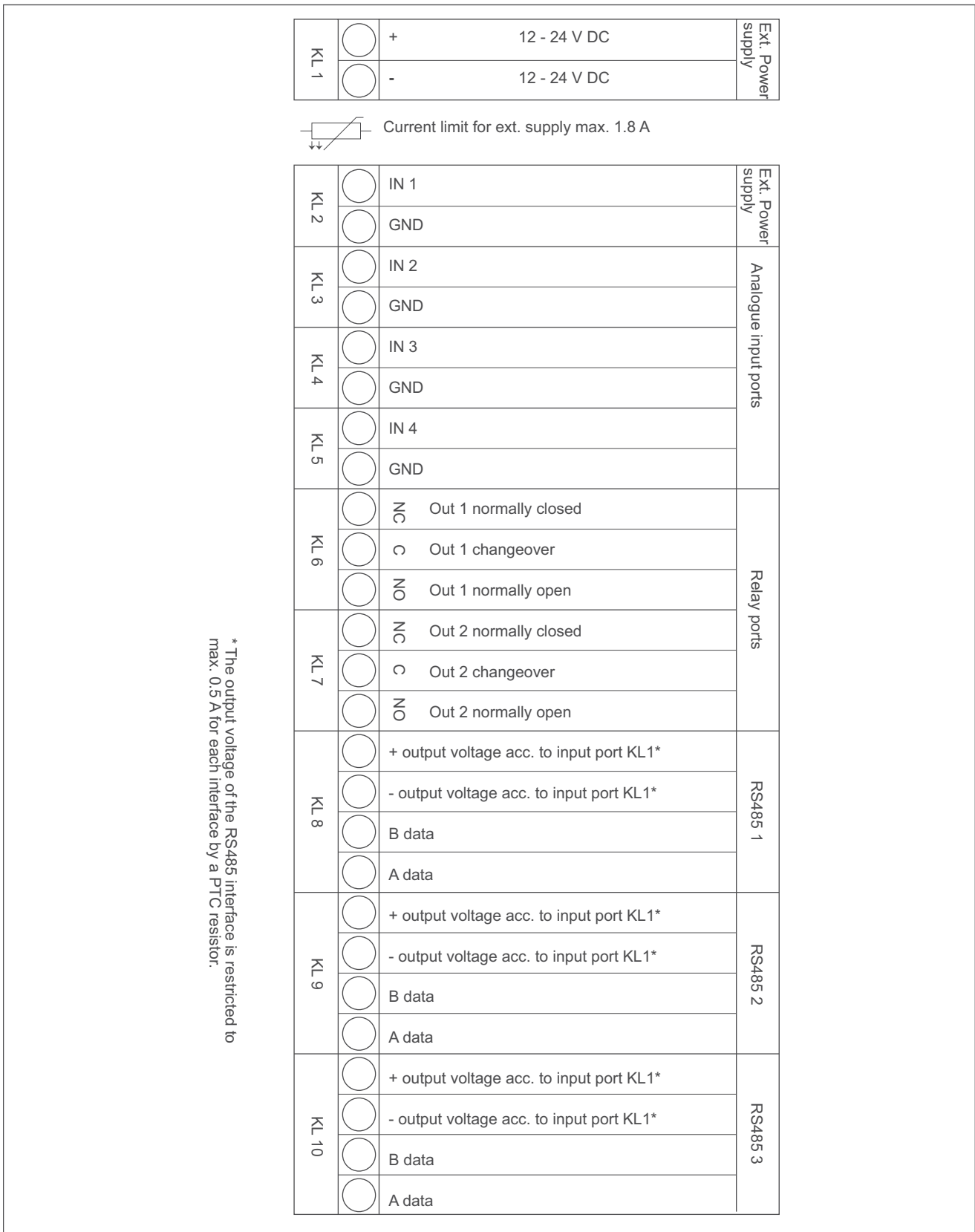


Fig. 42: Controller terminal assignment

Installation options with wiring and circuit diagrams

Installation option 1, wiring diagram: A door with a reader, door signalling contact, electric strike, signal generator and controller

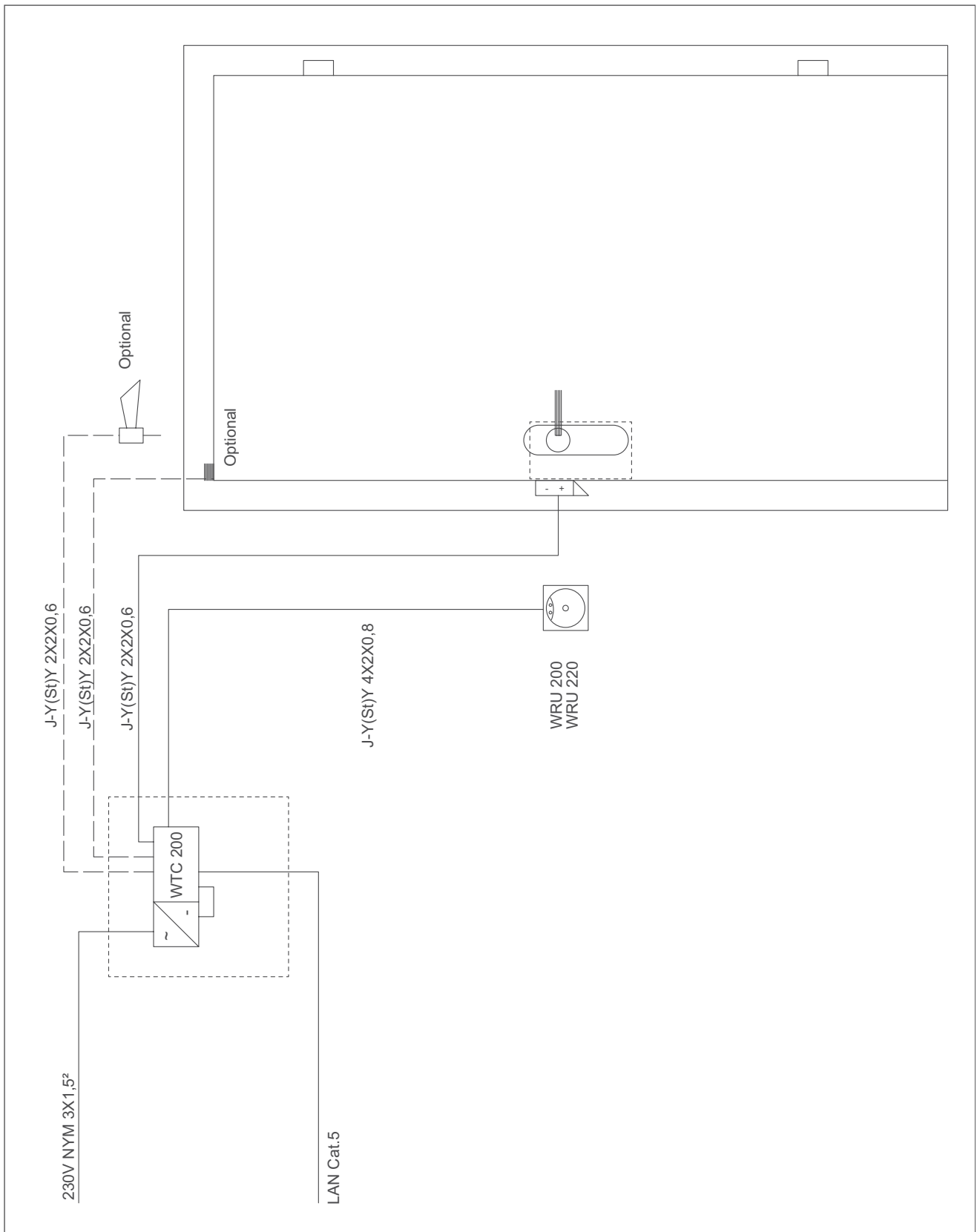
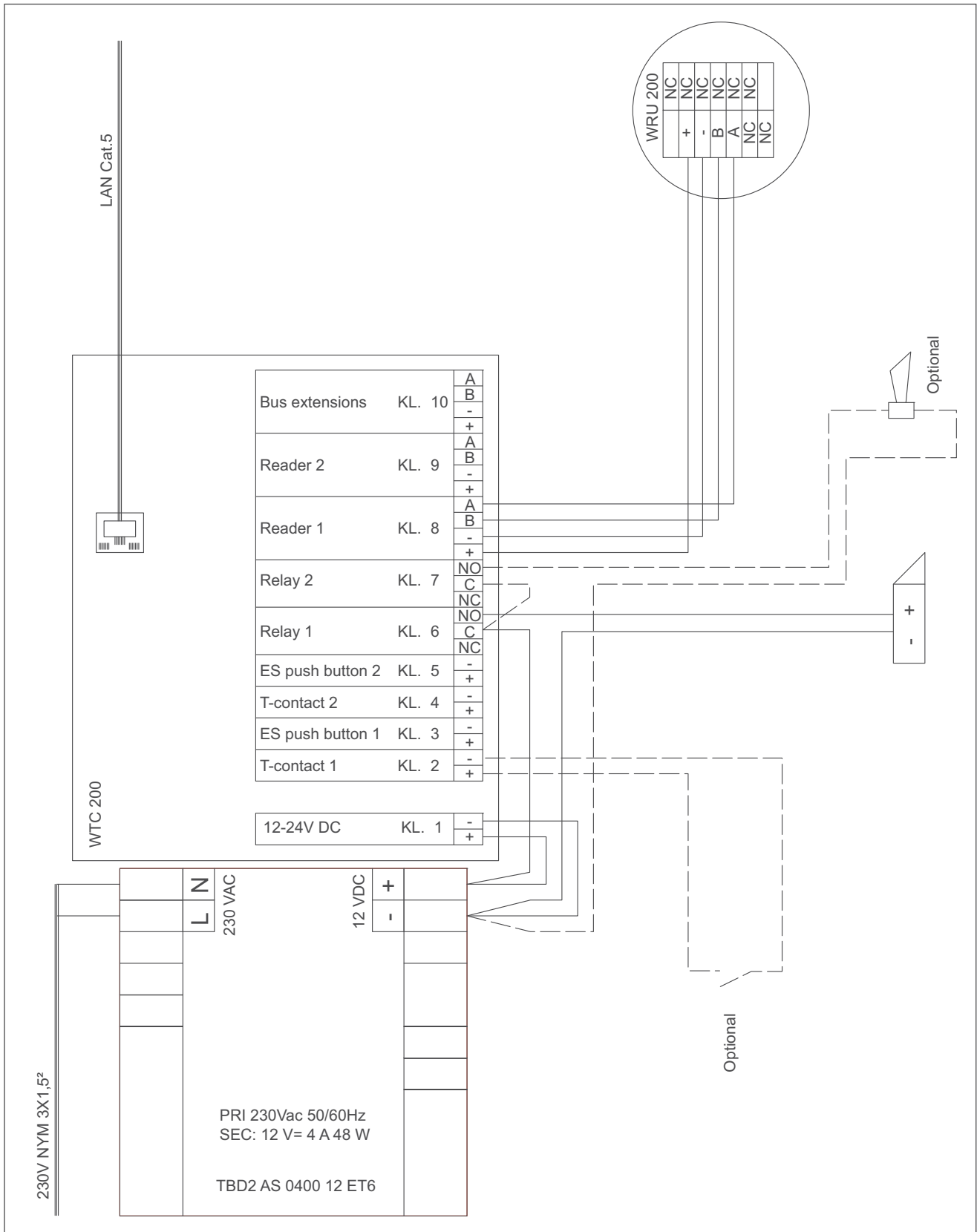


Fig. 43a: Installation option 1, wiring diagram



**Installation option 1, circuit diagram:** A door with a reader, door signalling contact, electric strike, signal generator and controller

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Fig. 43b: Installation option 1, circuit diagram

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**Installation option 2, wiring diagram:** A door with a reader, door signalling contact, electric strike, signal generator, door release button and controller

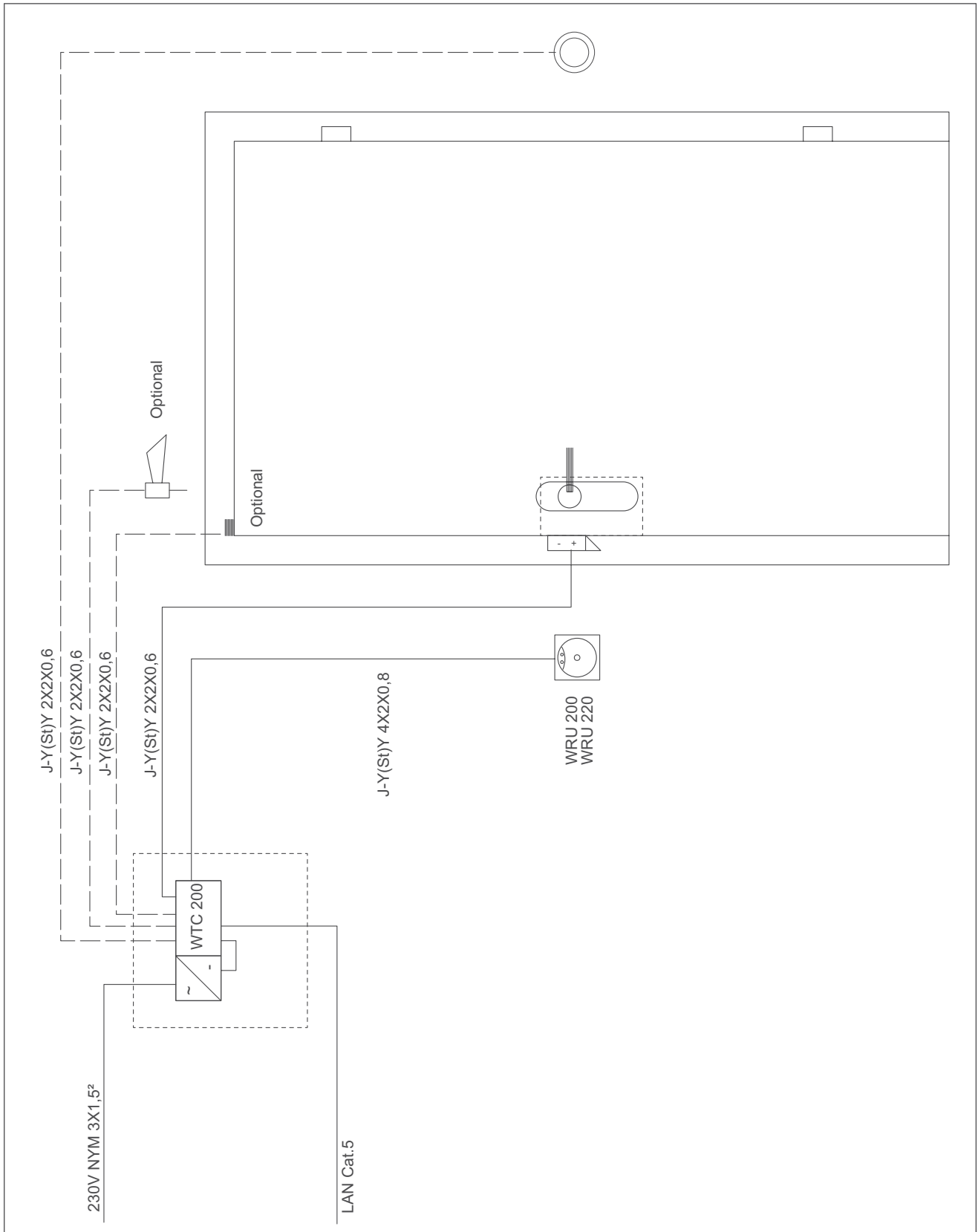
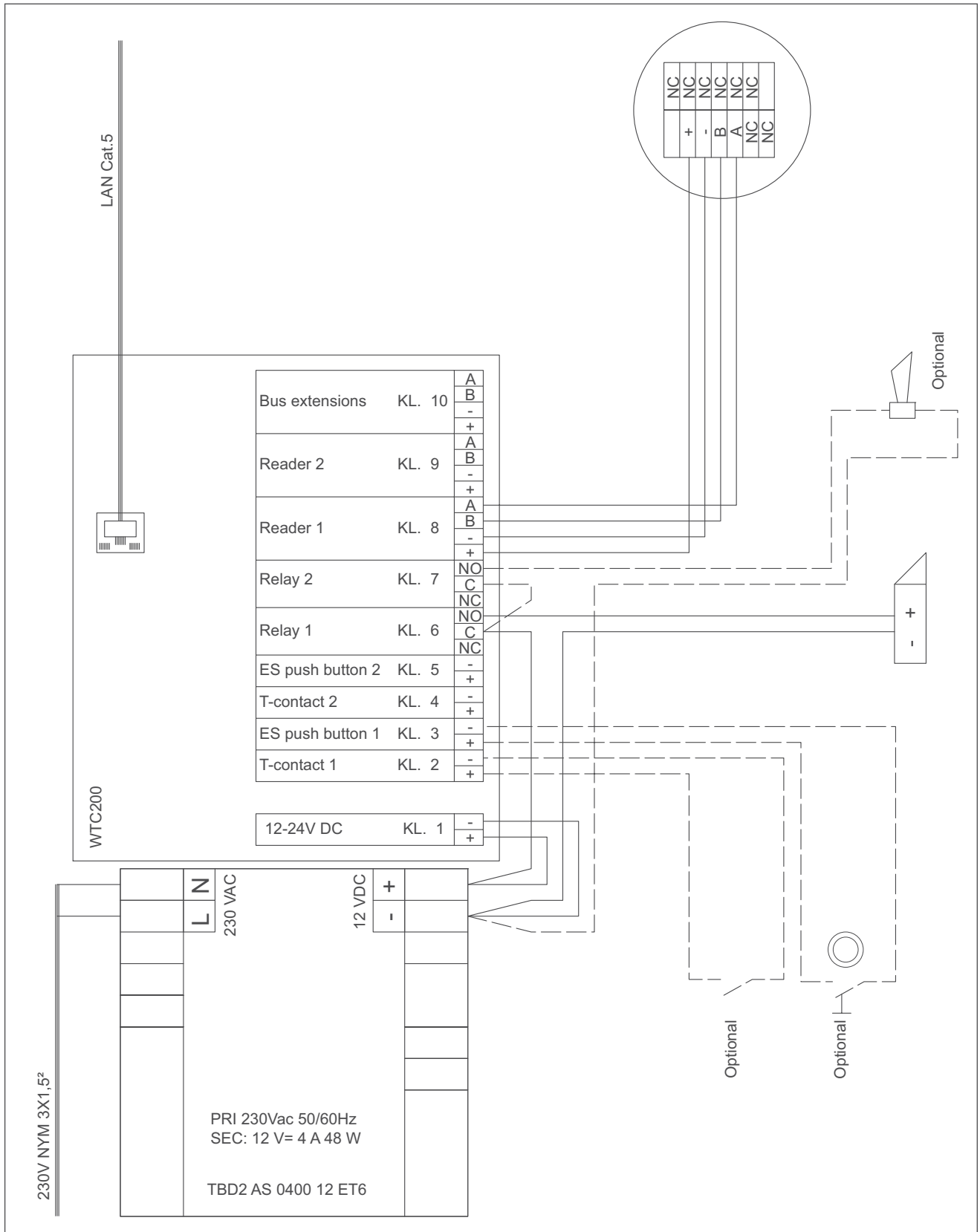


Fig. 44a: Installation option 2, wiring diagram

**Installation option 2, circuit diagram:** A door with a reader, door signalling contact, electric strike, signal generator, door release button and controller



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Fig. 44b: Installation option 2, circuit diagram

**Installation option 3, wiring diagram:** A door with two readers (e.g. internal and external), electric strike and controller

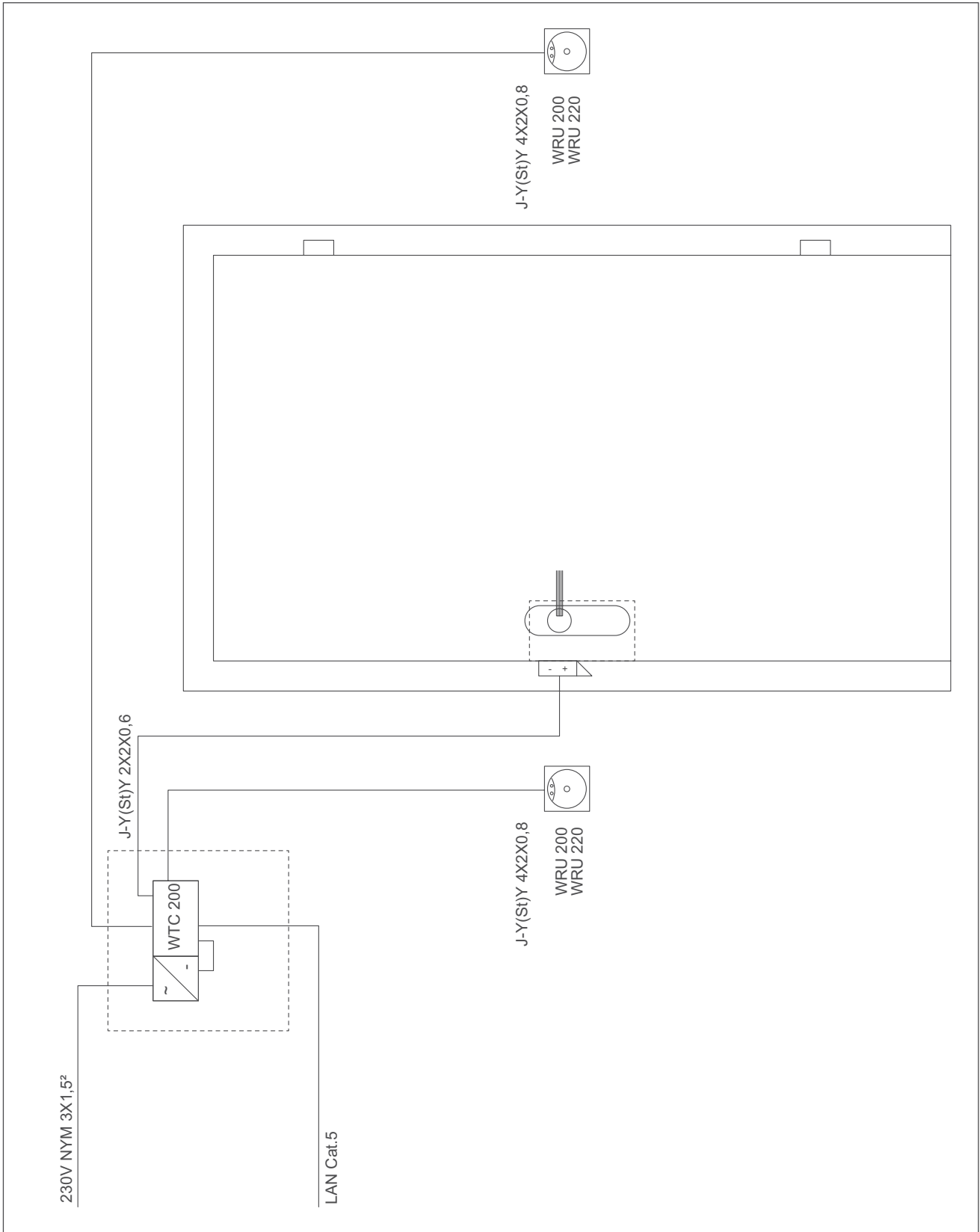


Fig. 45a: Installation option 3, wiring diagram

**Installation option 3, circuit diagram:** A door with two readers (e.g. internal and external), electric strike and controller

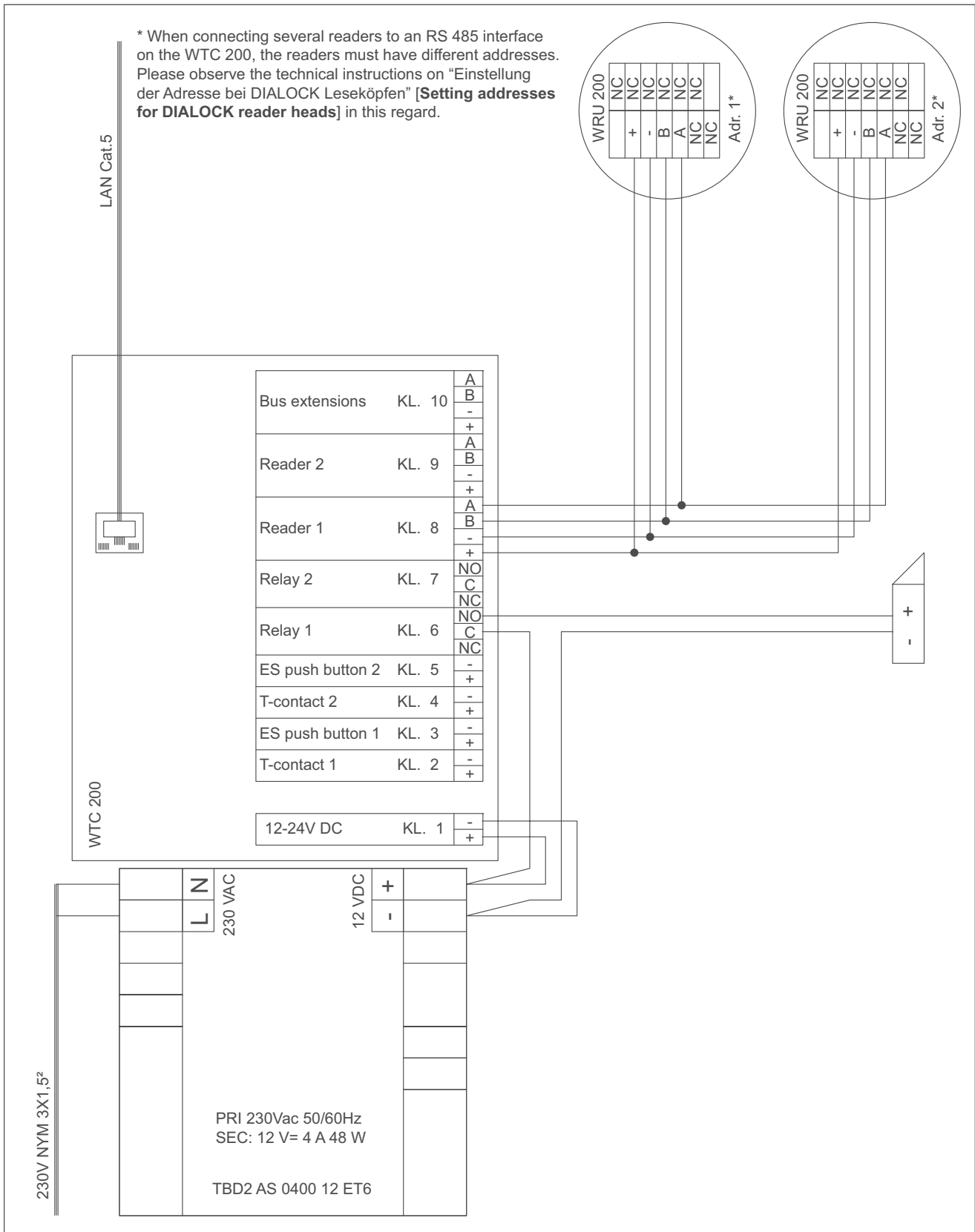


Fig. 45b: Installation option 3, circuit diagram

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Installation option 4, wiring diagram: Two doors with a reader/electric strike and a controller each

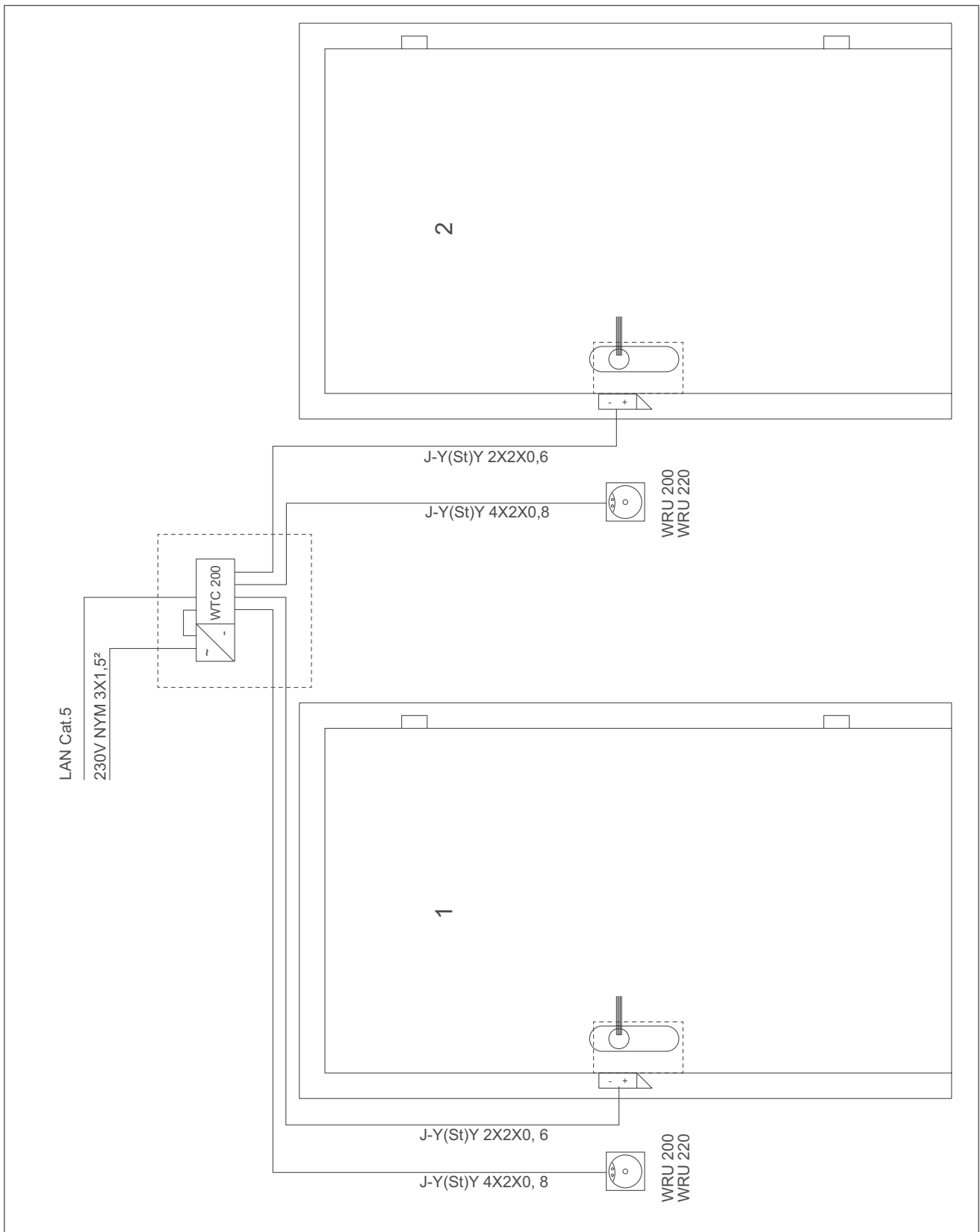


Fig. 46a: Installation option 4, wiring diagram

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Installation option 4, circuit diagram: Two doors with a reader/electric strike and a controller each

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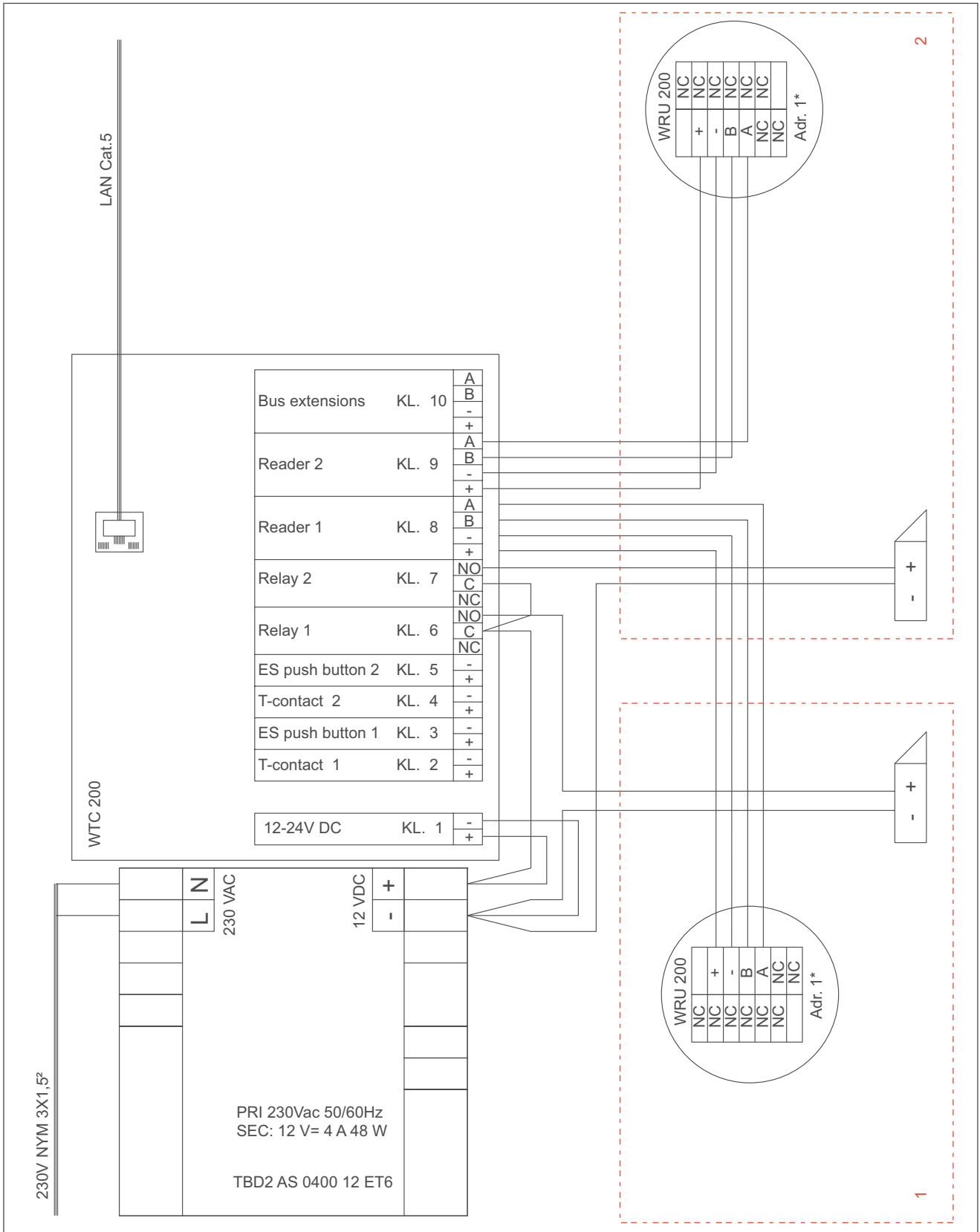


Fig. 46b: Installation option 4, circuit diagram

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**Installation option 5, wiring diagram: Four doors with a reader/electric strike and a controller each (including add-on module)**

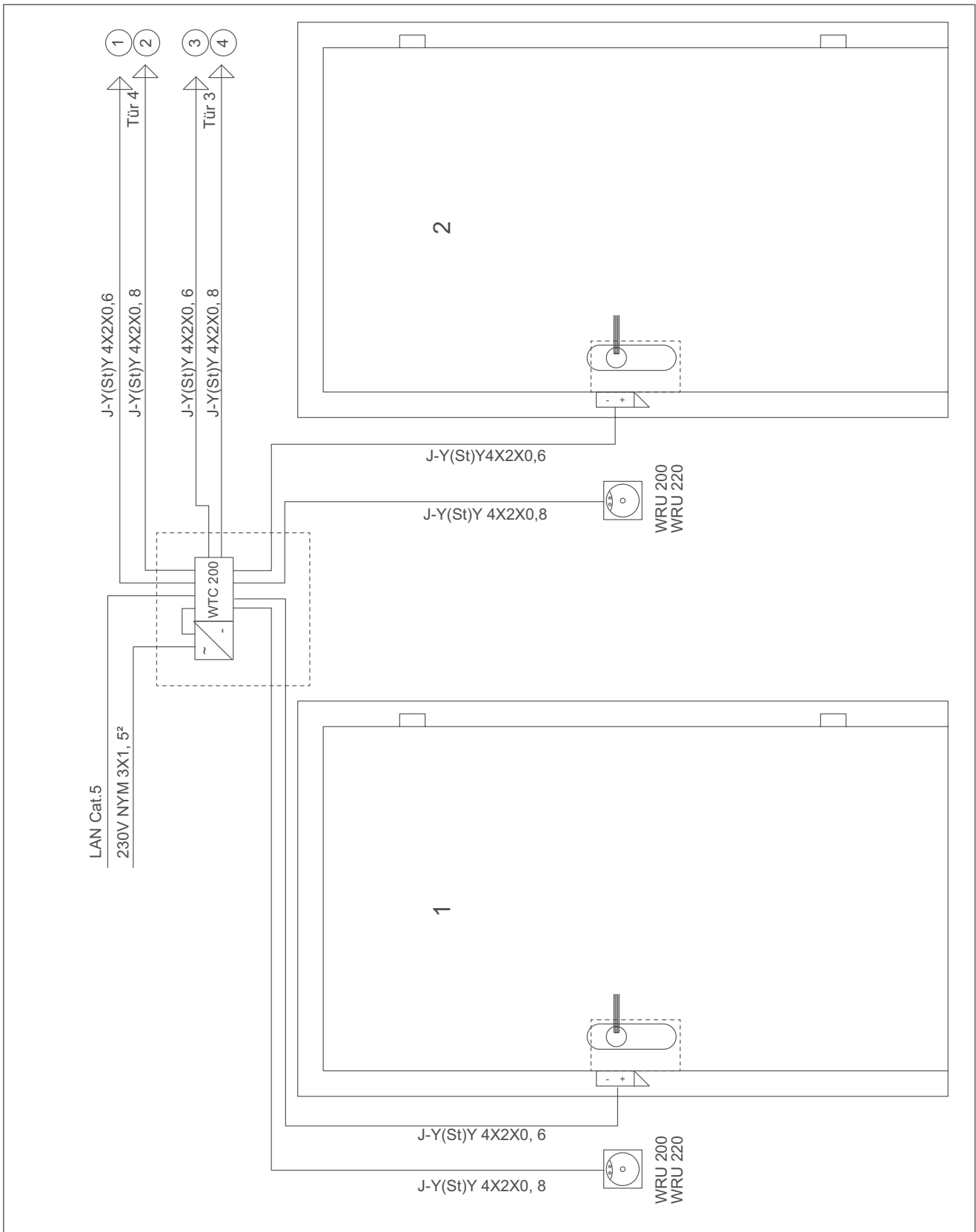


Fig. 47a: Installation option 5, wiring diagram



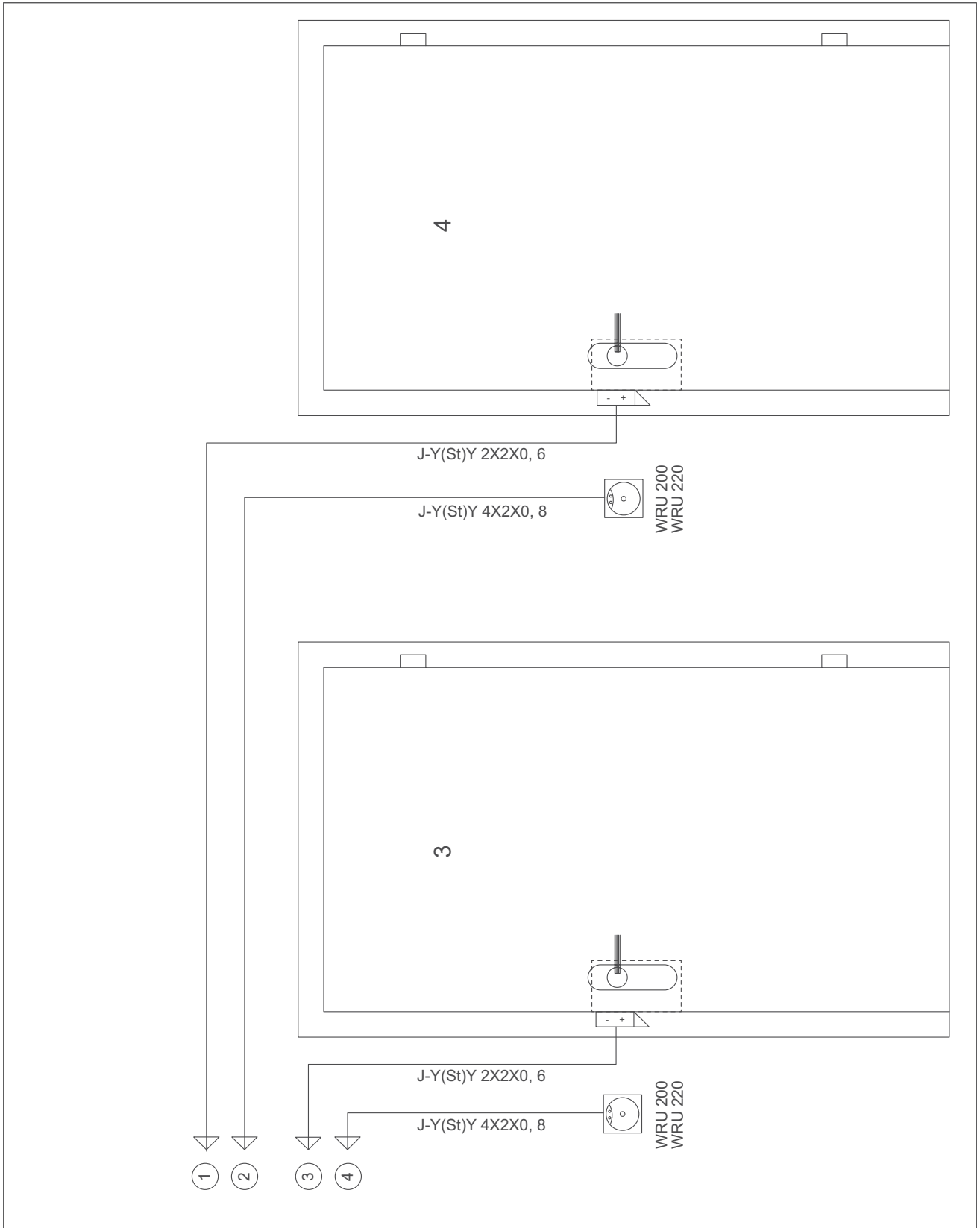


Fig. 47b: Installation option 5, wiring diagram

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## Installation option 5, circuit diagram: Four doors with a reader/electric strike and a controller each (including add-on module)

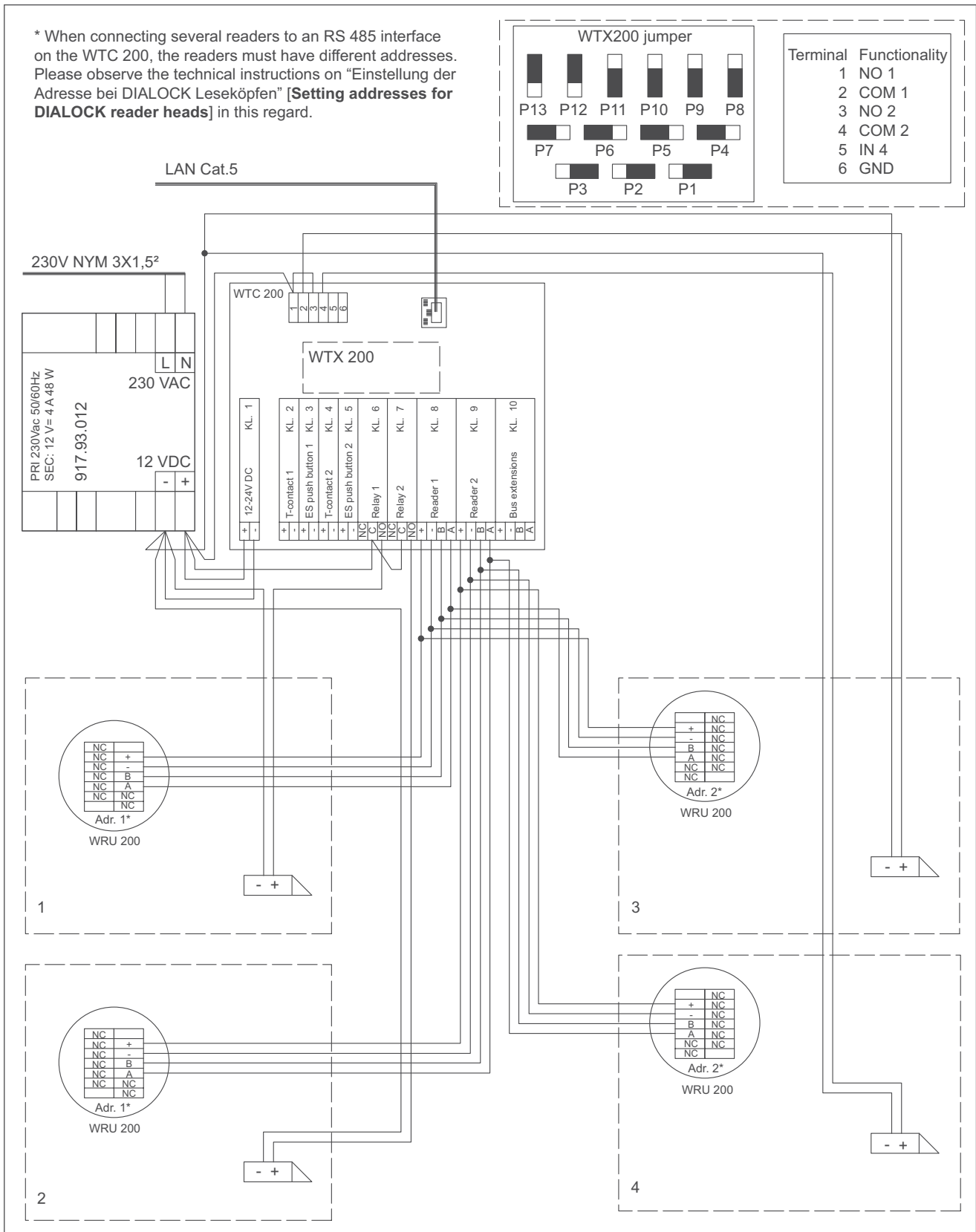


Fig. 47c: Installation option 5, circuit diagram

\*For this installation option, the "WTX 200 I/O board" add-on module also has to be installed (See chapter "5.4 Mounting the WTX 200 I/O board add-on module" on page 83).

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