KTC 2

Revolving door

Initial operation manual

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1. For your safety

This documentation contains important information regarding the mounting and the safe operation of the door system. Please read these instructions carefully before using the system.

It is important for your personal safety to abide by all enclosed instructions.

Using control elements, making adjustments or performing procedures that are not described in this documentation might cause electric shocks, danger caused by electric voltage/current and/or danger due to mechanical incidents.
Please keep these documents for further reference and hand them over to the person in charge in case the system is transferred to another party.

Explanation of symbol

⚠ **Please note This symbol indicates dangers that might cause personal or material damage or even kill people.**

At the revolving door

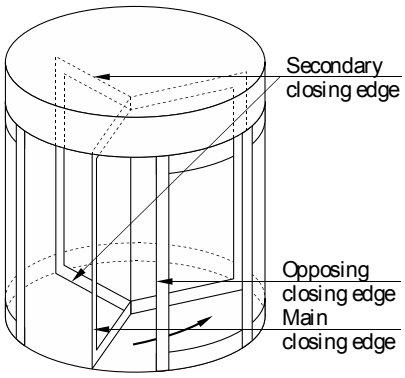
The **KTC 2** is a two-wing revolving door. The door is equipped with an integrated night shield and either breakout wings or an automatic sliding door. The wings may be equipped with showcases. The **KTC 2** is an entry/exit and connects two separate areas of a building. As a rule, it links the inside of a building with the outside. Thanks to its technical design and good geometry, there is almost no direct connection between the two separate areas. Therefore these door systems limit draughts and noise and control the traffic between the two areas.
The revolving door may be locked in order to close the entrance/exit.
The system has been adjusted in our factory; however, you may perform minor adjustments regarding the speed and for example Slow-Stop times.

Limitation of liability

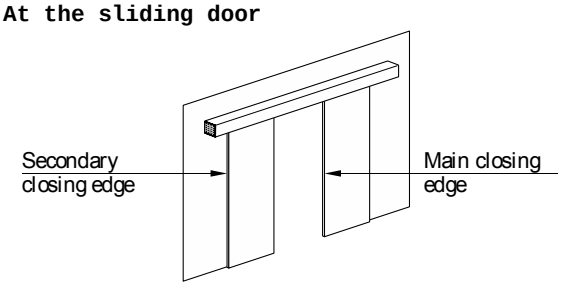
The **KTC 2** may only be used according to its specified intended application. **DORMA GmbH + Co. KG** will not accept any liability for damage resulting from unauthorised modifications of the **KTC 2**. Furthermore components/accessories that have not been approved by **DORMA** are exempted from liability.

Danger spots at closing edges

Automatic doors might cause hazards by crushing, shearing, hitting and drawing-in at the different closing edges.



At the sliding door



Depending on the structural conditions, the prevailing door version and the available safety equipment, we cannot completely exclude residual risks such as crushing and hitting (with limited force).

Safety during installation and commissioning

- An incorrectly performed installation may cause serious injury.
- Only qualified staff is allowed access to the control unit.
- The working area has to be secured against unauthorised access from other people. Falling items or tools might cause injuries.
- The revolving door has to be protected against water and other liquids.
- The mounting of the revolving door described herein is only an example. Structural or local conditions, available tools or other conditions might suggest a different approach.
- In any case, the way of mounting and the mounting equipment, like for example screws and wall plugs, have to be adequate with regard to the structural conditions (steel structure, wood, concrete etc.).
- Following the successful installation of the system, check the settings and the proper functioning of the revolving door and the respective safety equipment.
- Please ensure that the system is correctly installed with regard to mechanical and electrical aspects before you start with the commissioning.
- The protective earth conductor has to be connected.
- The safety sensors must be connected.
- Separately supplied components such as the program switch, the pushbutton for the Emergency Stop function, sensors and activators (radar motion detectors, canopy-integrated sensors) have to be mounted and connected.

Safety instructions

⚠ **Work on electrical equipment may only be performed by properly qualified staff (electricians).**

⚠ **Dangerous electrical voltage! Voltage may cause electric shocks and burns.**

- Do not use HQ lamps/fluorescent lamps as they interact with the safety sensors.
- Before performing any kind of work, de-energise the system (disconnect it from power supply) and secure it against accidental reactivation.
- Maintenance and other work at the door system may only be performed by properly qualified staff or authorised people.
- The door system is no playground: Please ensure that the system is only used to its specified intended application and keep playing children away from the door system. Do not allow children to play with the **KTC 2** or its adjustment and control devices.
- Children may only use the door system under supervision of an adult.
- Never stick metal objects into the openings of the **KTC 2**; otherwise you might sustain an electric shock.
- Glass door wings have to be made of safety glass.
- Do not accelerate the turnstile by hand.
- Do not enter the door system with bulky items. (Set system to summer configuration and open the sliding door)
- Enter the system quickly and only while the opening width is sufficiently big.
- Also leave the door system quickly while the exit is big enough to go through.
- Do not change your walking direction within the revolving door system.
- When using the door system, follow the rotation of the system at permanent speed and do not stop unless required.
- Keep parts of your body and objects out of the rotation range of the turnstile
- Make sure that the environment of the door system is sufficiently illuminated.
- The distance between the bottom edge of the wing and the floor finish amounts to 40 mm. You should always prefer a level and firm underground without gaps to floor finishes such as floor mats. Do not use soft undergrounds like carpets. When using floor mats, they have to be fixed to each other and to the ground. The distance between the different profiles of the mats must not exceed 4 mm.
- The rotational speed has to be adjusted so that it is suitable for the expected user group (also disabled or elderly people). Maybe you will even have to reduce the pre-adjusted speed (original settings).

- During the operation of the system, you are only allowed to remain within the door system or in direct proximity of the entry/exit for as long as you require for entering or leaving the two areas. (Only specially trained staff during maintenance work is may be excluded from this rule.)
- Do not step onto the glass ceiling while the system is in use.
- Do not use electric discharge lamps within the close range of the revolving door system as they may impair the proper functioning of the infrared sensors.
- In case the glass of the ceiling or the wings brakes, the system has to be put out of operation immediately and secured against entry. Immediately contact **DORMA** Service to order the required spare parts.

Safety check and system approval
Before the first commissioning and depending on requirements, however, at least once a year, the **KTC 2** has to be inspected by a properly qualified technician and serviced as required.
This inspection may be performed during the maintenance of the system.
A properly trained person (by **DORMA**) has to perform the inspection and approve the system with the aid of the inspection book.
The respective results have to be documented in accordance with DIN 18650-2 and the facility operator has to keep these documents for at least one year.

We would recommend taking out a maintenance agreement with DORMA.

Maintenance
All kinds of maintenance work may only be performed by specially trained **DORMA** staff. Disconnect the system from all mains (switch off fuse) while working on the system.

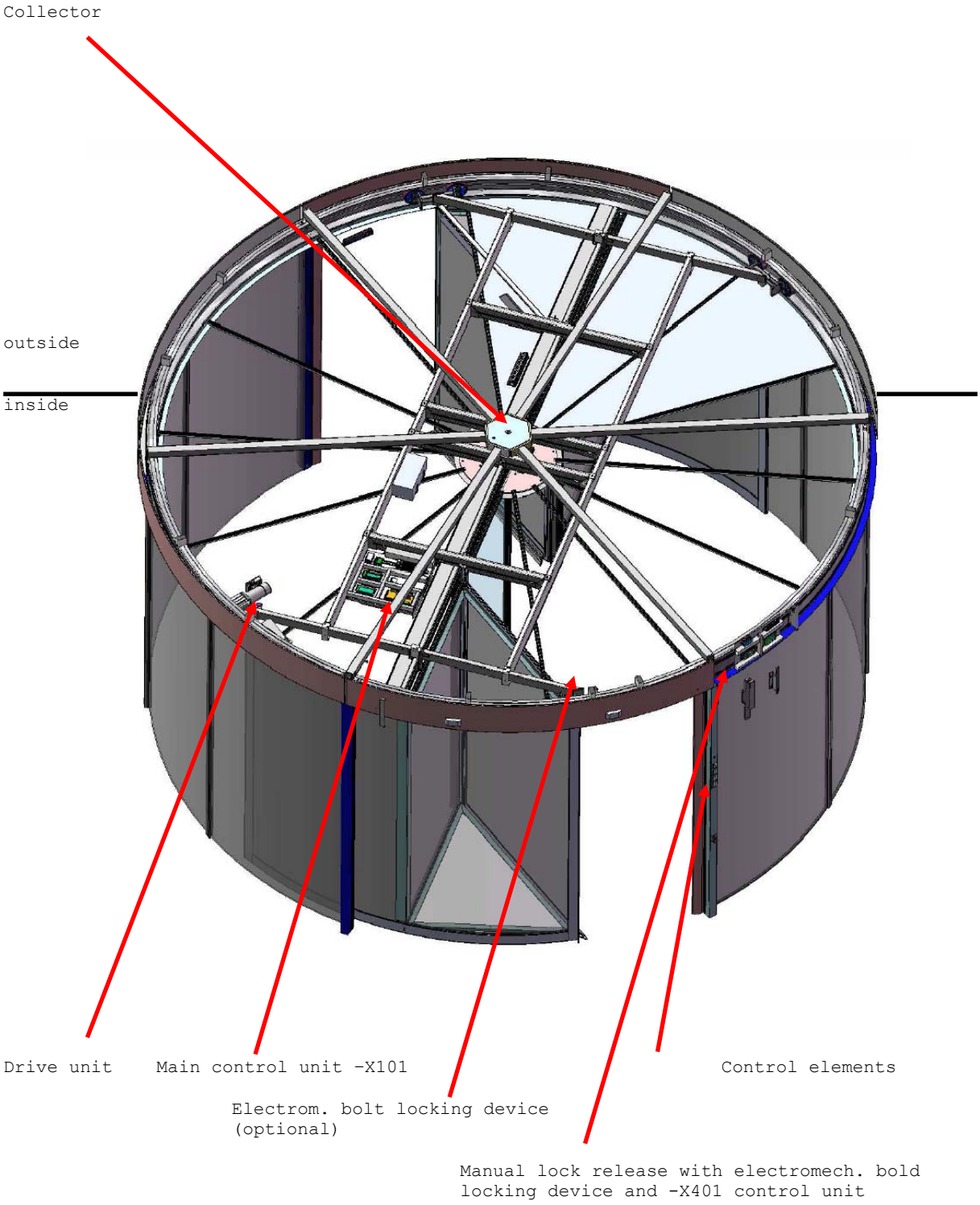
Wear
This door system contains wear parts that have to be inspected and replaced (as required) in regular intervals.
A wear part list is available on request.
Only use original spare parts.

Care
The system has to be de-energised (disconnected from power supply) before cleaning. Switch off fuse to ensure that the system is properly de-energised.
You may clean the **KTC 2** with a damp cloth and standard commercial detergents. Do not use scouring agents for cleaning purposes as they might damage the surface finish.
Ensure that no water or other liquids drop onto or into the system.
Never stick metal objects into the openings of the **KTC 2**; otherwise you might sustain an electric shock.

Recycling and disposal

Both the **KTC 2** and its packing mainly consist of recyclable raw material.
The **KTC 2** and the respective accessories/components must not be disposed of as domestic waste.
Please ensure that the old appliance and the respective components/accessories (if available) are properly disposed of and abide by the prevailing national statutory provisions when disposing of the system and its components.

2. System overview



3. Overview of drive and control components

3.1 Main control unit (-X101) (S310-054)

Front view

Relay K4-K7 (N60-0117); K3 (N60-0552)

Terminal block -X101/-X100

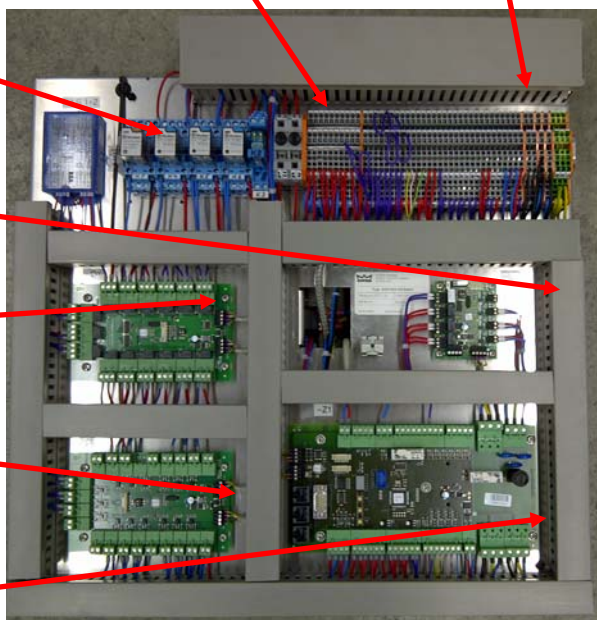
Microcell Three control unit (N60-0685)

Module for locking device (E60-0120)

Output module (E60-0119)

Input module (E60-0118)

CPU -Z1 (E60-0228-10)



Rear view

Frequency converter (N60-0402)

Mains filter (N60-0405)

Mains connection 230 V AC -X103

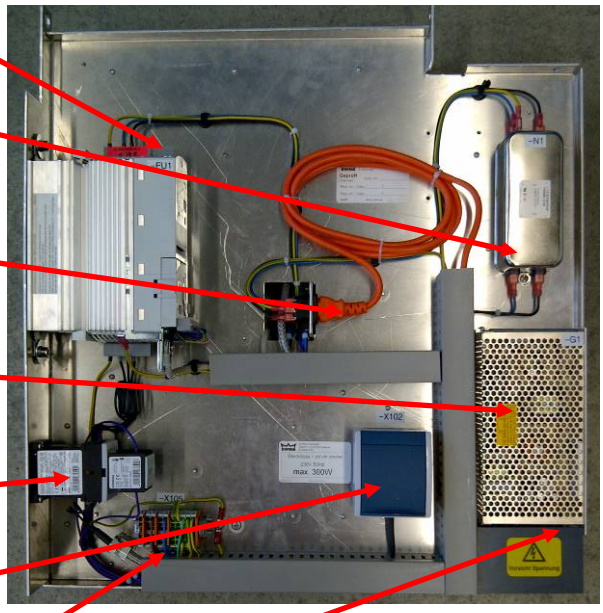
24 V DC power supply unit (N60-0583)

Relay K1 (N60-0560)

Service power outlet max. 300 W (N60-0694)

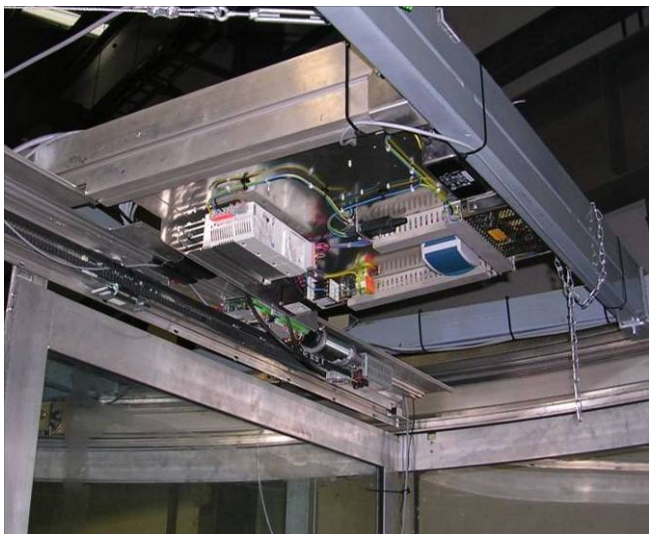
Collector (230VAC)-X105

Potentiometer for 24V DC adjustment



3.2 Installation position of main control unit (-X101)

Secure control unit in top position with the aid of the chain.



The control unit is provided with a cover (N25-0275) in order to protect it from dust and similar.

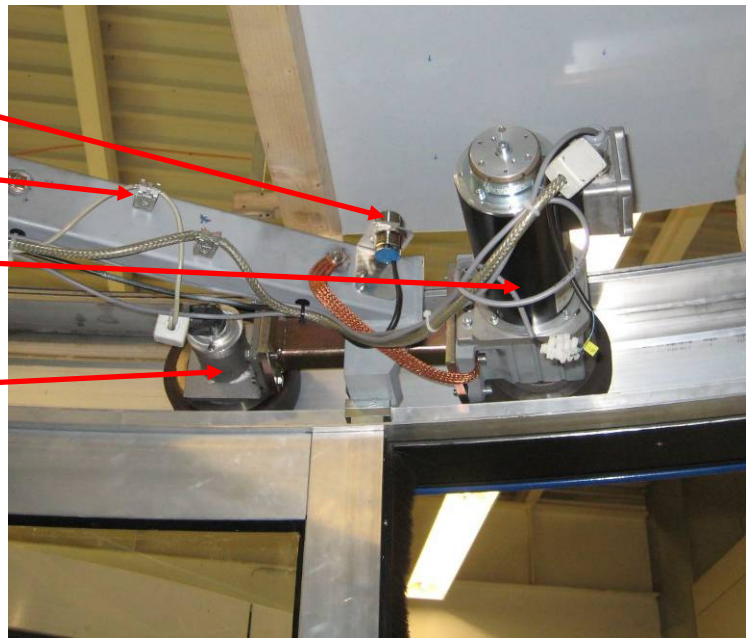
3.3 Drive unit

X-position sensor
S17(N60-0072)

Shield clips

AC motor -M1
(N70-0116)

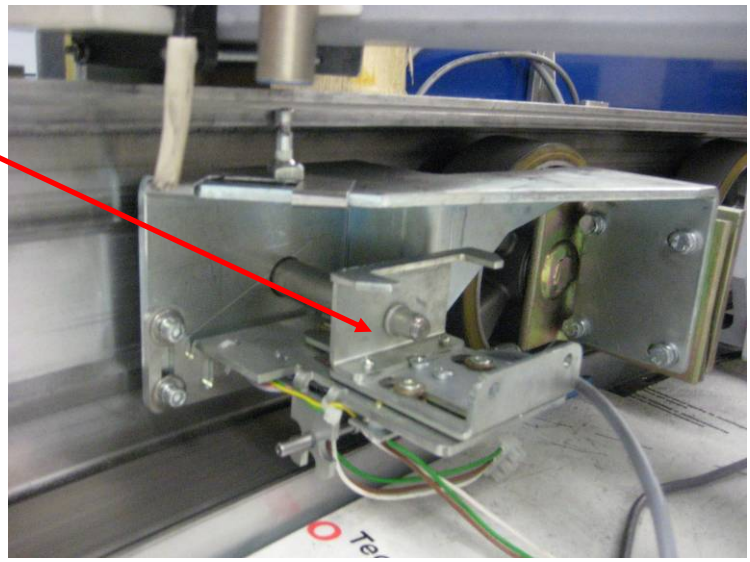
Compl. incremental encoder
(S310-053)



3.4 Locking device (optional)

Electromechanical
bolt locking device
(N60-0464 + E50-947)

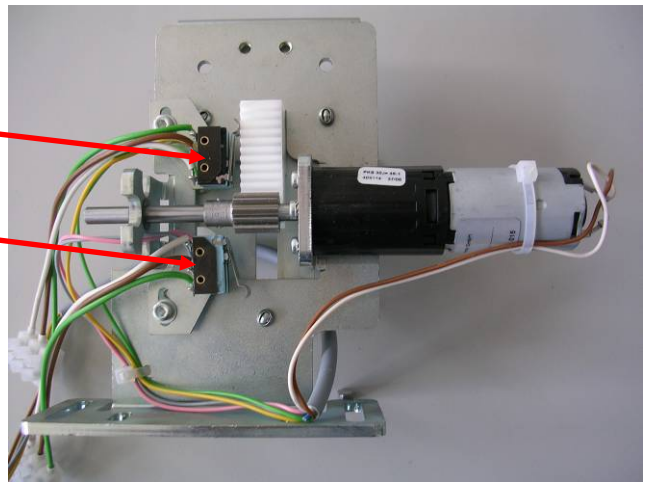
In the event of a failure of the locking device, you may lock or unlock the door through the drill hole for maintenance purposes. The hole is located at the side of the -X401 control unit (see "system overview"). (E50-0327)
Here you will find the sticker "emergency unlocking".



Limit switch for electromechanical bolt locking device

unlocked

locked



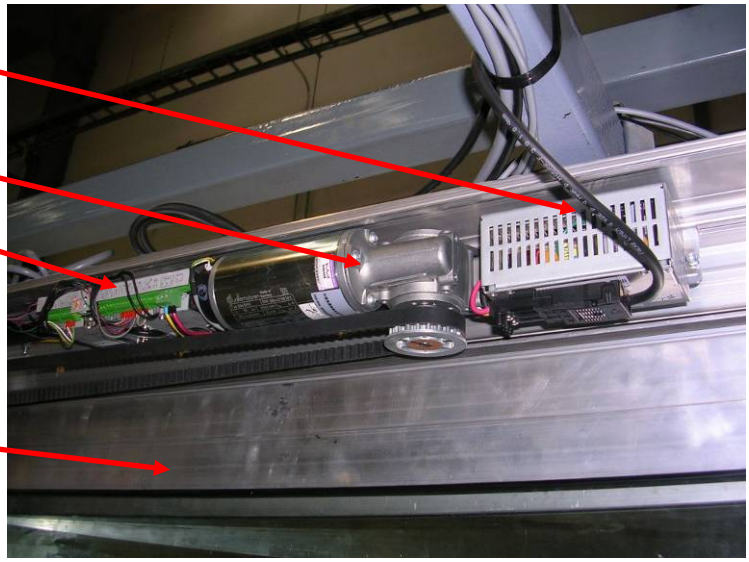
3.5 Drive unit for sliding door (optional)

ES 200 power supply unit (N60-0591)

ES 200 motor

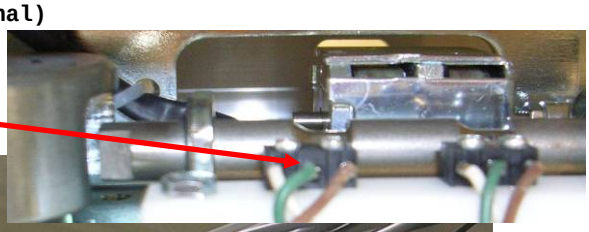
ES 200 basic/expansion module (N60-0586 / N60-0589)

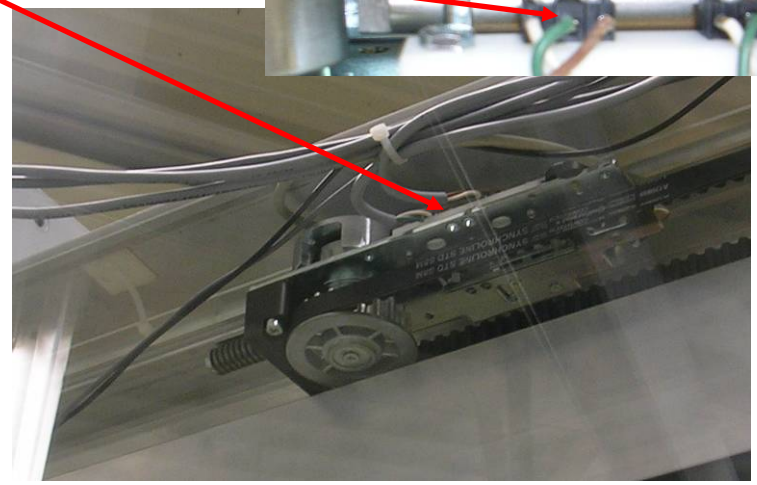
Door wing

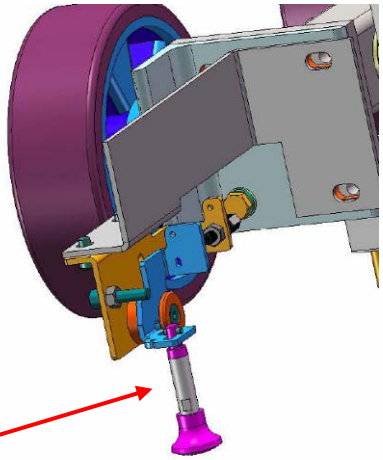


3.6 Locking device of sliding door (optional)

Locking feedback contact (N60-686)



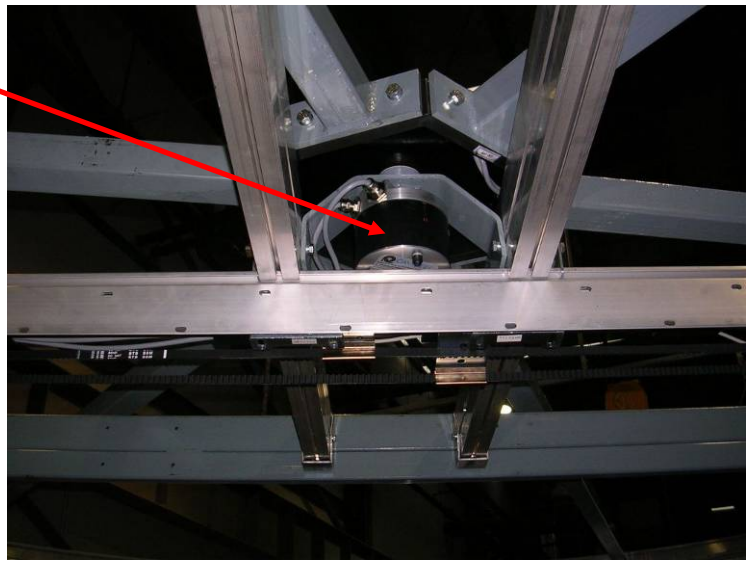




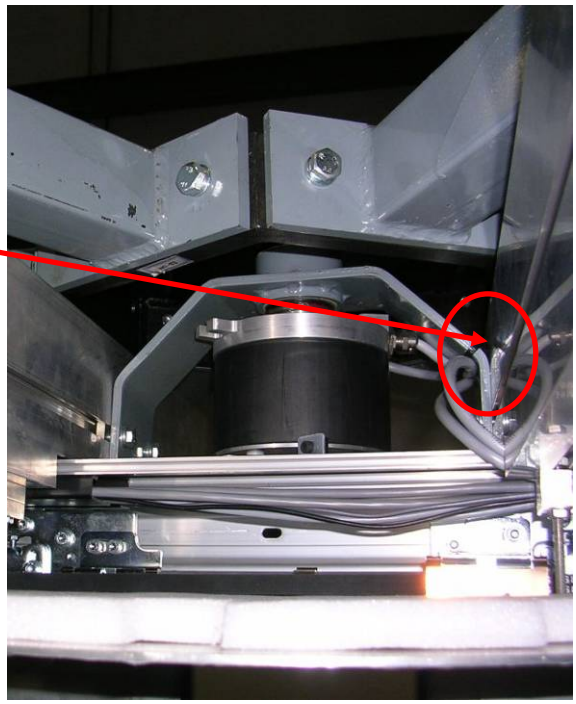
Rod to unlock electric sliding panel

3.7 Collector

Collector (N60-0669)



Cable ties for fixing of collector

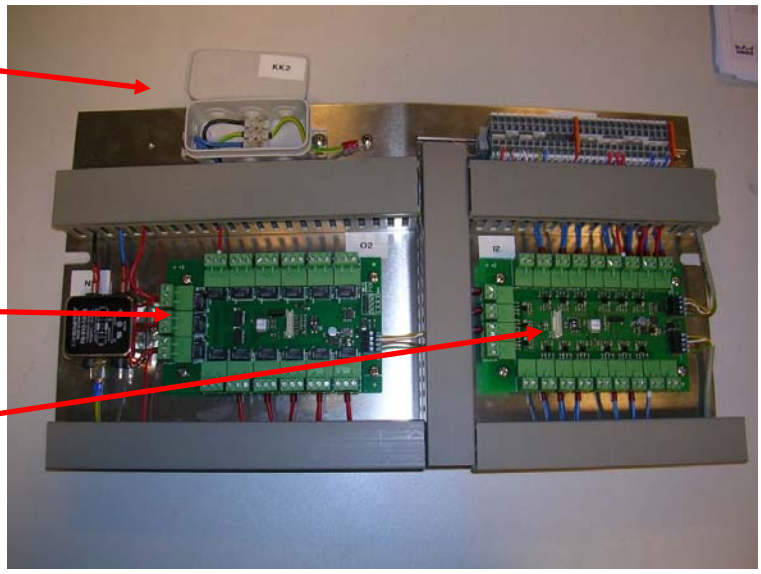


3.8 Canopy-integrated (S310-055) control unit (-X401)

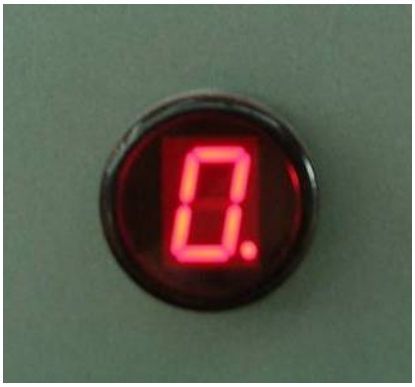
230 V AC power supply
& collector connection

Output module
(E60-0119)

Input module
(E60-0118)



3.9 Malfunction indicator at door post



3.10 Switches/pushbutton at door post (with autom. sliding door operator)

Malfunction indicator (N60-0680/N60-0681)

Electronic pushbutton for Emergency Stop function (N60-0459)

KT program switch (N60-0683)

ST program switch (N60-0684)

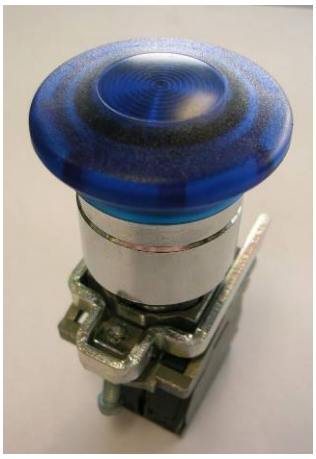
Key switch (Optional) (N60-0691)

Disabled access pushbutton (N60-0076)

3.11 Switches/pushbutton at door post (systems without autom. sliding door operator)

KT program switch
(N60-0109)

Emergency Stop pushbutton
(N60-0502-10)



Disabled access pushbutton
(N60-0076)

3.12 Canopy

Radar motion detectors
(here N60-0690)
or
Easy Motion Stereo
(N60-0709)

Canopy-integrated
sensor
(active infrared
sensor)
(N60-0514-10)
+ 1 m prism
(N60-0548-30)

3.13 Cable guiding at door system

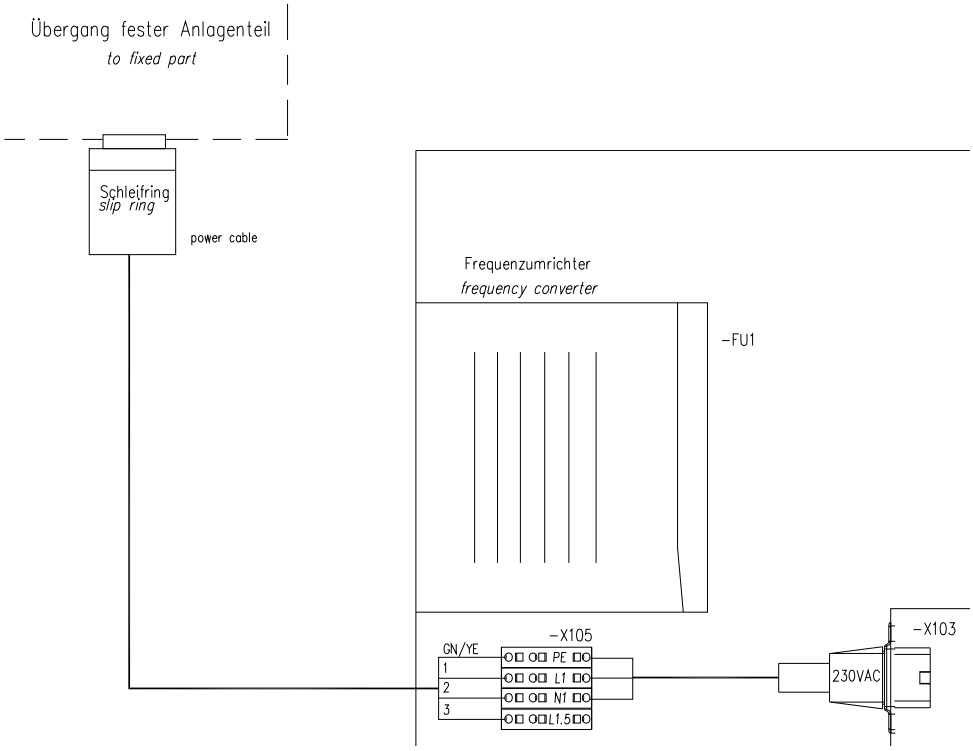
Here the girder for the sliding door is used within the door system.

Exterior view

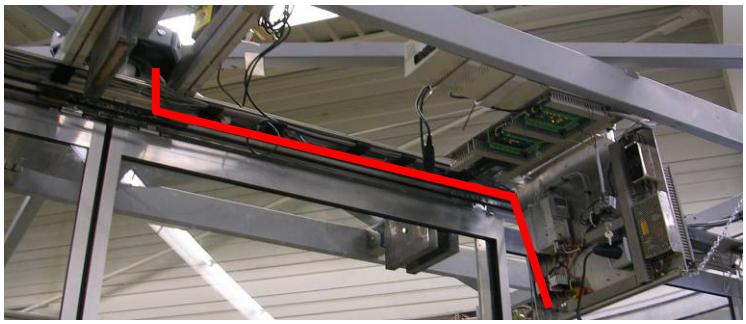
The cables run behind the canopy at the outer part of the door system.
The cables for the outer part of the door system run clockwise, starting at the control unit (-X401).

4. Electrical connection of revolving components

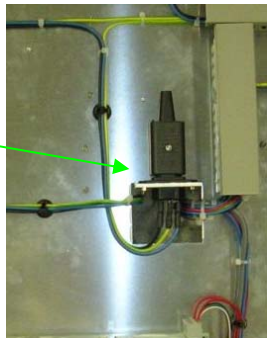
4.1 Power supply of revolving components



The red line indicates how the 230 V AC mains cable is laid from the collector to the control unit.

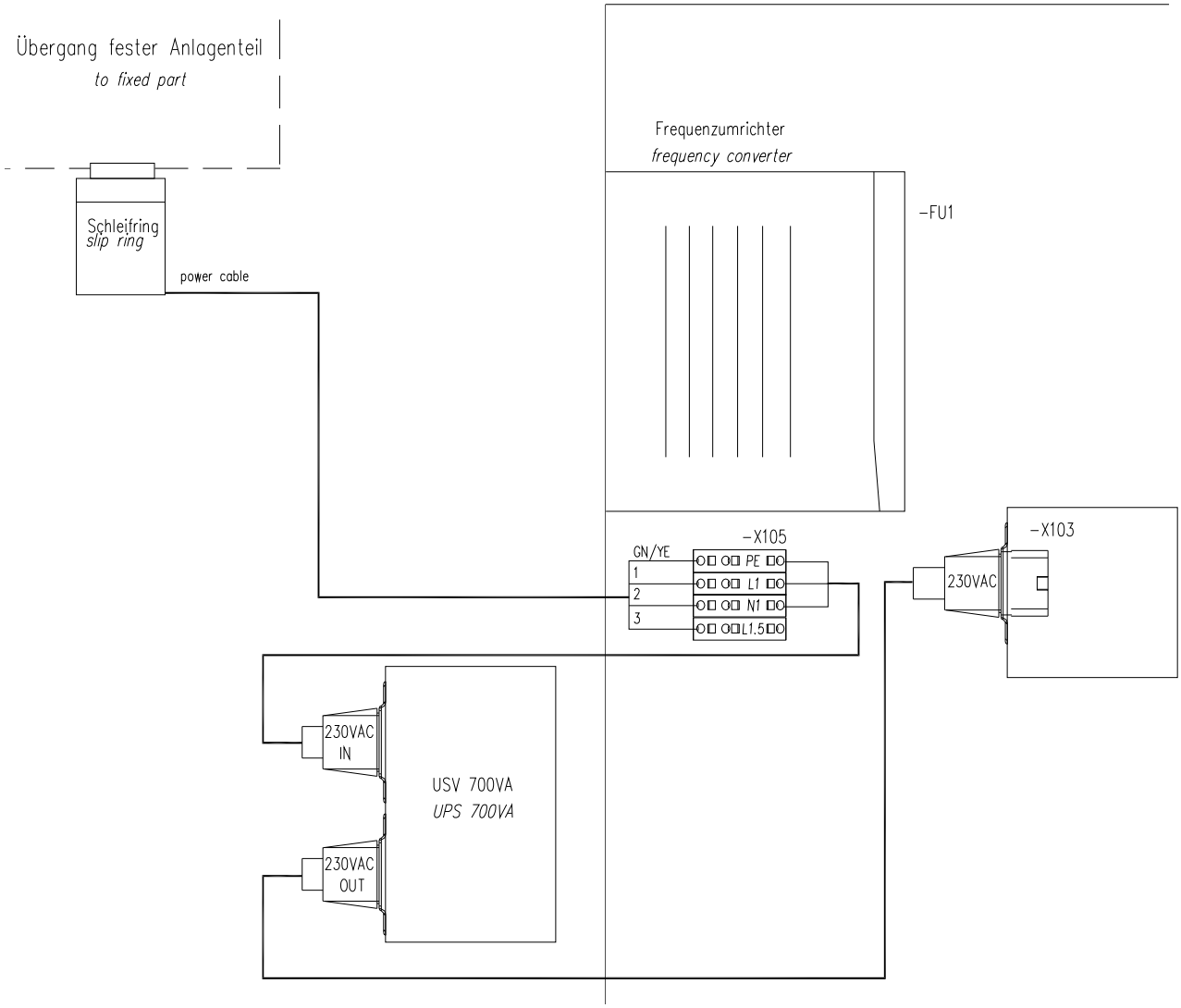


The outlet for the low-heat devices (located at the control unit) must be connected to this collector cable.
The plug for the low-heat devices is also used as mains switch; simply unplug it to disconnect the power supply unit from all mains.

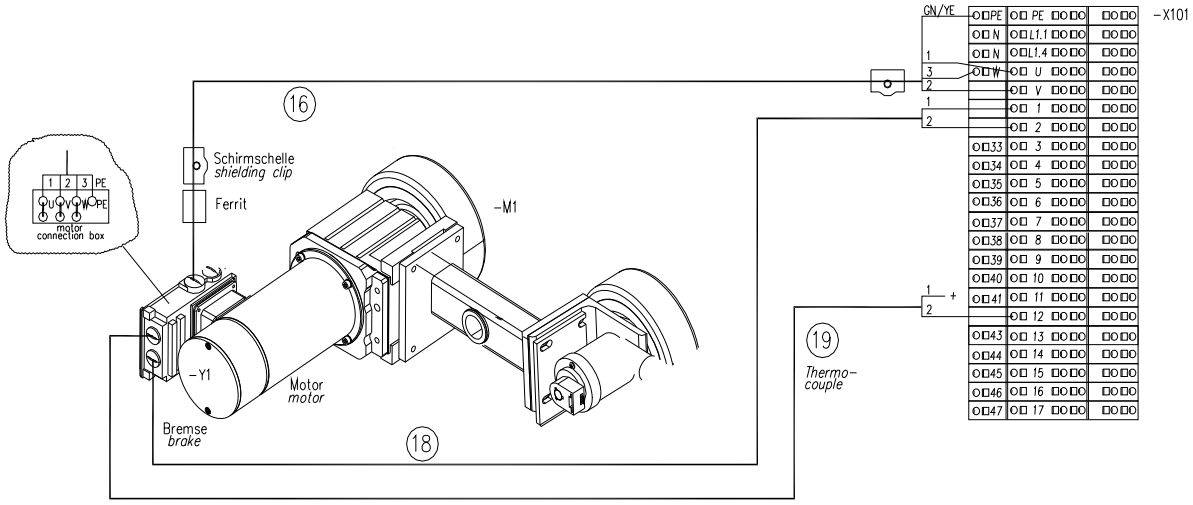


4.2 Power supply via USV emergency power supply unit (optional)

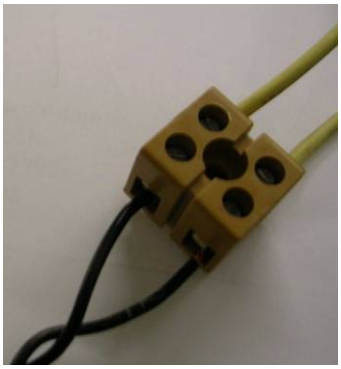
For systems with USV emergency power supply unit, the plug for the low-heat devices (mains switch –X103) must be connected to the USV while the other 230 V AC adaptor cable is used to link the USV and the control unit –X103.



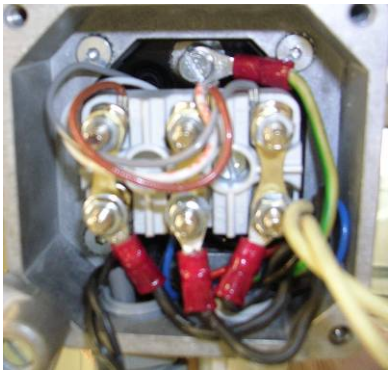
4.3 Connecting the motor:



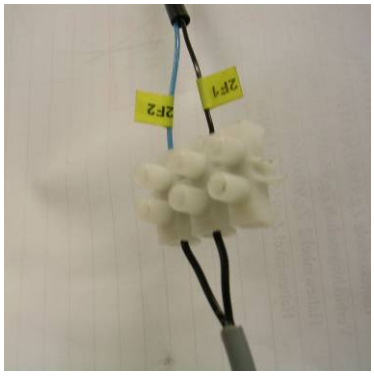
The motor is realised as delta connection, i. e. set jumpers as indicated in the picture.



Thermal sensor (cable No.:19)



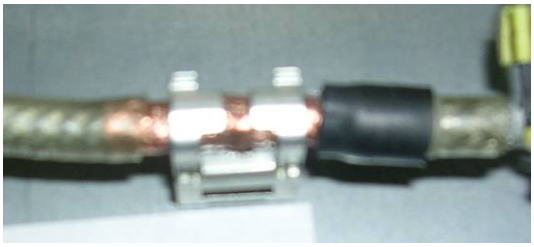
Motor (cable No.:16)



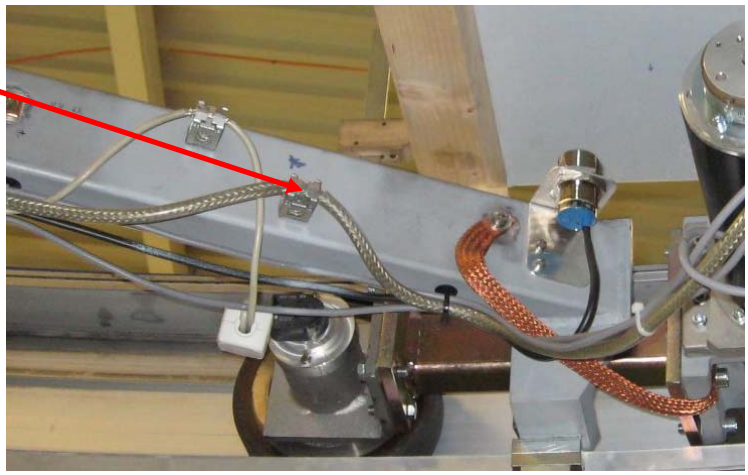
Electr. brake (cable No.:18)

Please note:

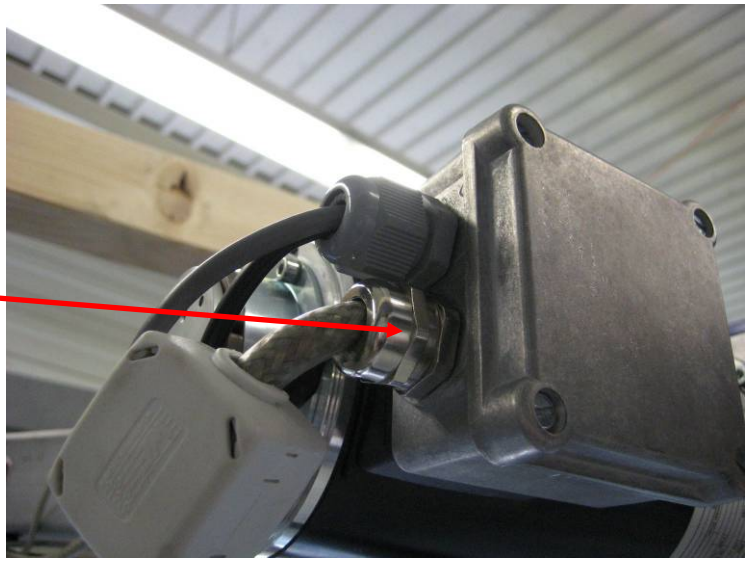
The motor cable (No. 16) is dismantled at the side where it is connected to the control unit (-X101) and at the system girder so that the shielding is visible. The part of the cable that has been dismantled has to be connected to the control unit and the motor (fixed with the respective clips).



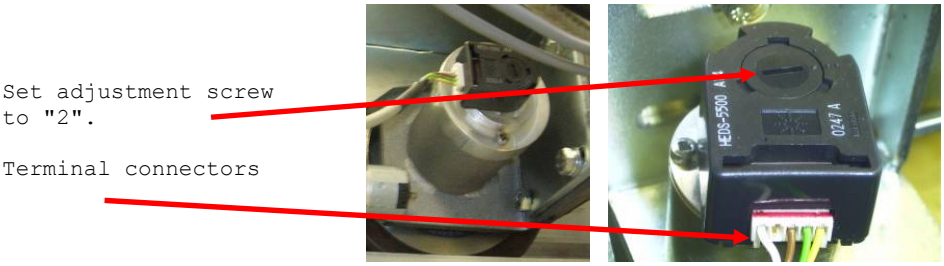
Shielded clip for
motor cable
(No. 16)

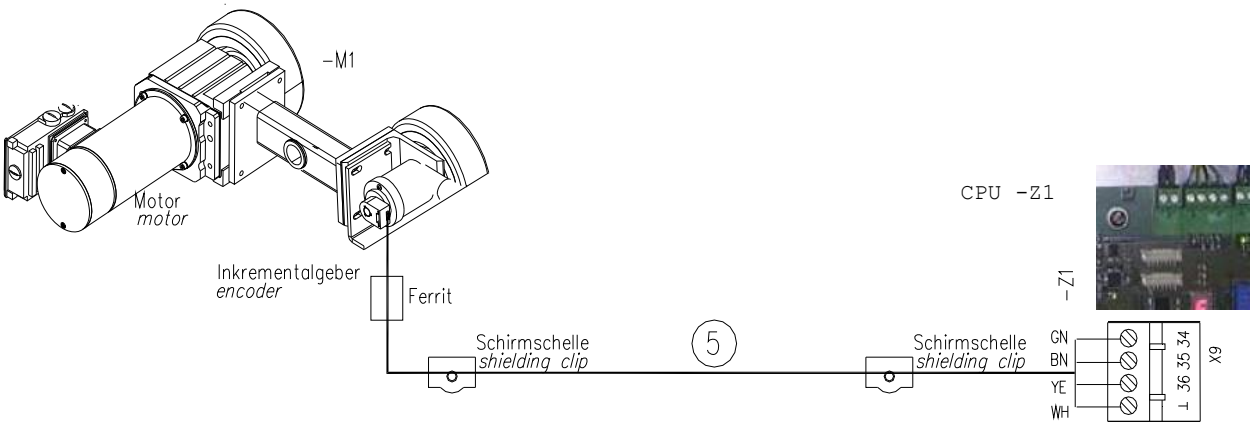


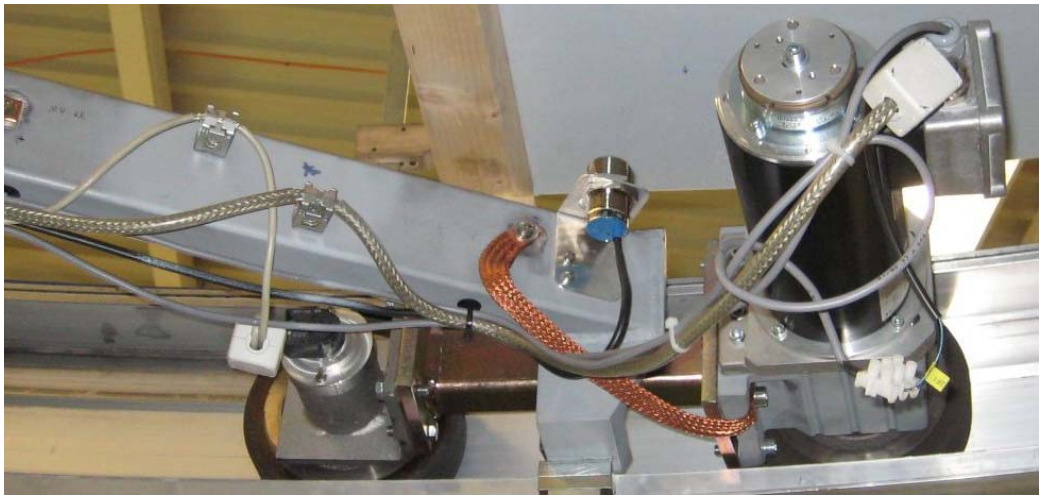
EMC screw connection
of motor cable (No. 16)



4.4 Connecting the incremental encoder

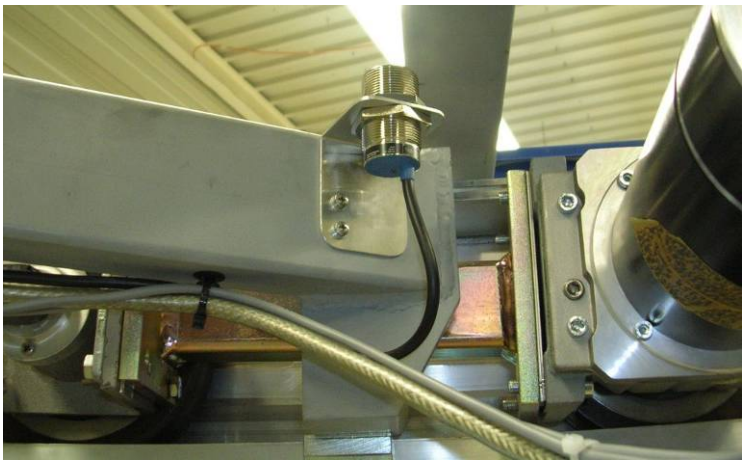


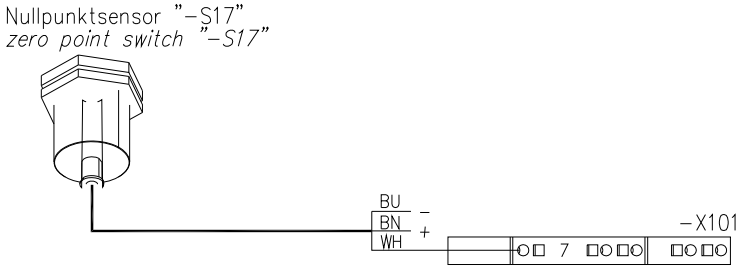




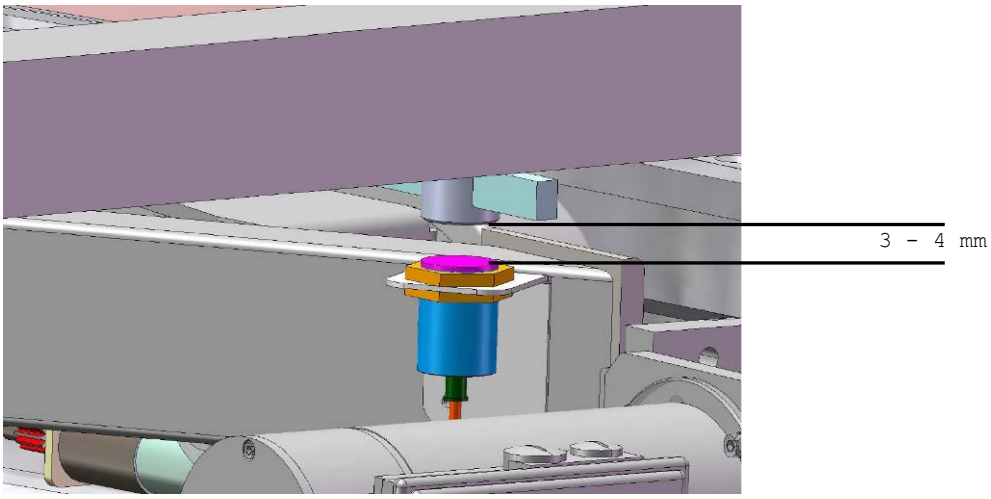
The incremental encoder is located at the drive unit. The terminal connectors of the white plug of incremental encoder cable No. 5 must point towards the rotor. Reverse polarity will destroy the incremental encoder.
In order to minimise possible interferences, the cable has to be laid separately - i. e. away from other cables such as the motor cable.
Incremental encoder cable No. 5 has been dismantled in front of the incremental encoder so that the shielding of the cable is visible.
The dismantled part of the cable must be fixed under the shield clips.
The incremental encoder cable is connected to the CPU (-Z1).

4.5 Connecting the X-position sensor:





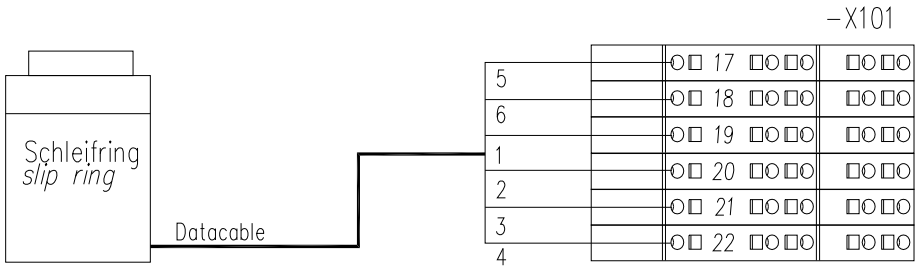
Installation position of X-position sensor:

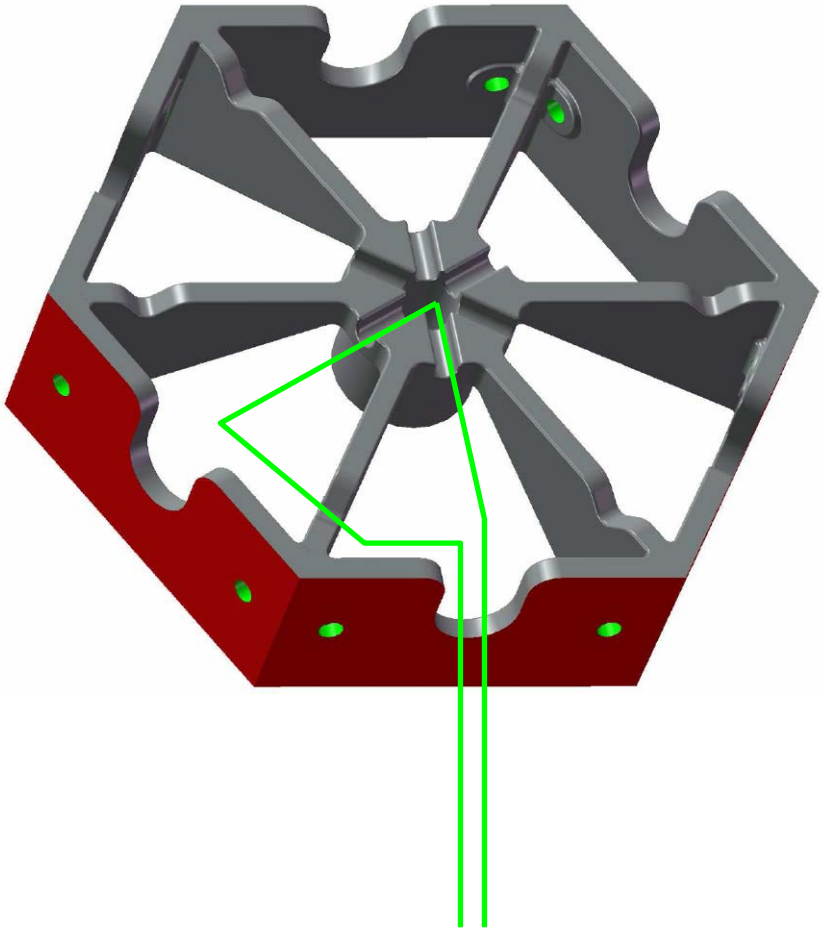


A distance of 3 - 4 mm is required between the proximity sensor and the cam.
Move cam for fine adjustment of starting position.

4.6 Data cable for collector

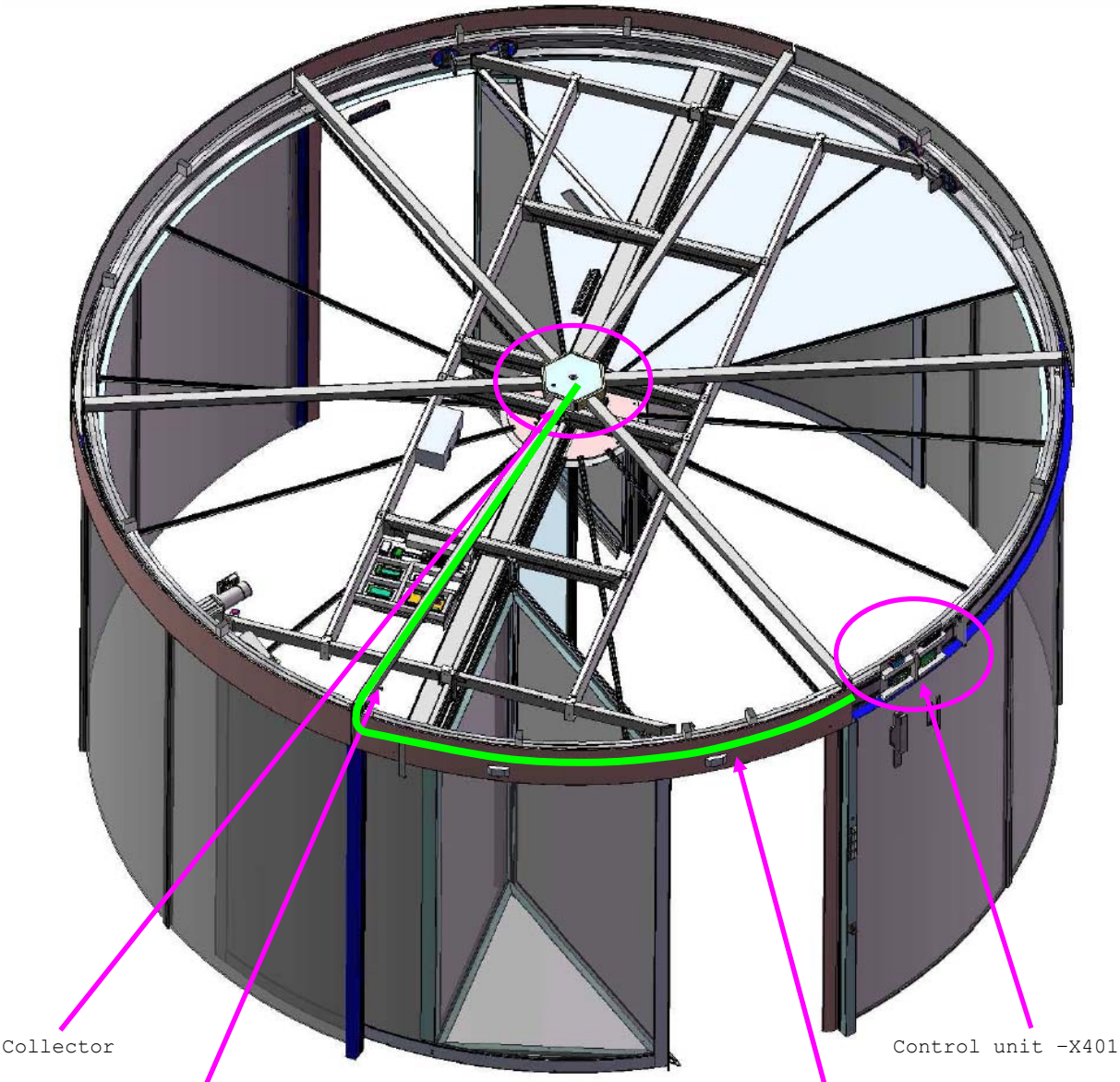
Here you see how the cables run from the static to the revolving part of the door system.



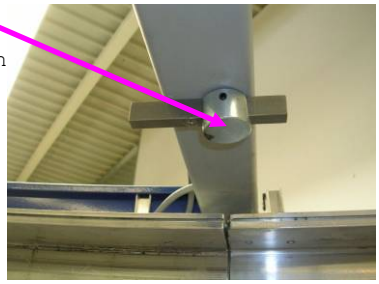


The cable comes from the static part of the revolving door and runs to the collector. The above sketch shows the two cables running to the collector through the central drill hole.

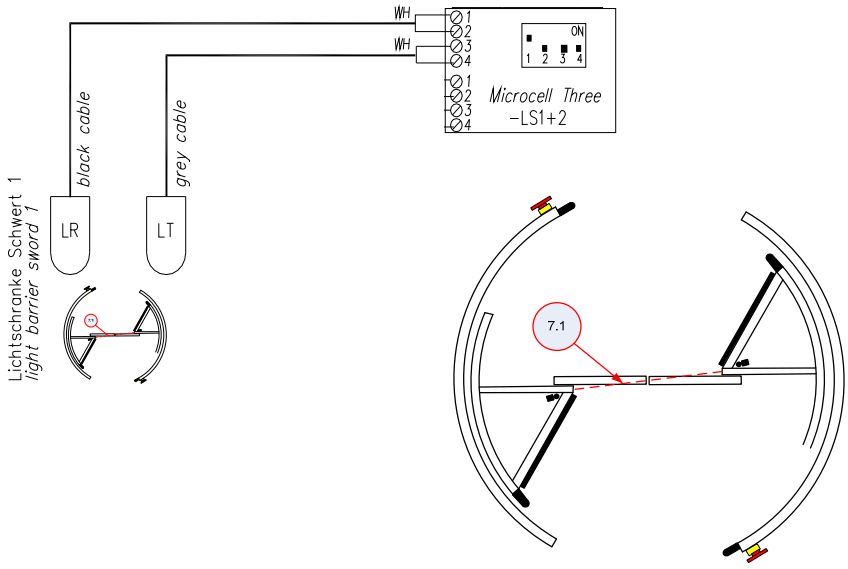
The green line indicates how the collector cable runs from the collector to the control unit (-X401).



The cams are used to adjust the "closed" position of the door.

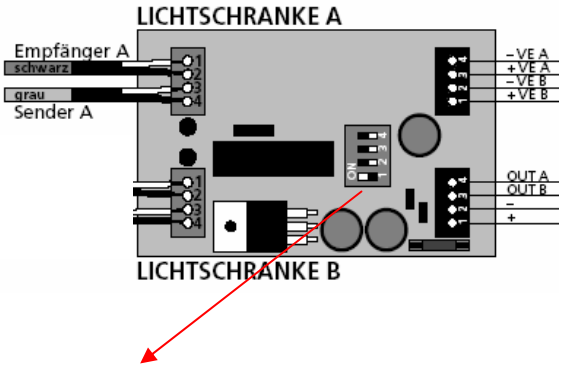


4.7 Connection of light barriers/safety contact strips



Transmitter (grey cable)
(N60-0634 transmitter + receiver)

Receiver (black cable)

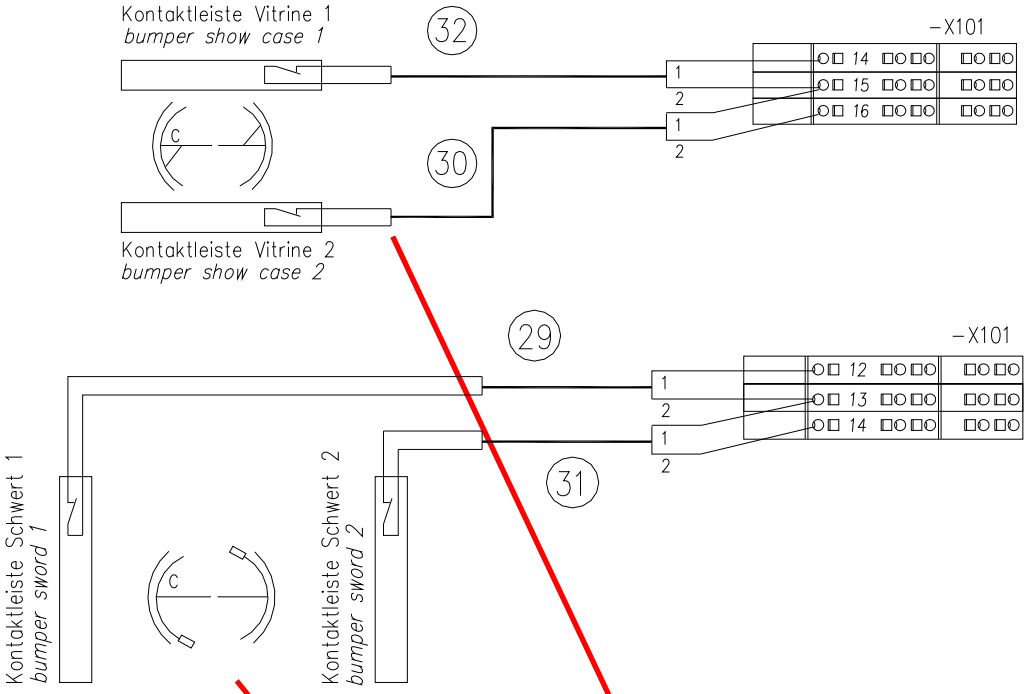


The DIP-switches are allocated as follows:
1 = ON
2 + 3 + 4 = OFF

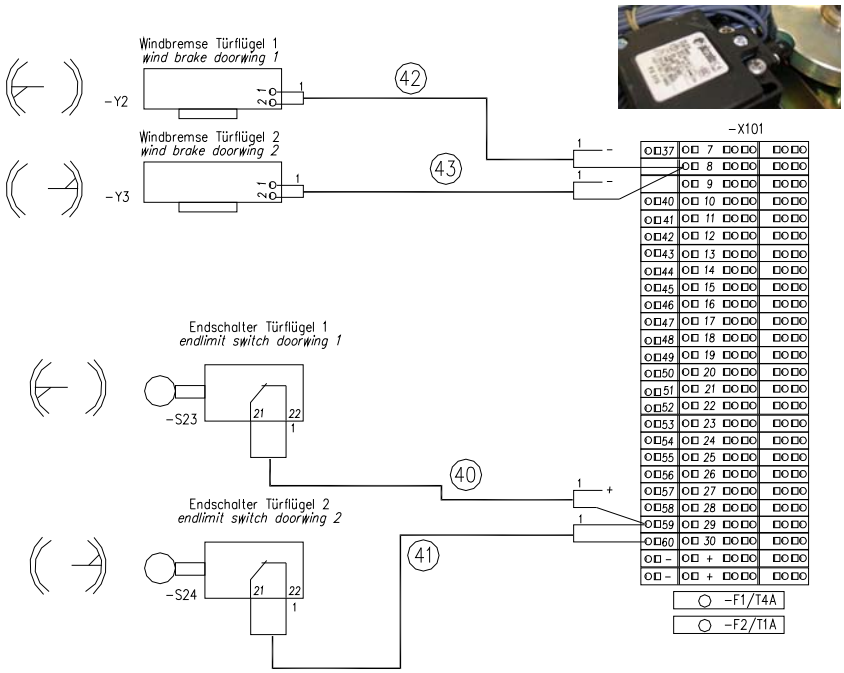
The LEDs are off during standard operation.
Whenever a light barrier is activated, the respective LED will light up.

The red line indicates how the cable is laid from the control unit to the showcase door.
(Light barrier and safety contact strips, cables No. 30 + 32)

Set jumpers at the -X101 control unit for all safety contact strips that are not required (e. g. systems without showcases).


Kontaktleiste Vitrine 1
bumper show case 1
32
-X101
14
15
16
1
2
30
Kontaktleiste Vitrine 2
bumper show case 2
29
-X101
12
13
14
31
Kontaktleiste Schwert 1
bumper sword 1
Kontaktleiste Schwert 2
bumper sword 2

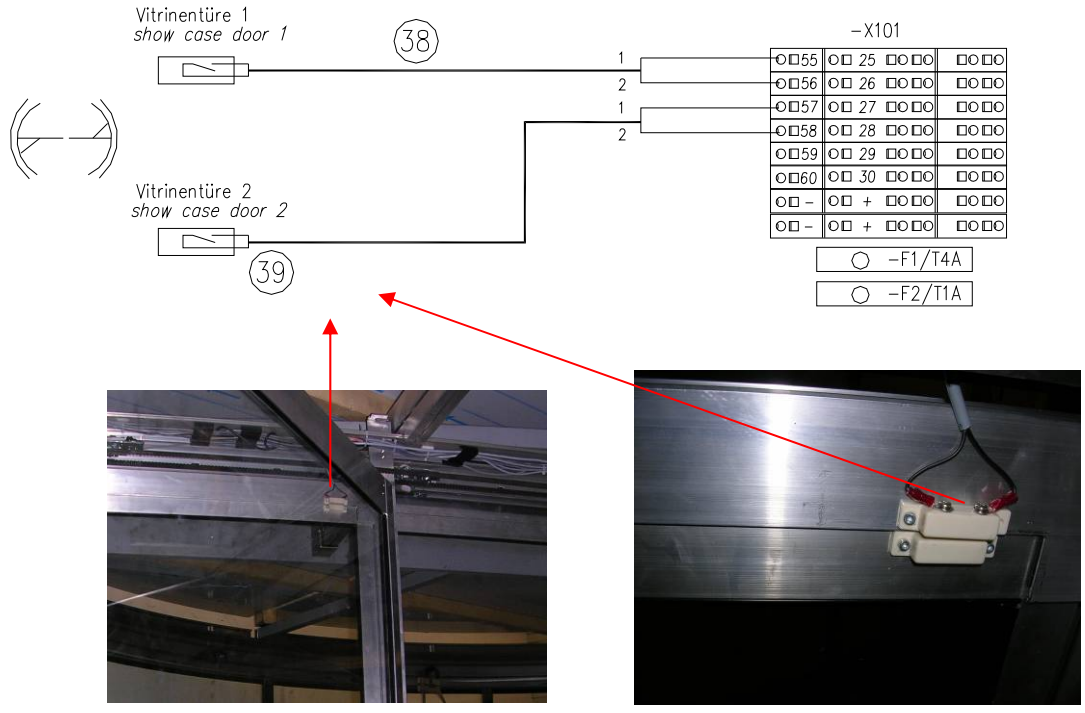
4.8 With breakout wing



In addition, the following jumper is required (-X101: +24 V/31).

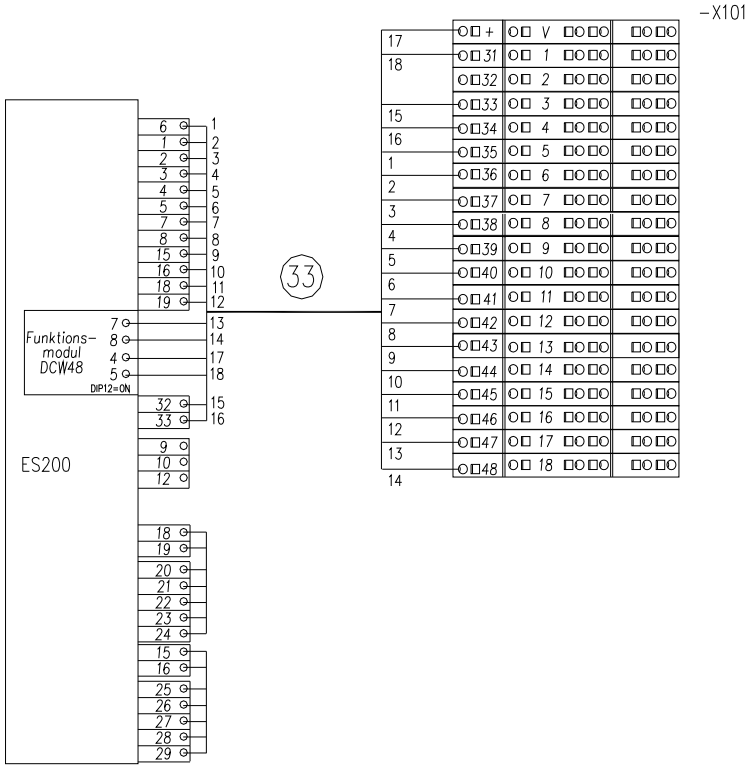
4.9 Limit switch for showcase

For systems without showcase, set jumper between 55 and 58!

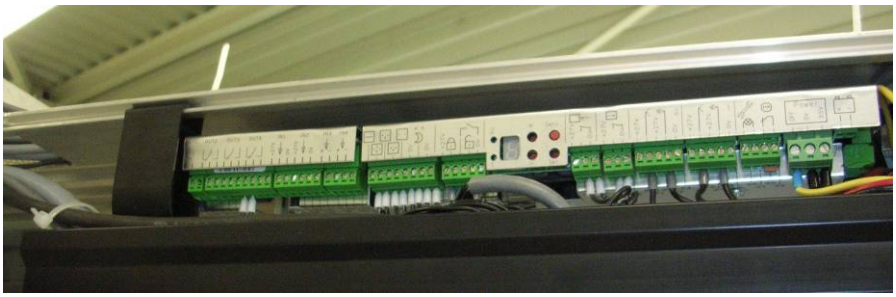


5. Connection diagram for optional sliding door

5.1 Connection diagram for ES 200



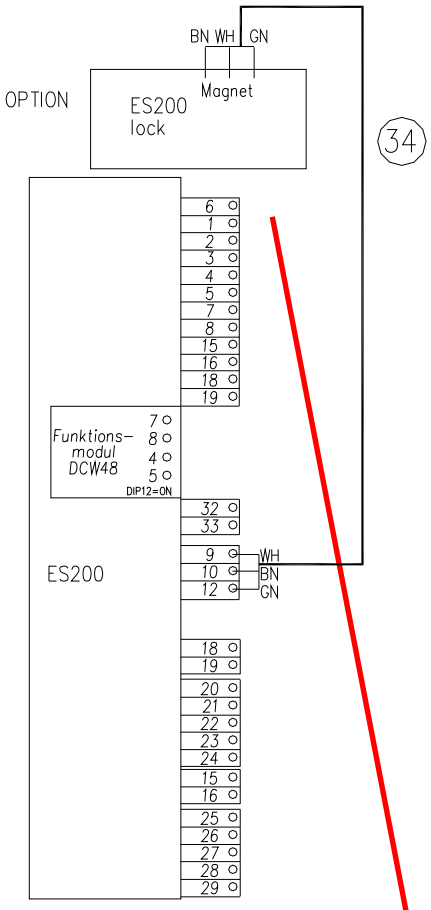
ES 200 basic module (N60-0586)

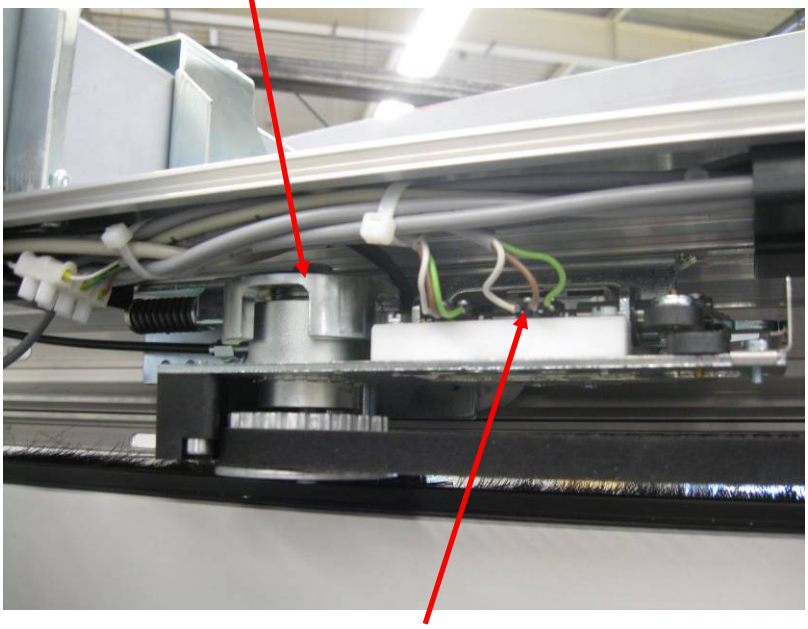


ES 200 I/O module (N60-0589)

In addition, the following jumper is required (-X101: +24 V/60).

5.2 Connection of ES 200 locking device (Option)

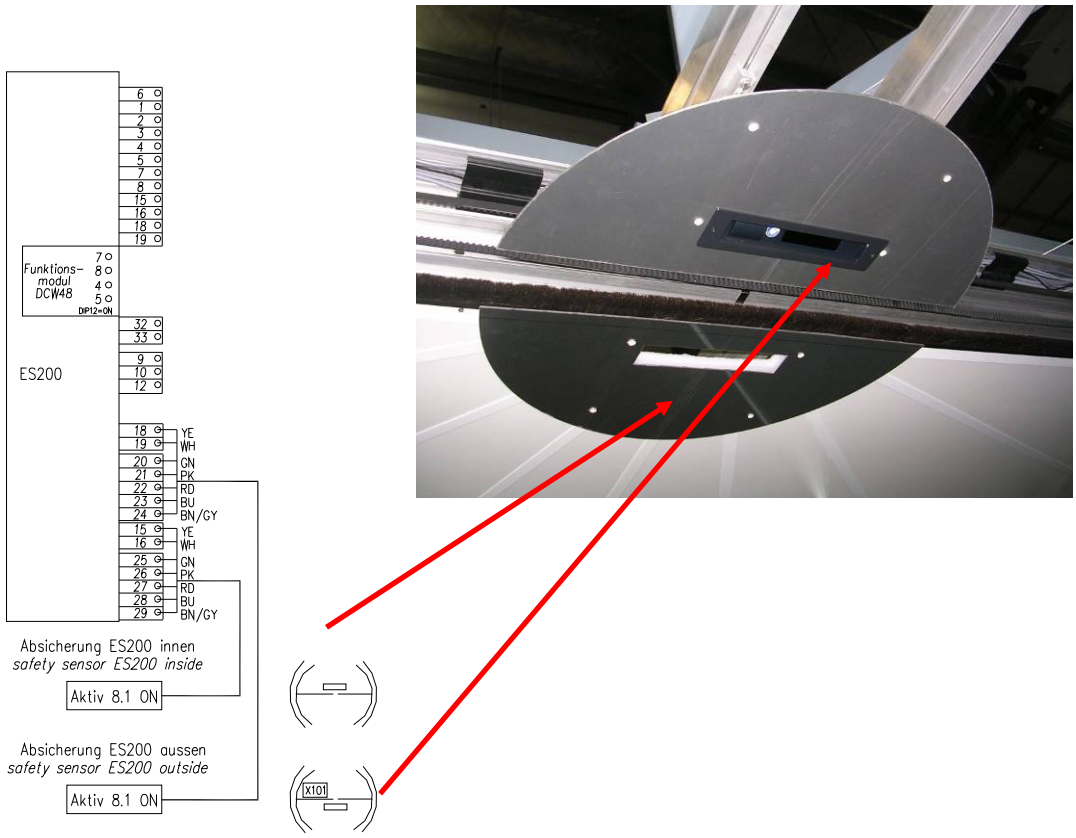




Limit switch

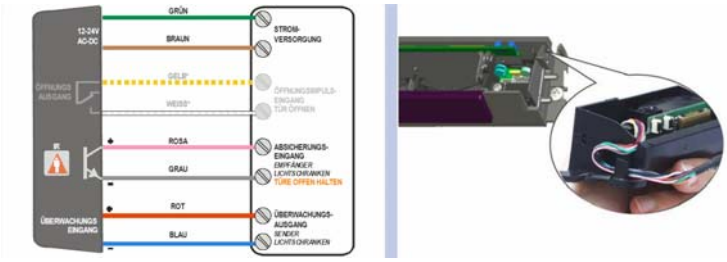
(Please note that the limit switches are not activated while the door is locked)

5.3 Connection diagram for safety sensors of sliding door



5.4 Adjustment of Active 8.x or IRIS ON

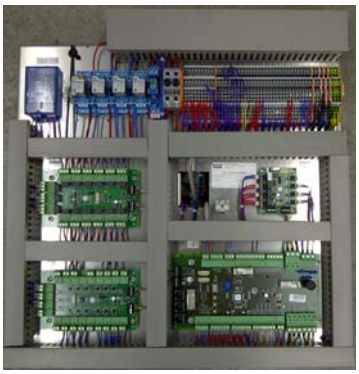
2 m * 2.5 m antenna 2 m-prism

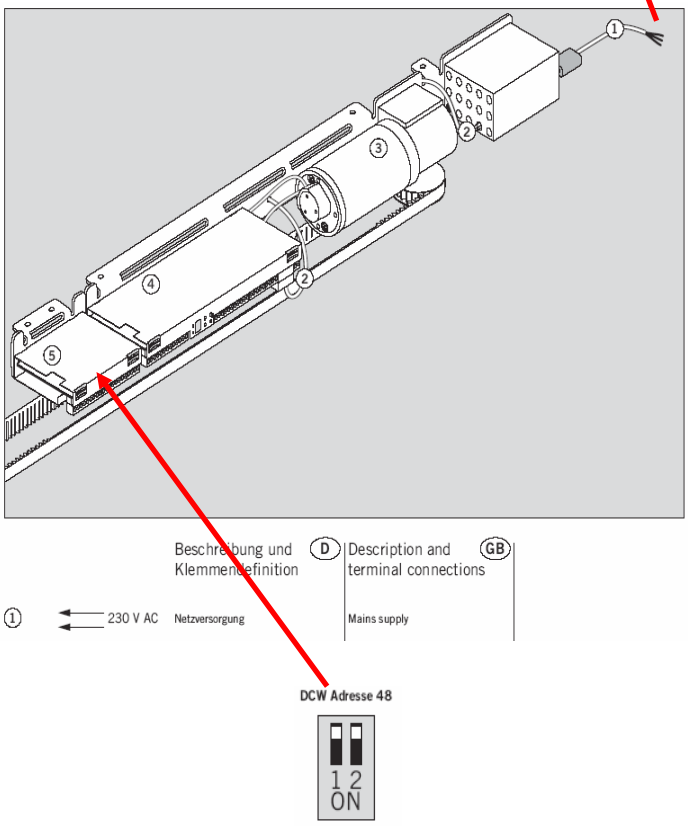


You may use the "IRIS ON" safety sensor instead of the "Active 8.1 ON" sensor. However, in this case an activation of the sliding door is not possible as only the canopy-integrated radar motion detectors are activated (and their activation also depends on the setting of the respective program switch).

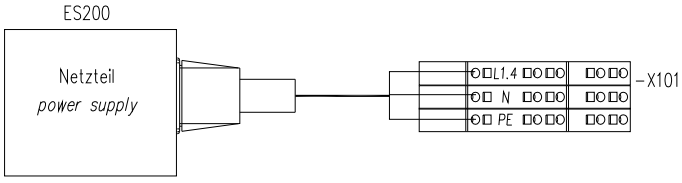
Designation	Remote control	Value
Output configuration		1
Maximum duration of presence detection		1
Sensitivity (presence detection)		1 - 2 (1 = DIN 18650)
Monitoring mode		1
Number of infrared light curtains		1
Installation configuration (height/frequency)		1
Redirectioning of output for safety sensor	F1	0
Sensitivity of radar detector		2-3

5.5 Wiring of power supply for ES 200

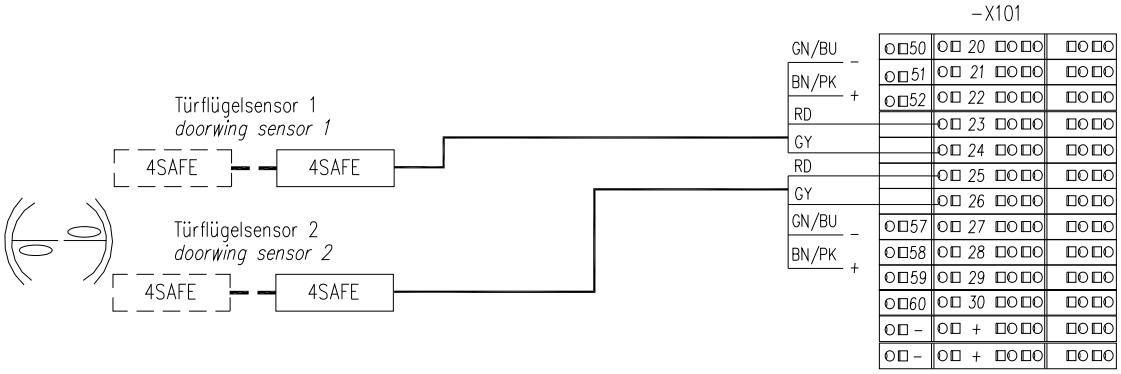


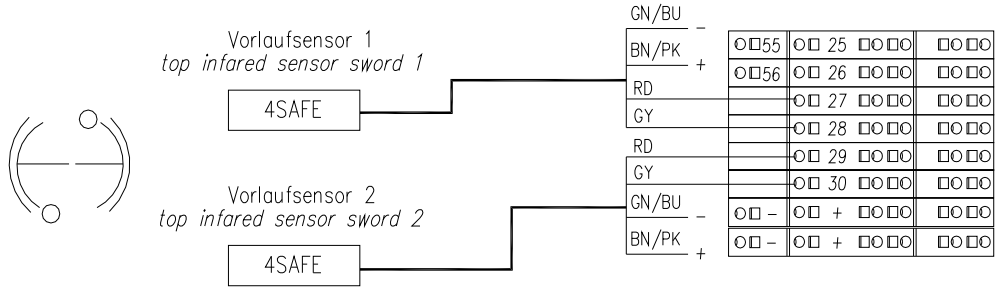


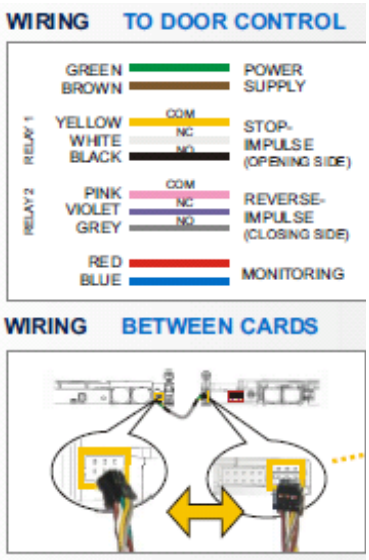
Connection of ES 200 power supply unit



5.6 Connection of 4Safe sensors



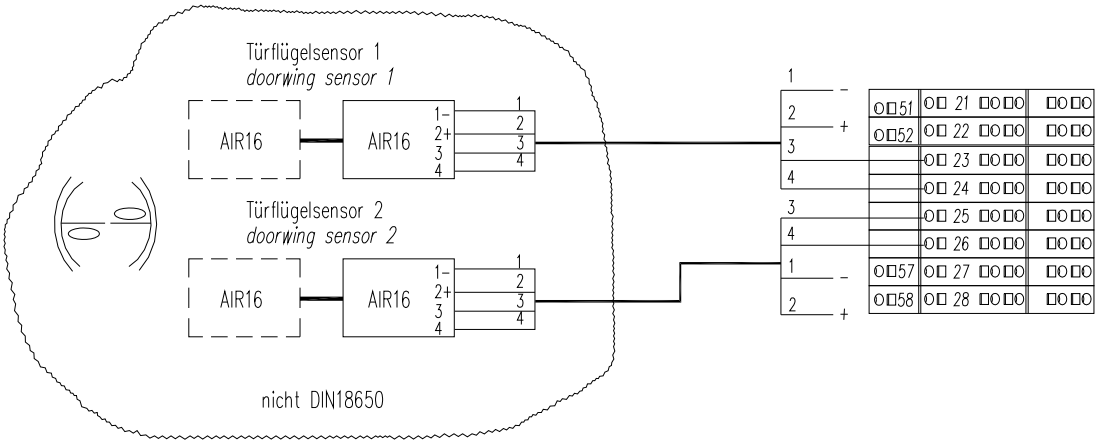




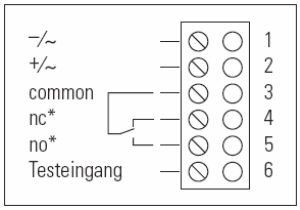
You may also bridge individual sensors at the -X101 terminal block for testing purposes.
Do not forget to disconnect the sensor cable at the terminal block.
Jumper for example between:

23 - 24	**Wing sensors 1**
25 - 26	**Wing sensors 2**
27 - 28	**Pre-detection sensor 1**
29 - 30	**Pre-detection sensor 2**

5.7 Connection of AIR16 sensors (not DIN 18650)

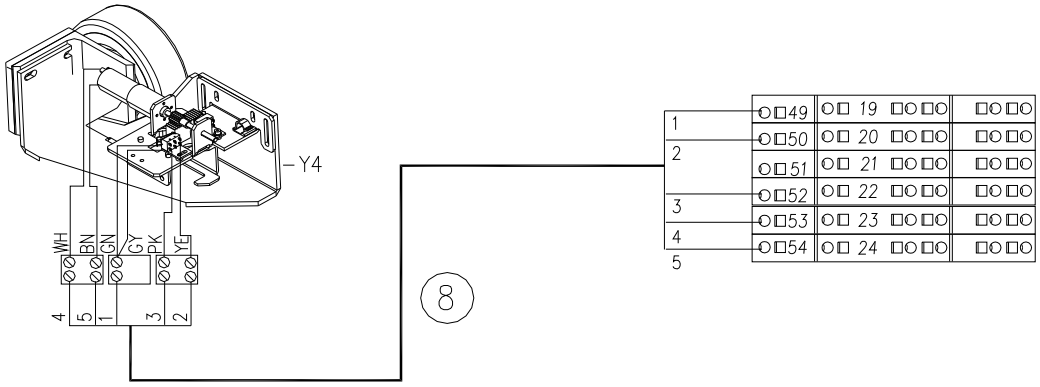


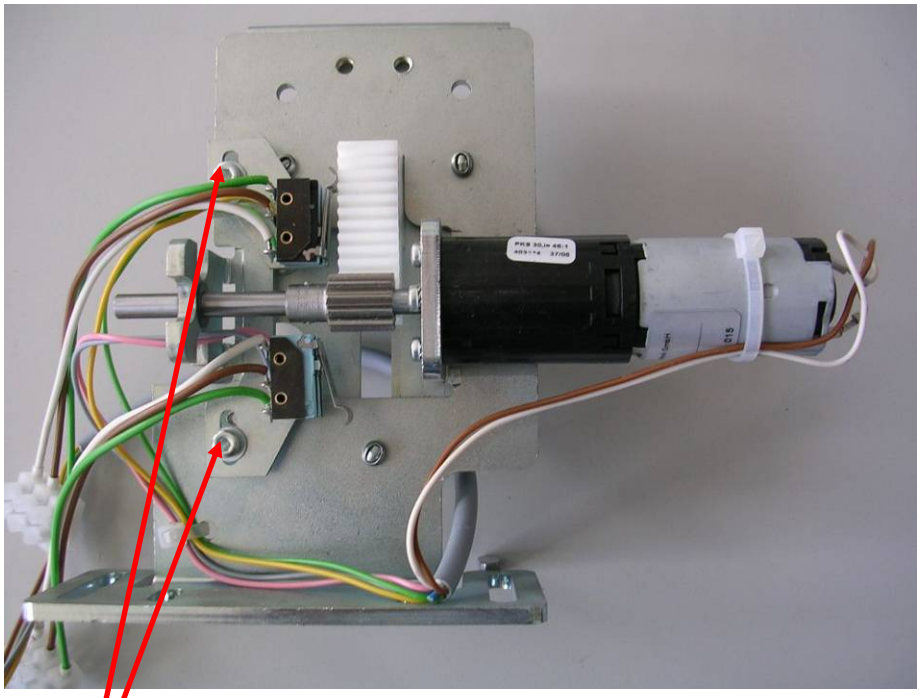
Connection terminals for AIR16



Via flat cable is it possible to connect more sensors together.

5.8 Connection of electromechanical Locking device (optional)



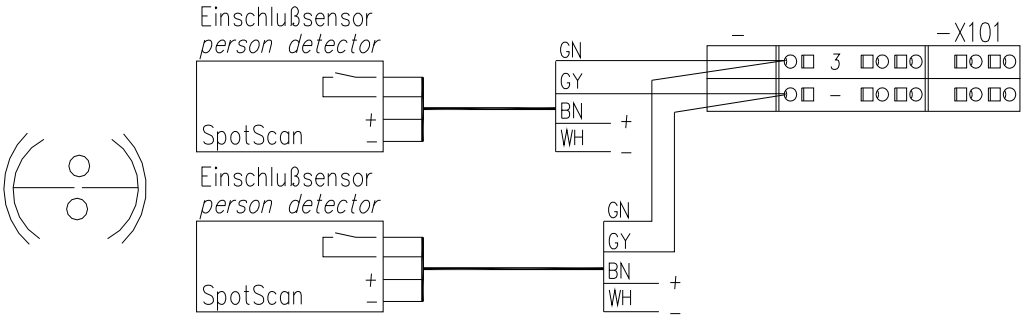


The fixings of the limit switches must be screwed down tight.

CPU setting

#el. locking devices		Electromechanical bolt locking device no = 0, yes = 1	1

5.9 Connection of presence sensor for winter configuration (OPTION)



Connection/adjustment of SpotScan sensors
Please consider the SpotScan instructions for further information.

Adjustment of DIP-switches

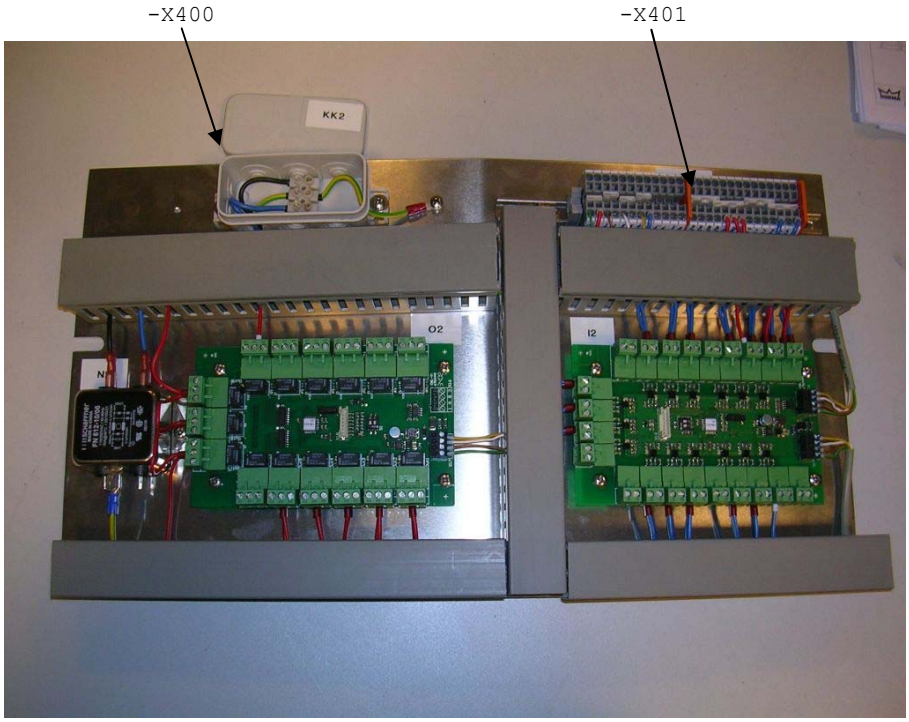
DIP 1 = OFF frequency 1
DIP 2 = ON Background-suppression
DIP 3 = OFF Passive output (NC contact)

The detection range has to be adjusted so that people are easily detected whenever trapped inside one of the sections.

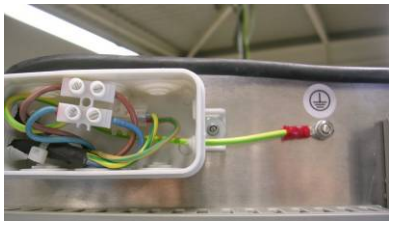
6. Electrical connection of static components

The static components are connected to the revolving components behind the right internal canopy cover.

6.1 Control unit (-X401)



6.2 PE (protective earth) connection



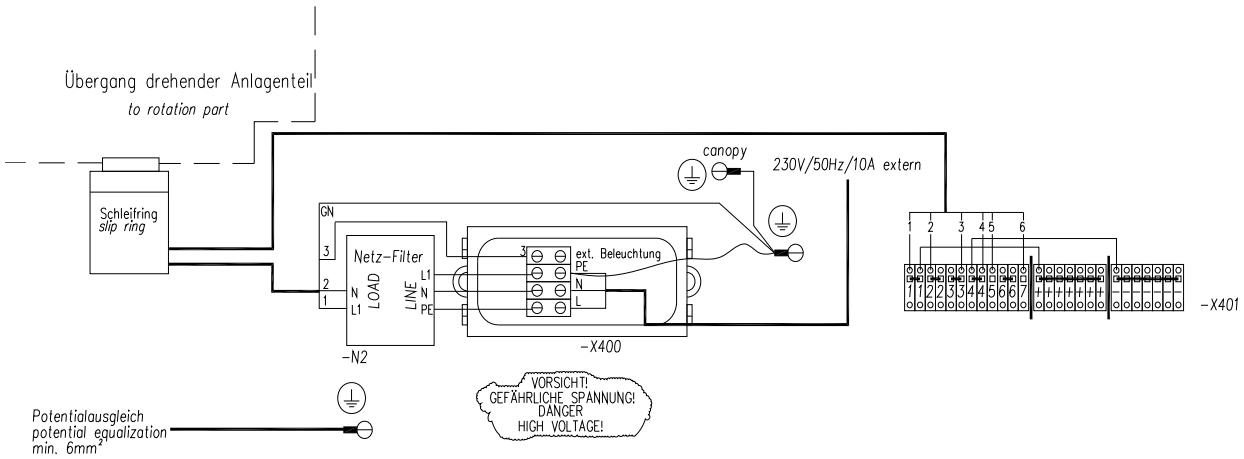
6.3 Connection of equipotential bonding

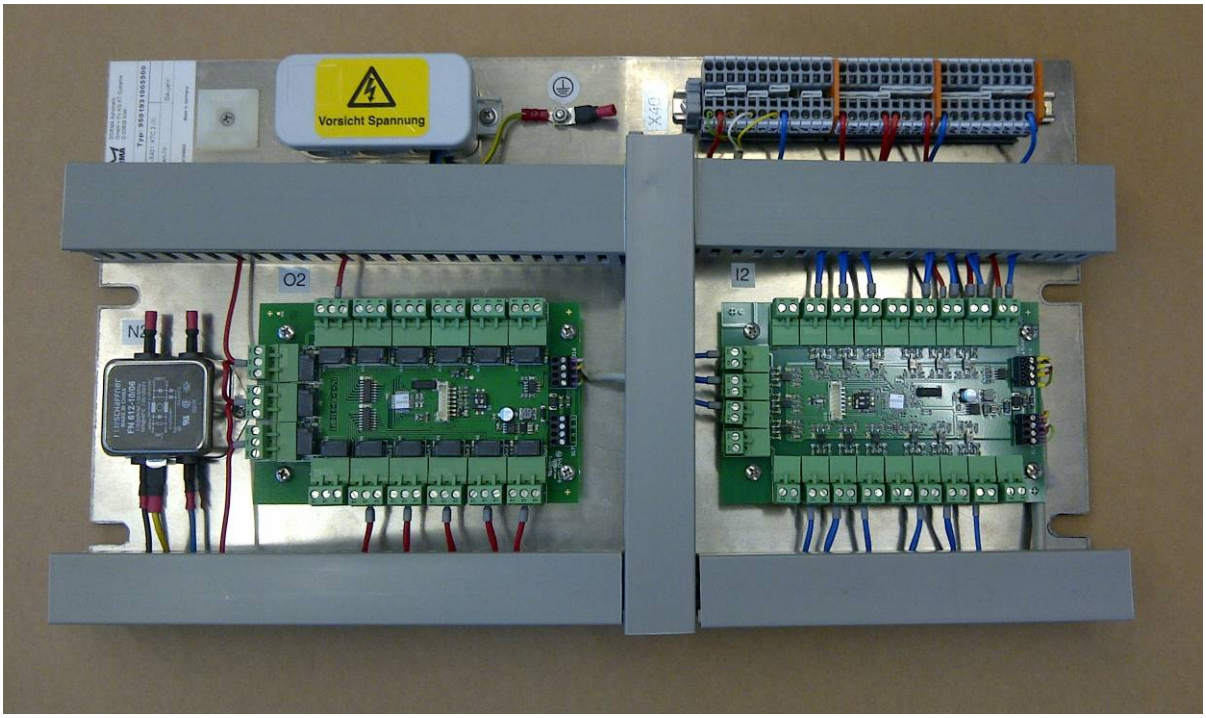
Always earth (ground) door system with the aid of an external equipotential bonding.
Install the bonding at a suitable position within the door system - depending on prevailing conditions.
Please note that at least 6 mm² are required for the external connection.

⚠ **The power supply (incl. PE) must be properly wired.**

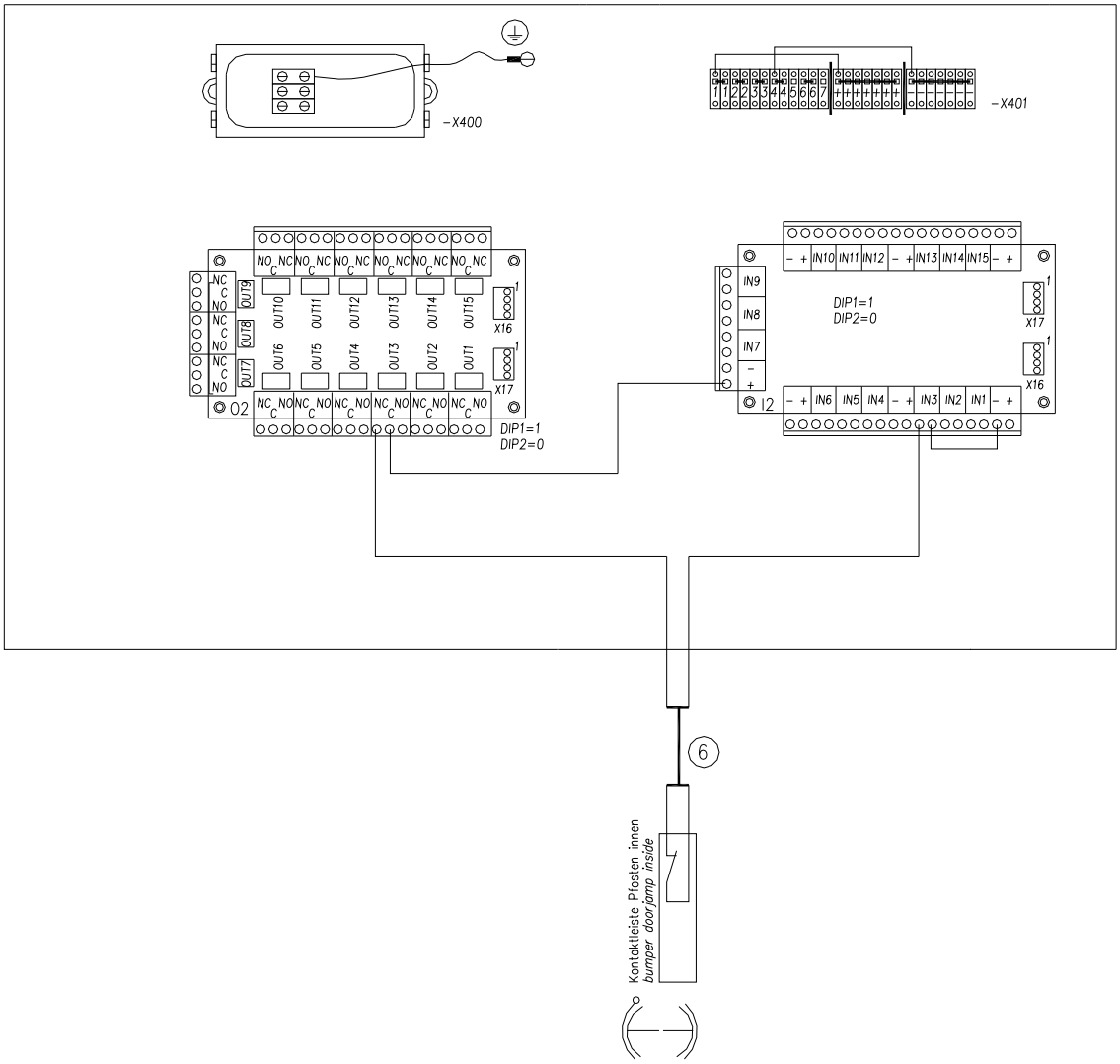
De-energise (disconnect from mains) power supply line and protect against reactivation.

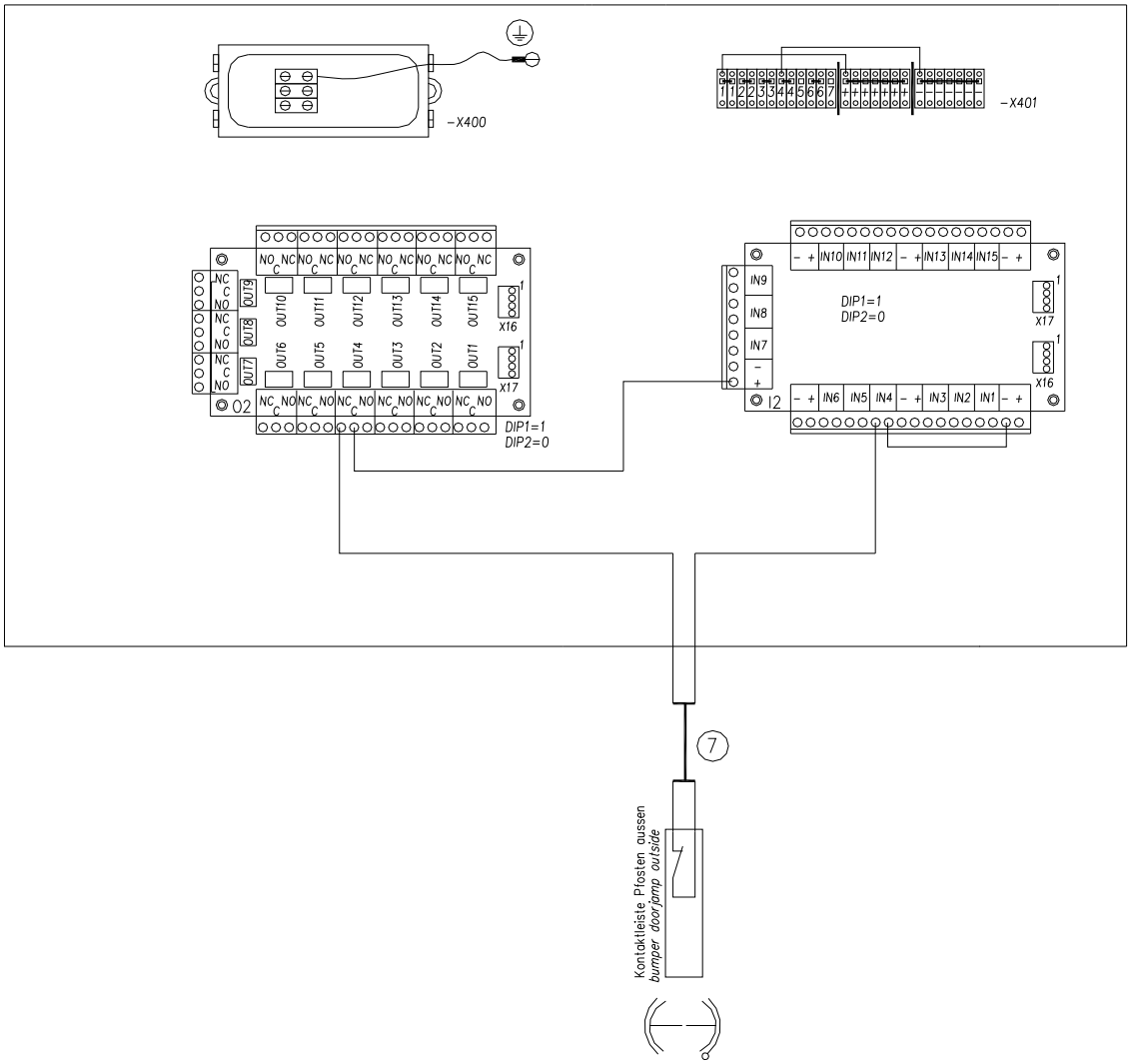
6.4 Connection of collector



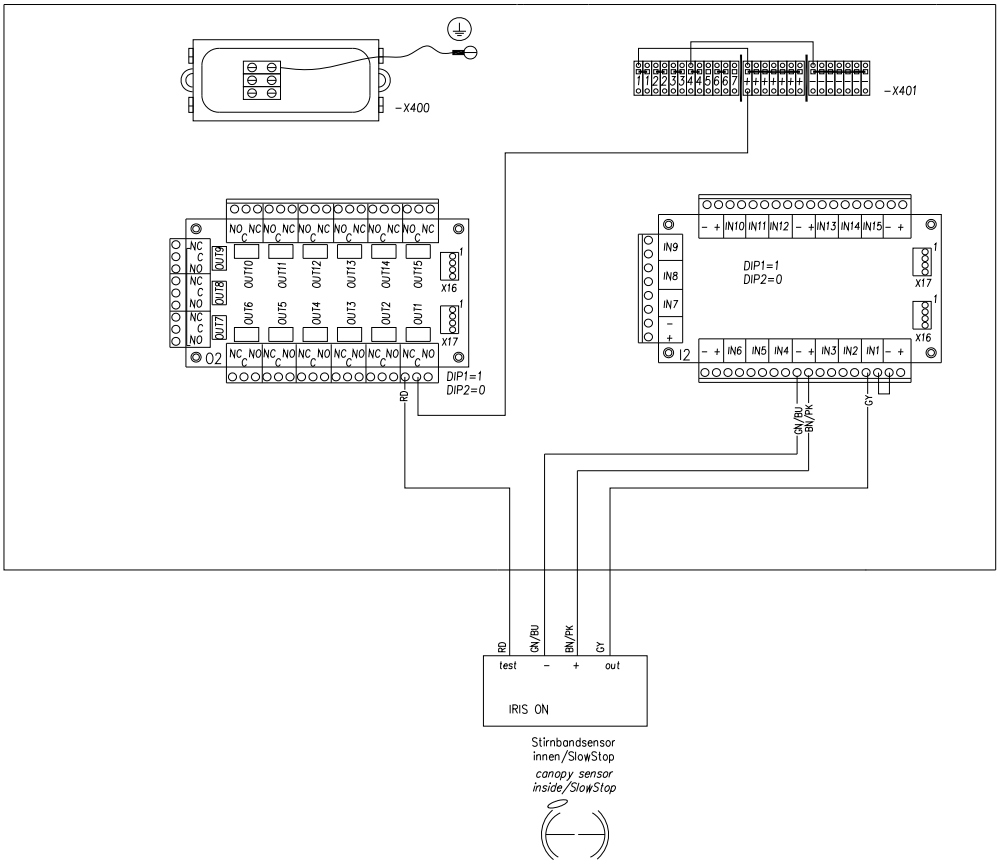


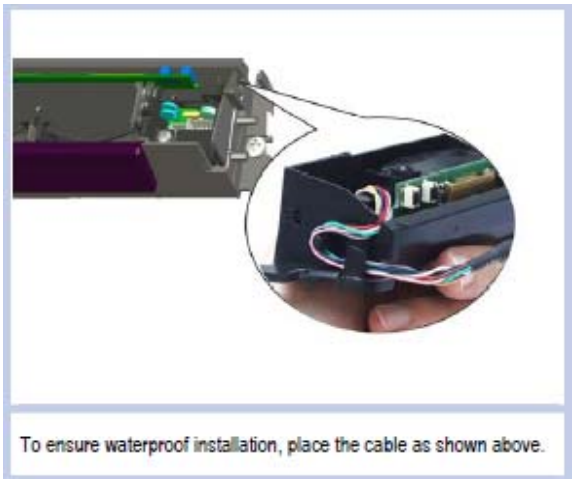
6.5 Connection of safety contact strips at post



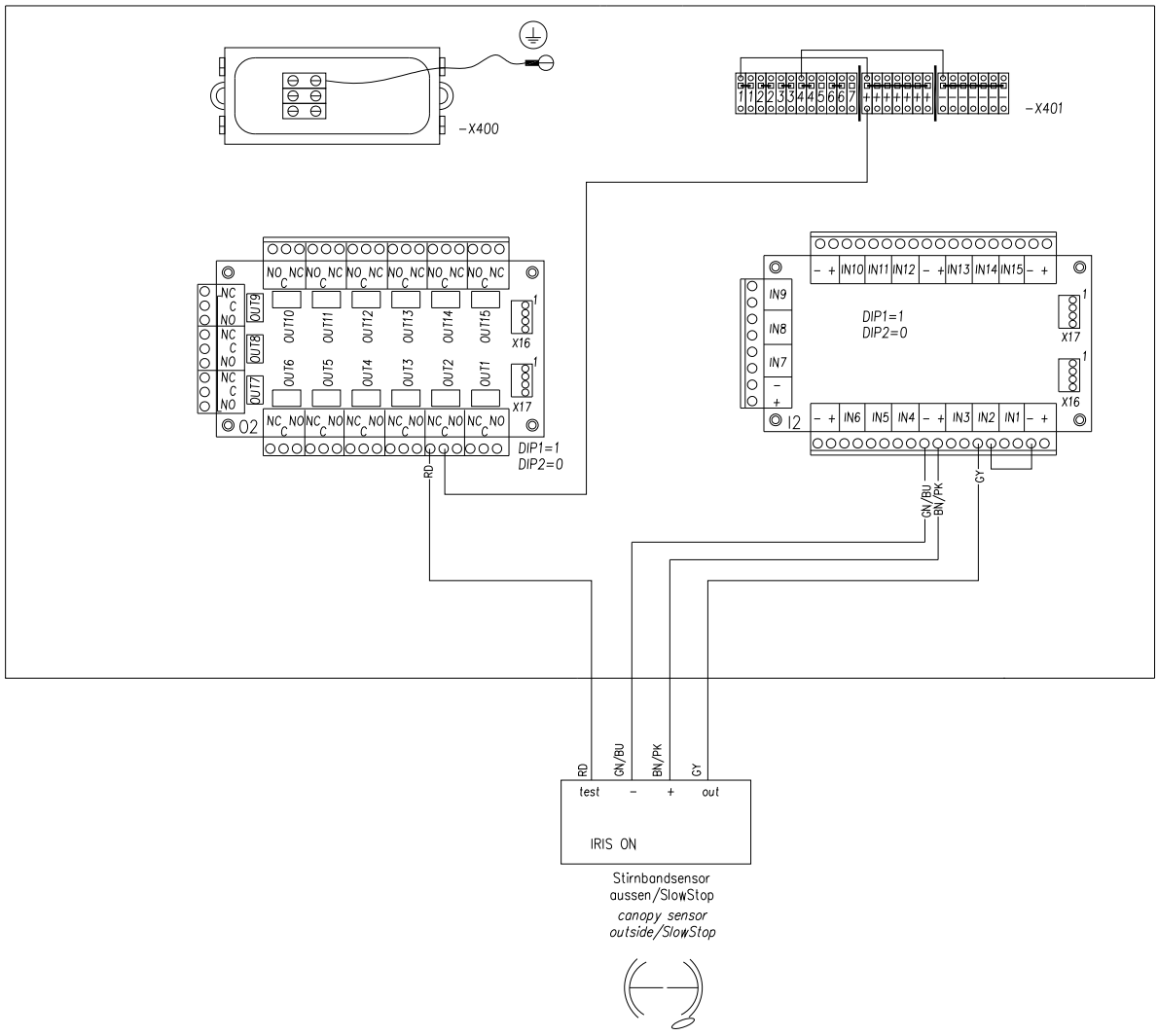

-X400
-X401
NO NC C
OUT10
OUT11
OUT12
OUT13
OUT14
OUT15
OUT9
OUT8
OUT7
OUT6
OUT5
OUT4
OUT3
OUT2
OUT1
X16
X17
02
DIP1=1
DIP2=0
IN10
IN11
IN12
IN13
IN14
IN15
IN9
IN8
IN7
IN6
IN5
IN4
IN3
IN2
IN1
12
7
Kontaktleiste Pfosten aussen
bumper door jamp outside

6.6 Connection of canopy-integrated sensors

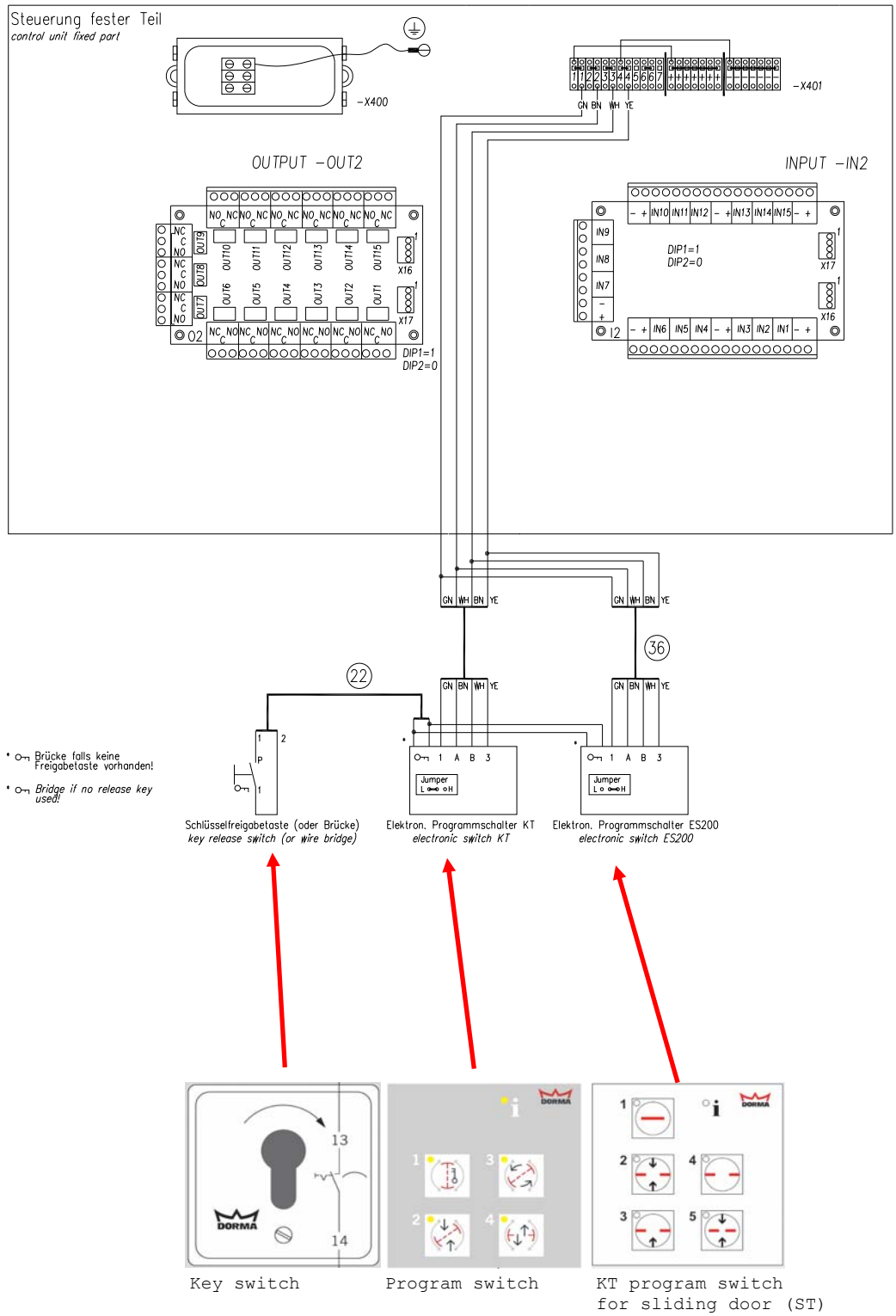




To ensure waterproof installation, place the cable as shown above.

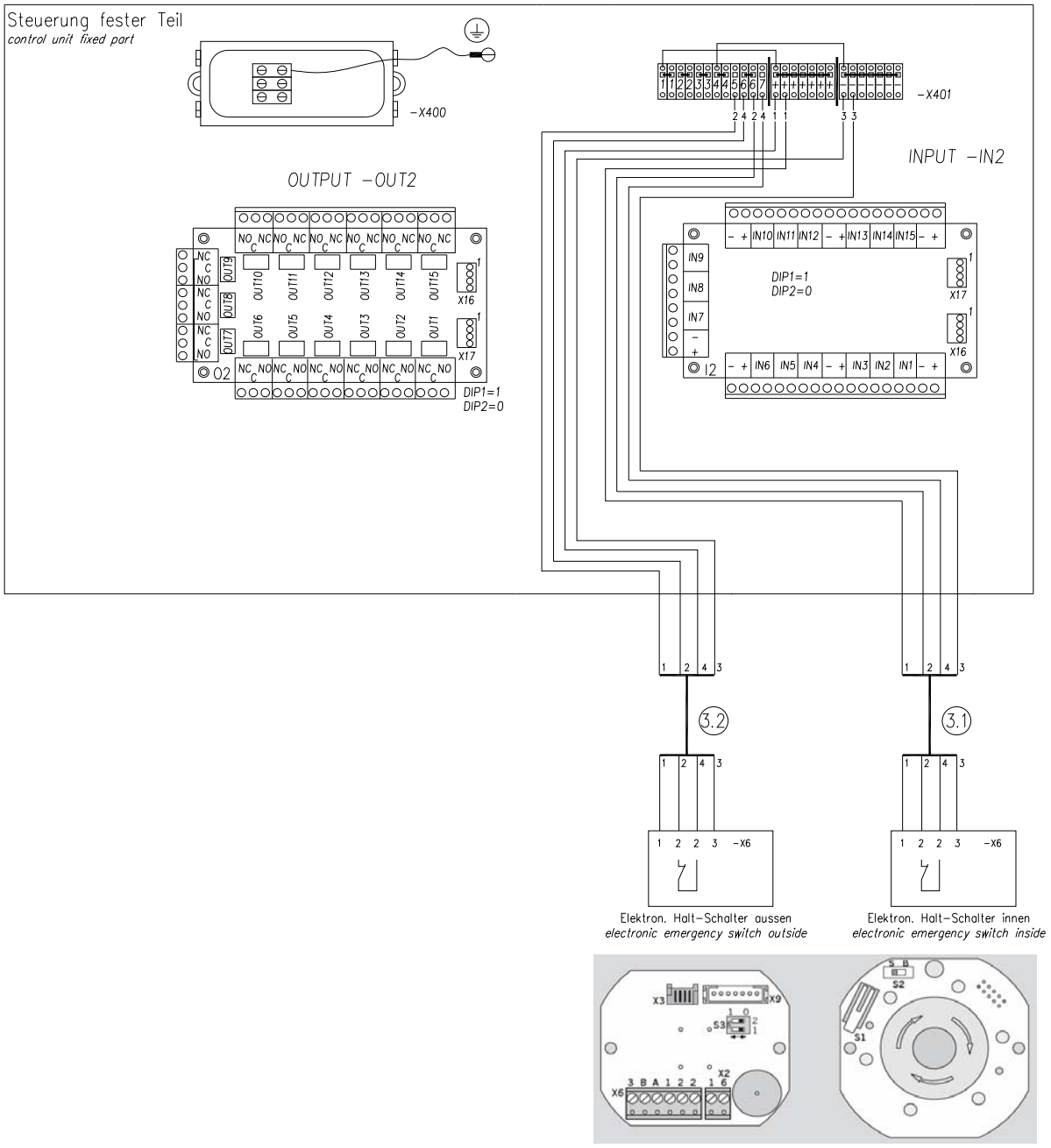

-X400
-X401
NO NC C
OUT19
OUT18
OUT17
OUT10
OUT11
OUT12
OUT13
OUT14
OUT15
OUT6
OUT5
OUT4
OUT3
OUT2
OUT1
X16
X17
02
DIP1=1
DIP2=0
IN9
IN8
IN7
IN10
IN11
IN12
IN13
IN14
IN15
IN6
IN5
IN4
IN3
IN2
IN1
12
RD
GN/BU
BN/PK
GY
test
out
IRIS ON
Stirnbandsensor
aussen/SlowStop
canopy sensor
outside/SlowStop

6.7 Connection of pushbutton for Emergency Stop function/program switch (required for systems with sliding panels)



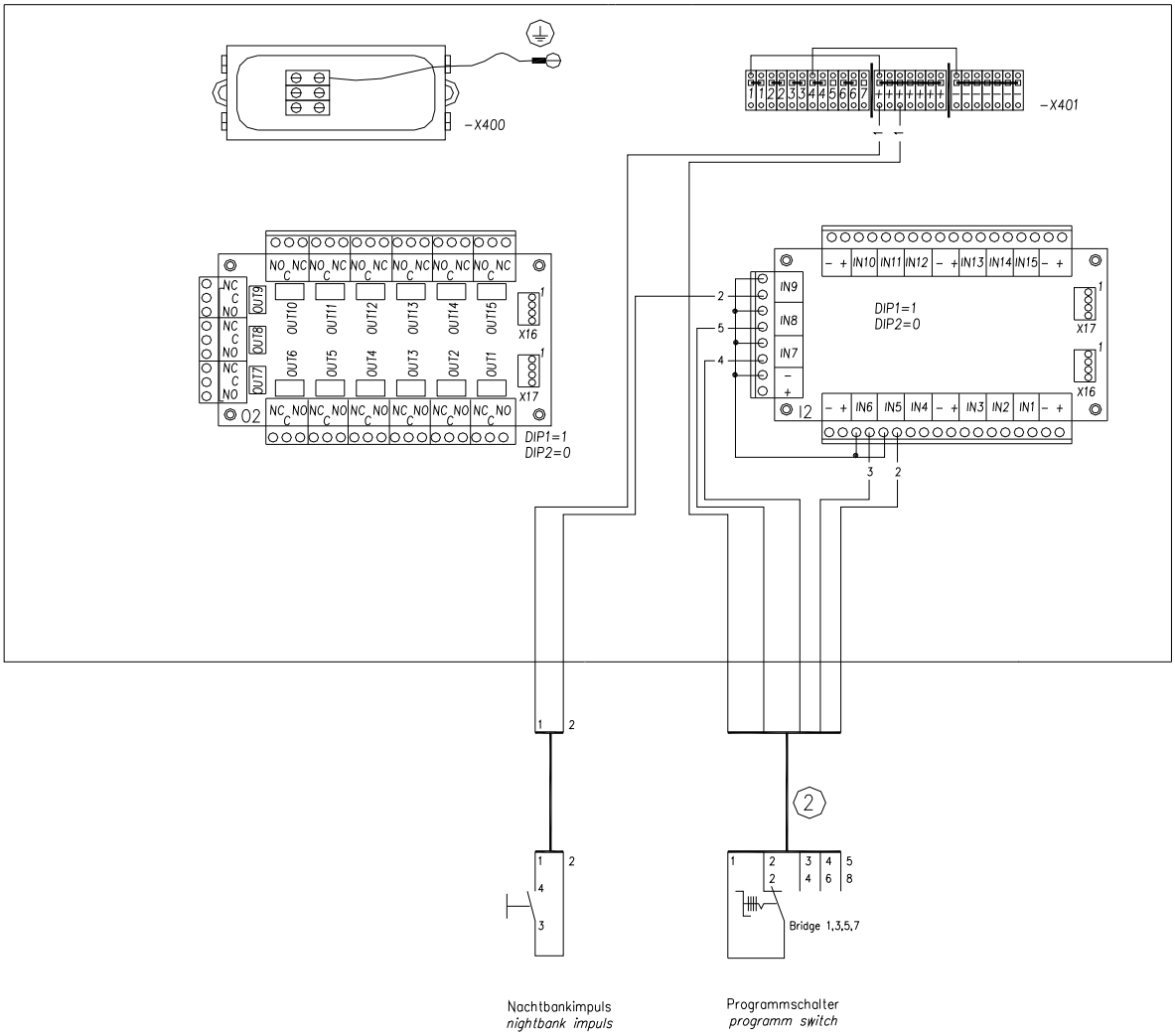
Key switch Program switch KT program switch for sliding door (ST)

For systems with breakout wings you may use any program switch but the ST program switch for sliding doors (see image above).



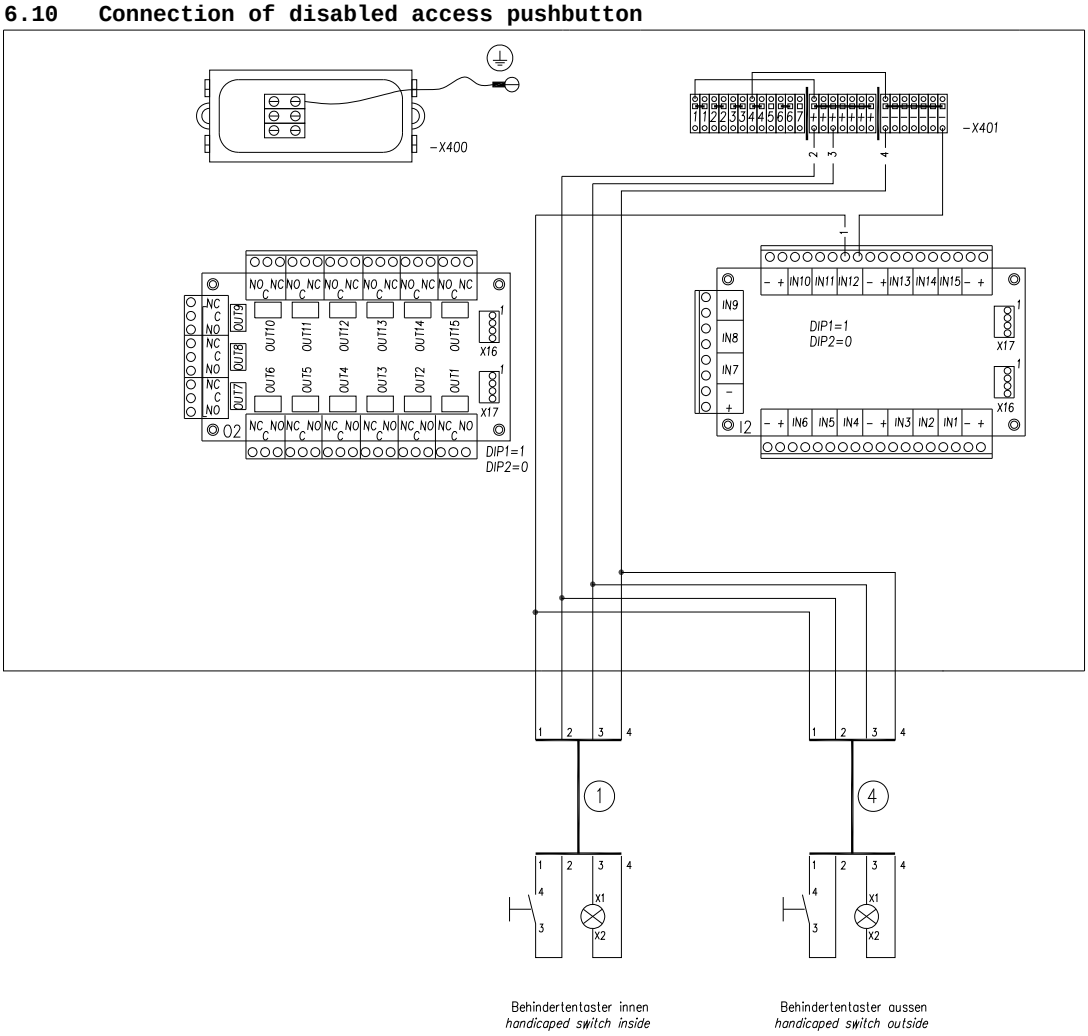
Connect to terminal block X6.

6.8 Connection of program switch and Night-/Bank activator (option)

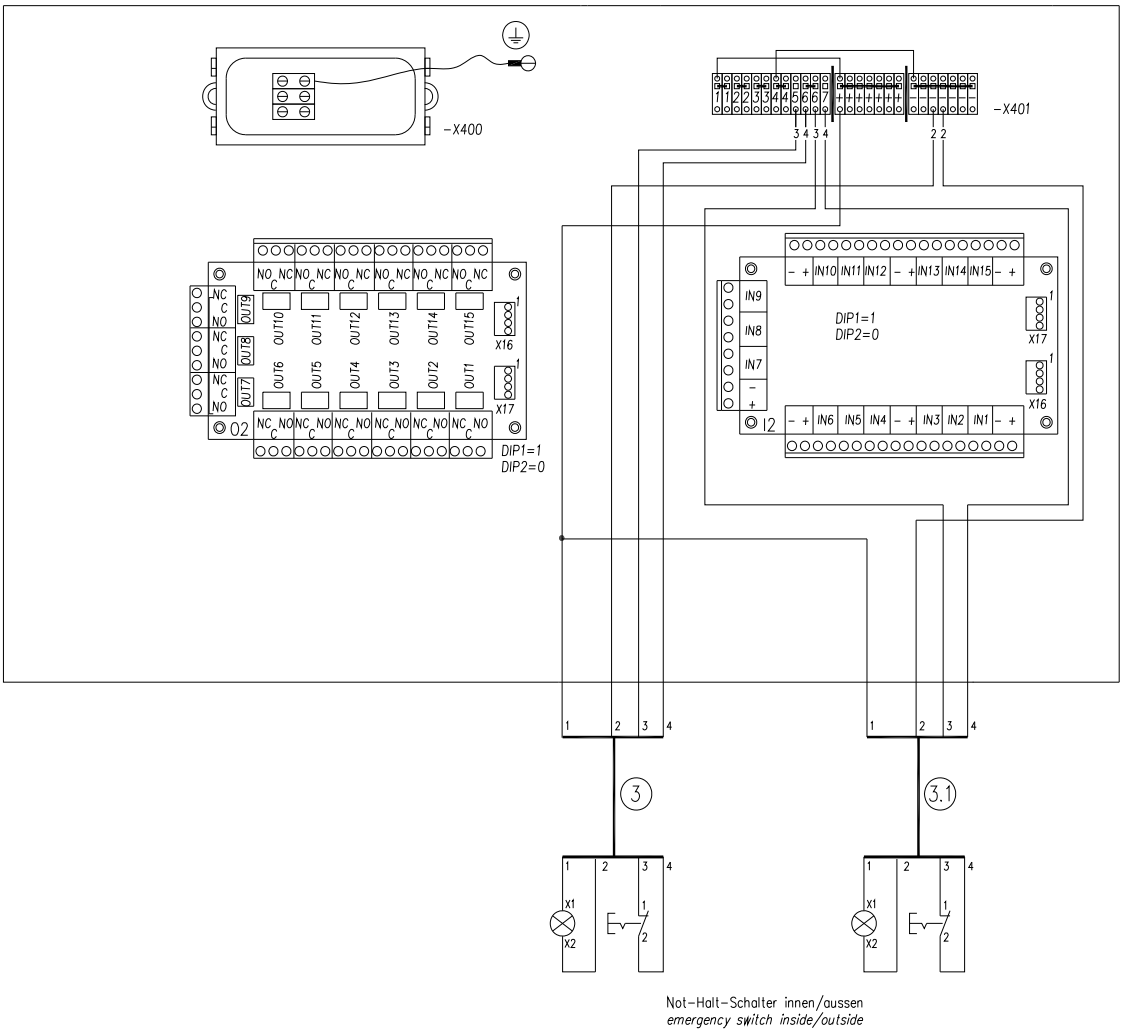


Systems with manual sliding door require a mechanical program switch.
However, you may also install the DCW KT program switch as an option.

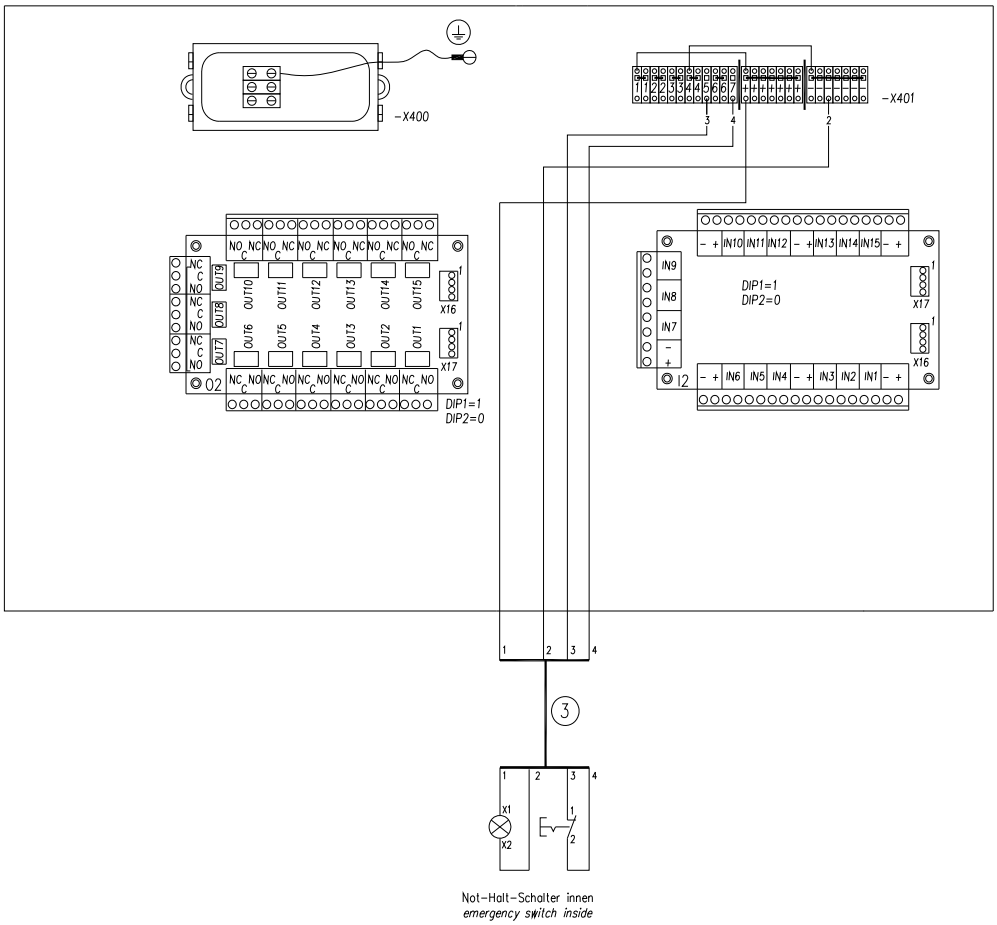
6.10 Connection of disabled access pushbutton



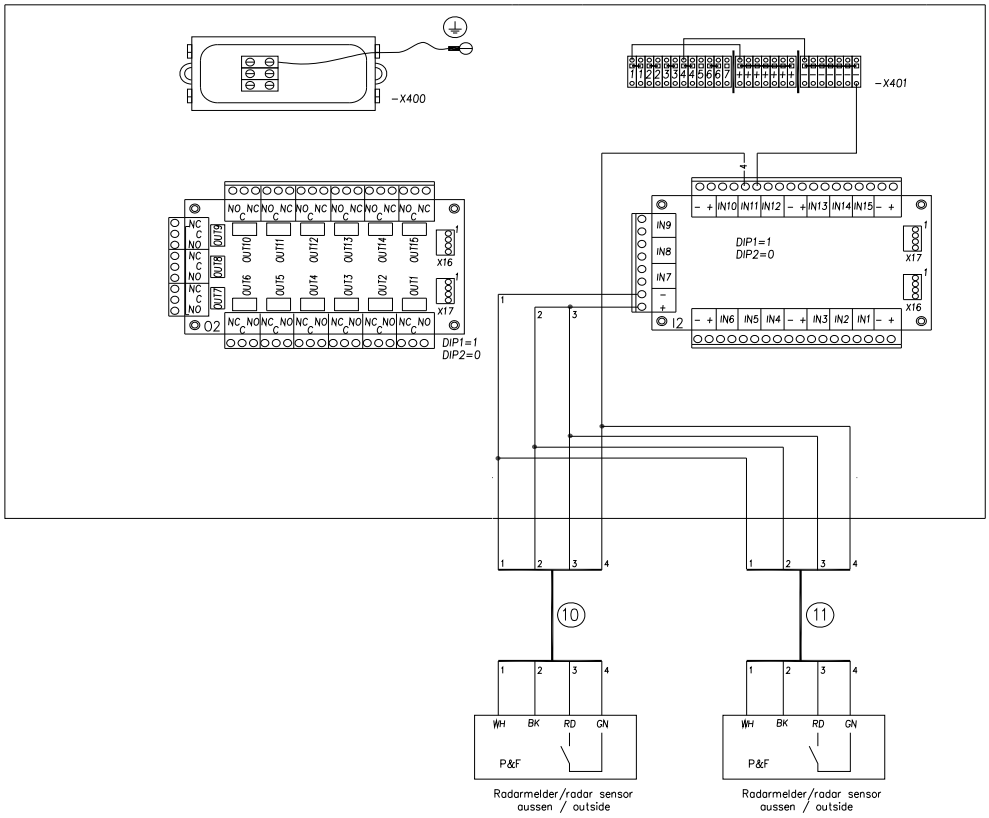
6.11 Connection of pushbutton for Emergency Stop function (inside and outside)



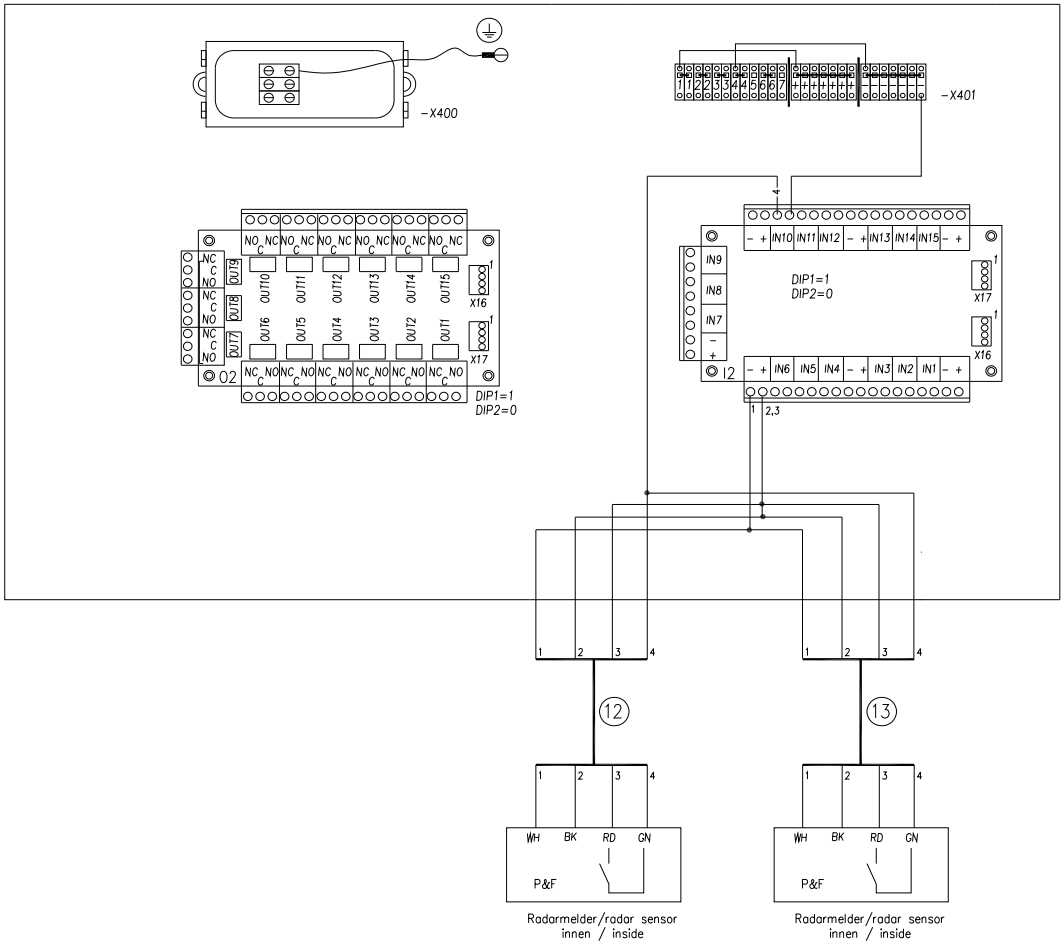
6.12 Connection of pushbutton for Emergency Stop function (only on the inside)



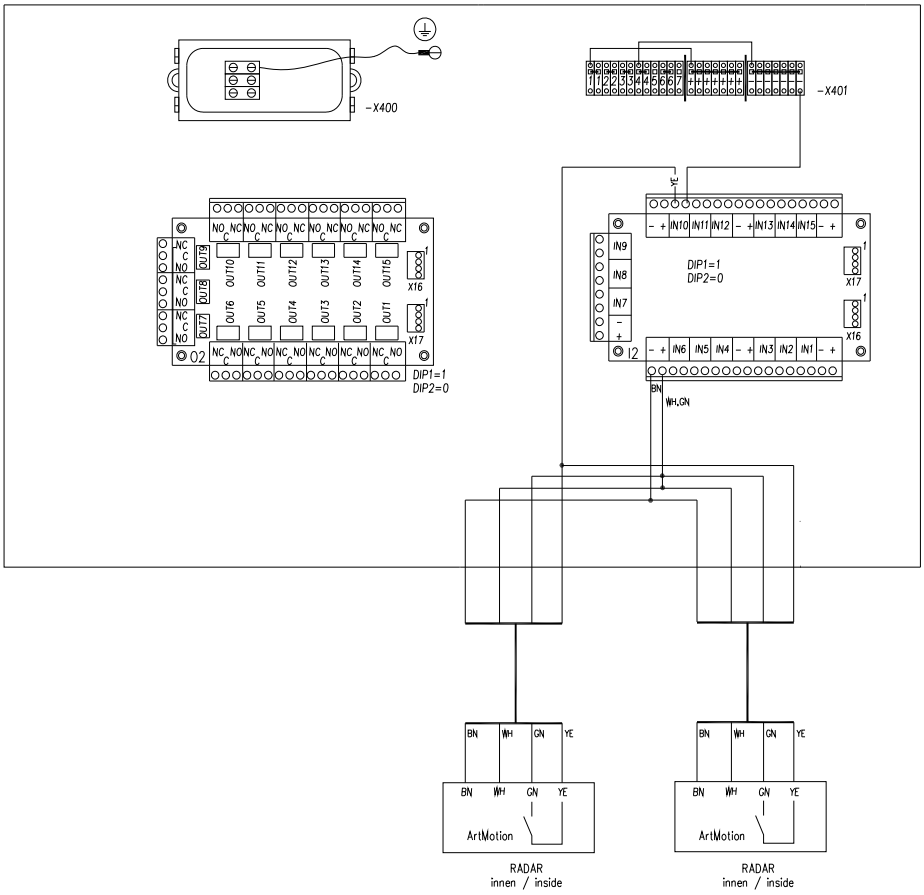
6.12 Connection of motion detectors



The above connection diagram shows how to connect the P & F sensor. All sensors are connected in parallel.


-X400
-X401
DIP1=1
DIP2=0
DIP1=1
DIP2=0
12
13
WH
BK
RD
GN
P&F
Radarmelder/radar sensor
innen / inside
Radarmelder/radar sensor
innen / inside

6.14 Connection of radar motion detectors



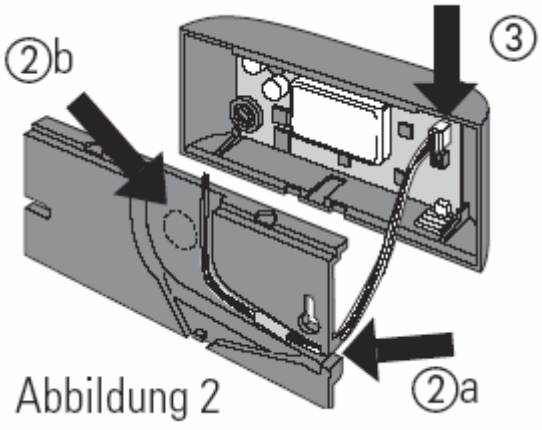
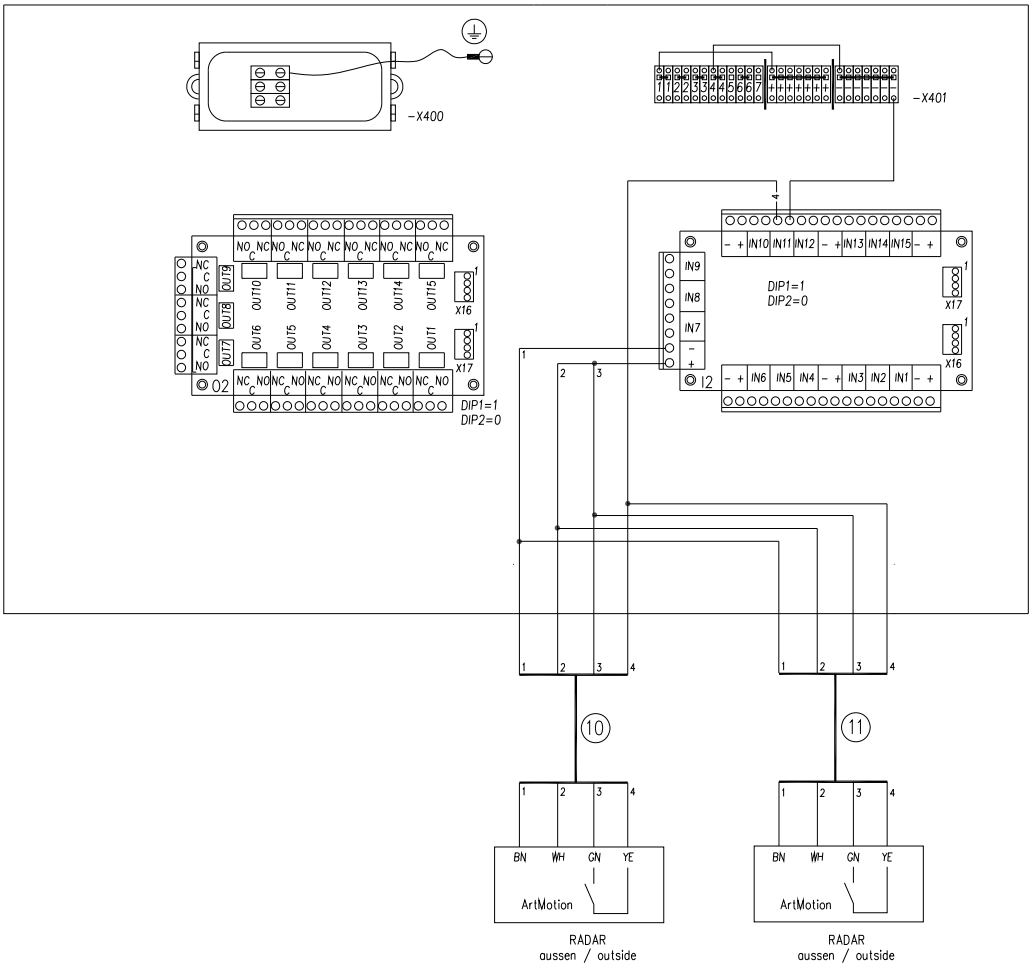
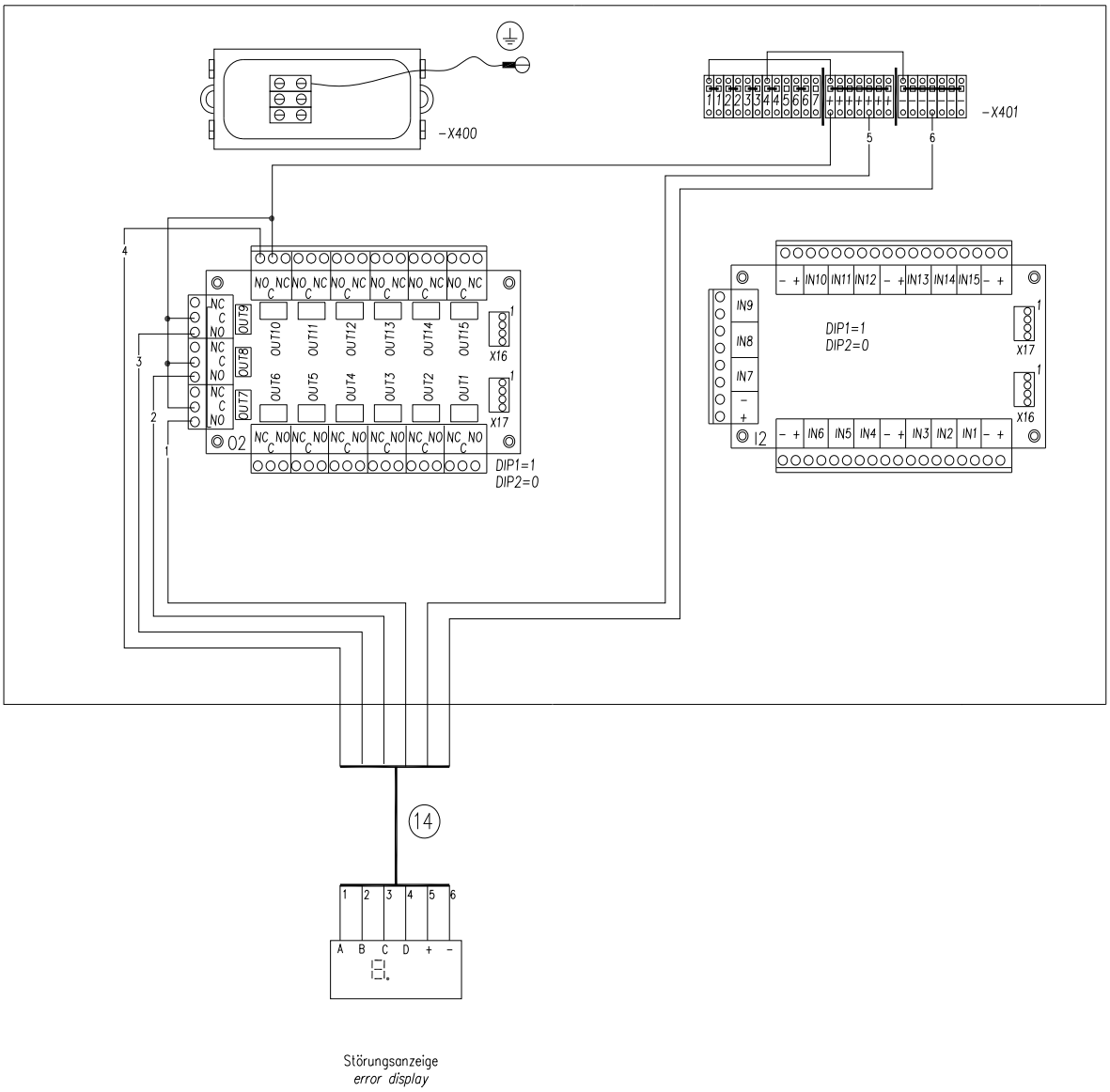


Abbildung 2

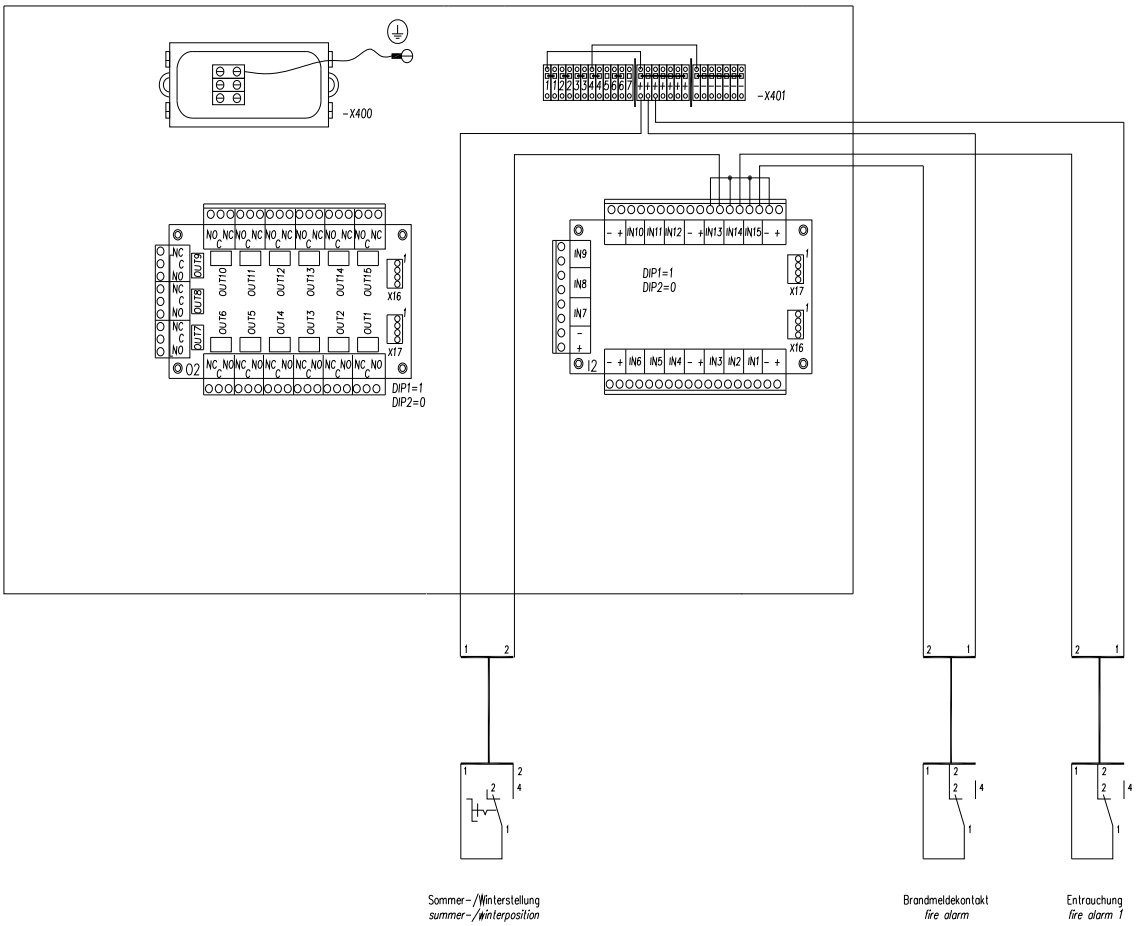

-X400
-X401
DIP1=1
DIP2=0
DIP1=1
DIP2=0
10
11
BN
WH
GN
YE
ArtMotion
RADAR
aussen / outside
BN
WH
GN
YE
ArtMotion
RADAR
aussen / outside

6.15 Connection of fault indicator



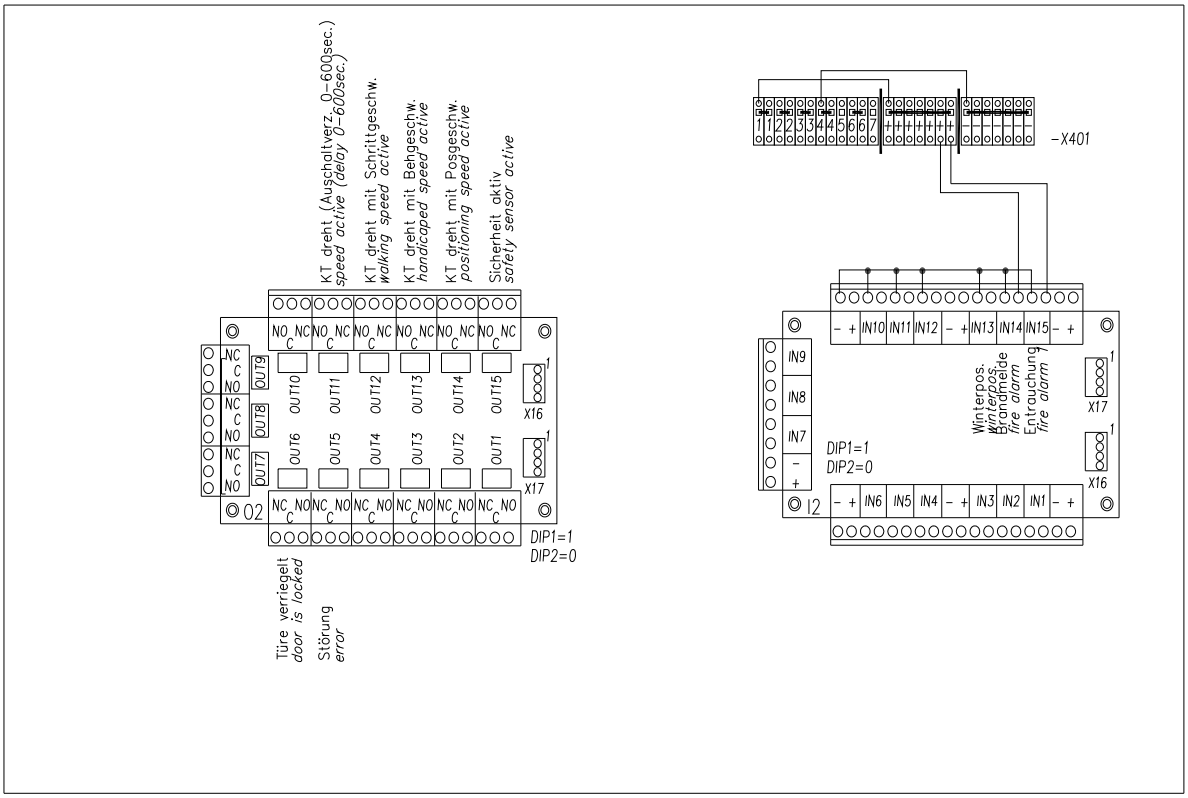
6.16 Special inputs

These functions are OPTIONALLY available.



6.17 Special outputs

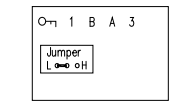
These functions are OPTIONALLY available.



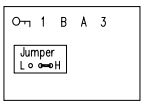
7. Commissioning

7.1 Basic requirements

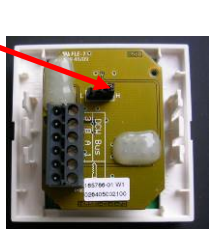
- The door system is completely mounted.
- The power supply is switched **off**.
- The cover for the ceiling has not been mounted.
- All separately supplied components are connected in accordance with the installation instructions and the wiring diagram.
- The X-position sensor (including the corresponding cams for the X-position) has been adjusted.
- (Clearance between sensor and cam = approx. 3 - 4 mm) When the system is in starting position (locked position), the cam must be opposite the sensor.
- Activate the pushbutton for the Emergency Stop function.
- The door can now be moved by hand.
- Move door system manually to summer configuration.
- Check DIP-switches of DCW-components for proper setting.



Elektron. Programmschalter KT
electronic switch KT



Elektron. Programmschalter ES200
electronic switch ES200



DIP switches 1 + 2 of the modules have to be adjusted as follows:

Input module/output module for revolving components (1 + 2 to OFF) at -X101 control unit

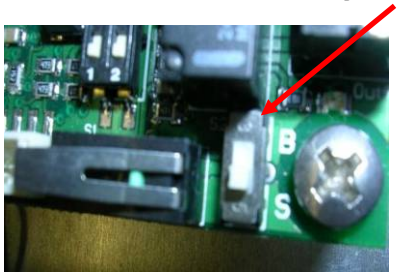
1	2	DCW module
0	0	

Input module/output module for static components (1 to ON, 2 to OFF) at -X401 control unit

1	2	DCW module
1	0	

DIP switch "control of locking device" on -X101 control unit

The DIP switch has to be adjusted to "S".



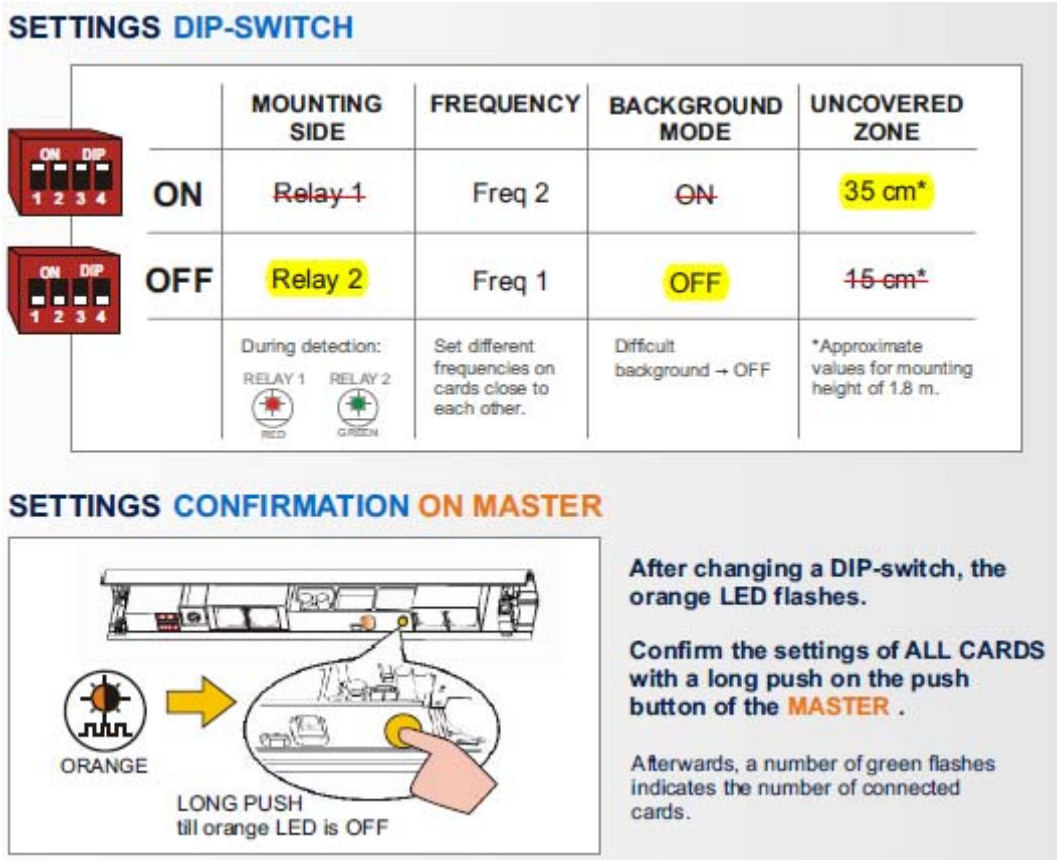
- Switch on power supply.
- For systems with OPTIONAL sliding door, always perform commissioning of sliding door first (see "commissioning instructions for sliding door")
- Measure 24 V DC voltage (X401: +/-) and adjust if required (at -G1 potentiometer)

No electric discharge lamps are installed in the close range of the door system ☐ OK ☐ not OK
Check control voltage, approx. 24.5 V DC at X401 ☐ OK ☐ not OK

7.2 Adjustment of infrared sensors

Sensors at wings (4Safe)

Designation	Remote control	Value
Immunity		1
Output configuration		4
Detection hold time		3

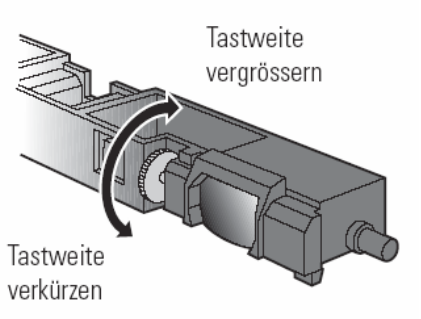


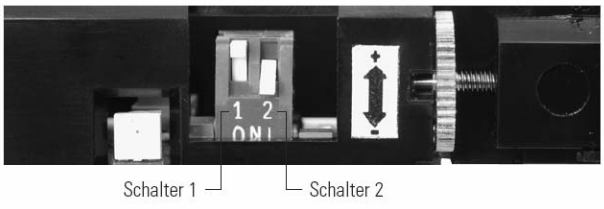
Sensors at wings, AIR16 (OPTION)

Adjustment of internal DIP-switches: 1 = OFF 2 = ON

Adjust the detection range to approx. 500 mm above floor with the aid of the adjustment screw.

Preferably select the 7th notch (inclination).





Canopy-integrated sensors, IRIS ON

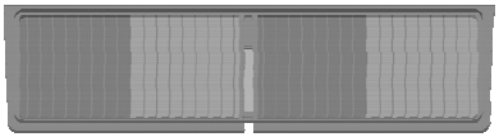
The inputs/outputs have to be connected as shown in the connection diagrams in case no canopy-integrated sensors are connected or if these sensors are de-installed at a later point of time. This goes for inputs and outputs 1 and 2 on the -X401 control unit. In case no sensors are connected, set jumpers at the respective inputs/outputs.

Designation	Remote control	Value
Output configuration		1
Maximum duration of presence detection		1
Sensitivity (presence detection)		1 - 2 (1 = DIN 18650)
Monitoring mode		1
Number of infrared light curtains		1
Installation configuration (height/frequency)		1
Redirectioning of output for safety sensor	F1	0

Please note:

Adjust the detection range of the sensor so that users cannot put their hands behind the safety contact strips at the post.

Use the 1 m prism as displayed!



7.3 Radar motion detectors
ArtMotion

4 Start-up

Start-up is carried out in three steps: **Mounting, Adjusting, Testing!**

During startup, make sure that no moving objects are in or enter the microwave field of the ArtMotion!
Objects such as plants, flags, fans etc. must **not** protrude into the microwave field.

4.1 Commencing startup

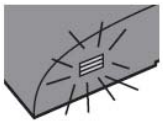


Figure 6

Apply power to the ArtMotion and remove the top part of the housing in accordance with chapter 2 «Opening the housing» if it is already mounted (Figure 6). The ArtMotion is functioning correctly if the light flashes briefly once.

4.2 Setting switches (DIP switches)

Please note that these switches (DIP switches) must be set before the microwave field is adjusted.

Setting the direction recognition «**Switch 1**»

Setting the crossing traffic masking «**Switch 2**»

4.3 Switch setting (direction recognition)

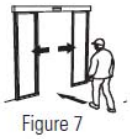


Figure 7

Switch 1: Direction recognition «**On**»

«On»

Direction recognition is switched on.*

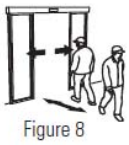


Figure 8

Switch 1: Direction recognition «**Off**»

«Off»

Direction recognition is switched off.

4.4 Switch setting (crossing traffic recognition)

Figure 9

Switch 2: Crossing traffic masking «**Off**»

«Off»

Crossing traffic masking is switched off.*

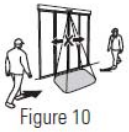


Figure 10

Switch 2: Crossing traffic masking «**On**»

«On»

Crossing traffic masking is switched on.

4.5 Detection Field

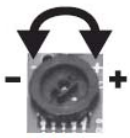


Figure 11

Turn the thumb wheel in the «+»direction:
⇨ Increase of microwave field size!
Turn the thumb wheel in the «–» direction:
⇨ Decrease of field size!

4.6 Checking and testing of the microwave field

Microwave field set to «large» (value 10)

Microwave field set to «small» (value 0)*

Figure 12

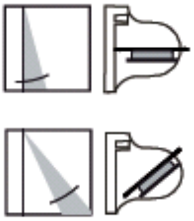
Figure 13

Walk around the detection field and check its extent. Reduce the size of the microwave field if the door reverses.

Easy Motion Stereo

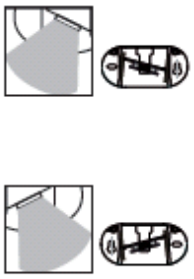
WN 058107 45532 12/11

Adjusting the inclination angle



The inclination angle can be adjusted from 0° to 90° in 10° increments using the integral locking discs. Increments of 5° are possible by inserting the PCB in the locking discs. Default setting = 15°.

Setting for an inclined detection area



The detection field can be tilted 15° using the supplied locking discs for an inclined detection area (e.g., in revolving doors).

1. Remove standard locking discs.
2. Insert supplied locking discs for an inclined detection area.
3. Set desired detection area.

Detection area size

Change the size of the detection area using the potentiometer.

Detection capabilities

Setting the detection capabilities takes place with the DIP switch. The settings are checked by walking in the sensing area.

Default setting

DIP switch 1-4 down (OFF).

Direction detection

With direction detection, the sensor can be set to trigger by forward movements only or by forward and backward movements.


Without forwards or backwards direction detection, no detection


With forward direction,detection (towards the sensor)

Cross-traffic optimization

Cross-traffic optimization allows passers-by to be partially suppressed. The detection field is reduced when this option is set.


Little cross-traffic, door opens with cross-traffic


A lot of cross-traffic, door remains closed

Immunity

Immunity allows various external interferences, e.g., rain, vibrations and reflections to be minimized.


Low immunity


High immunity

Relay contact switching mode

Relay contact when detection is active (NO)

Relay contact when detection is passive (NC)

LED status display

Color indicator	Status
R Red flashing	Initialization after switching on
R Red	On: Detection active Off: No detection

Commissioning

Remove all objects from the door area that do not normally belong there.
Switch on the device and wait 10 s (red LED flashes).
Test the settings by walking near the sensing area.
The red LED lights up when an object is detected.

Revolving door applications

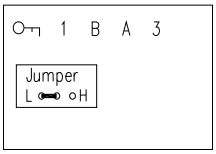
The sensor can be used on revolving doors.
Mount the sensor approx. 20 - 30 cm above the door edge to the sides of the door hinges (hinge side) and activate cross-traffic optimization. The closing door panels are not detected as a result.

Troubleshooting

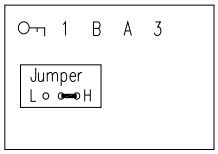
Fault	Corrective action
Door is detected.	Reduce the detection area size. Adjust the inclination angle.
LED not lit up.	No power supply. Device defective.
Sensor responds to very slight interference such as rain, vibration or reflections or the door opens for no apparent reason.	Reduce the detection area size. Switch on cross-traffic optimization. Switch on immunity.

7.4 DCW program switch

In order to allocate the program switch to different addresses, set jumpers as follows:

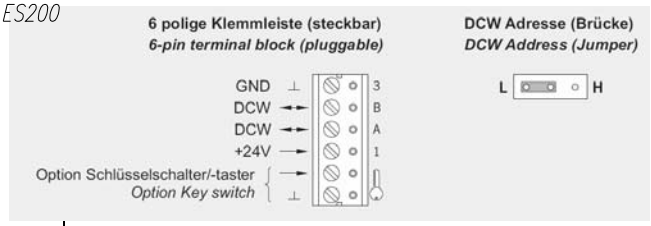


Elektron. Programmschalter KT
electronic switch KT



Elektron. Programmschalter ES200
electronic switch ES200

In case no key switch is installed, bridge inputs with key symbol!



⚠ Work on electrical equipment may only be performed by properly qualified staff (electricians).
Do not work on electrical connections while the system is connected to power supply as this may cause short-circuits.

Connect system as shown in the connection diagram.
Connect 24 V DC power supply.

Whenever two DCW program switches are connected to a single operator, the jumpers have to be set to different positions (H or L)

Operating instructions

This program switch is only suitable for operators with DCW bus.
This program switch is for products out of our System 55 product range. It fits into every standard box for flush- and surface-mounting.
An individually adjustable code is required to activate the program switch. You may also protect the code with an additional key switch.

Changing the operation mode

1st Enable the program switch by entering the code.
Original setting = 1 - 1 - 1 - 1
The last four figures are always analysed as code. In case you have entered the wrong code, simply start again and type in the correct code.
- The program switch is enabled as soon as the LED for the current operating code blinks.

2nd Adjust the desired operation mode with the aid of the keys.
- The LED for the selected operation mode blinks.

One minute after the last key has been activated, the program switch is de-activated automatically.

Changing the code

1st Enable the program switch.
2nd Press and hold keys 1 and 2 simultaneously for approx. 3 seconds.
- The LEDs for keys **1** to **4** light up.

3rd Enter the new four-digit code.
The code always consists of four figures from 1 to 4. You may enter the figures in any order and even use them twice.
- One LED will go out for each figure you have entered.
- The new code is activated as soon as all four digits of the code have been entered (all LEDs are out).
- The system now indicates the current operation mode.

Unlocking via key switch

In case you want to unlock the system only via the key switch, you have to change the code to **0 - 0 - 0 - 0.**
1st Enable the program switch via the key switch.
2nd Press and hold key 1 and 2 simultaneously for approx. 6 seconds.
- After three seconds, the LEDs **1** to **4** light up and go out after six seconds.
- The system now indicates the current operation mode.
- The code has successfully been adjusted to **0 - 0 - 0 - 0** and the system can only be unlocked via key switch.

If you want to change the code, the system has to be unlocked via the key switch. Please proceed as explained under **"changing the code"**.

Please note:

Whenever the program switch has been enabled via the key switch, please note that:
- The program switch will automatically be disabled one minute after the last key has been activated.
- The system always has to be locked via key switch.

What to do if you have forgotten the code

1st Switch off power supply.
2nd Press and hold key 1 and 3 simultaneously.
3rd Switch on power supply.
4th Release the keys.
- The code is now adjusted to **1 - 1 - 1 - 1**.

- The program switch is adjusted to OFF.

Power failure
Following a power failure, the program switch is adjusted to the operation mode that has been activated before the power failure.

Malfunction
The red LED at the program switch indicates a malfunction. The number of blinks is used as error code.
For example: 1 blink = error 1,
2 blinks = error 2 etc.
After a short break, the blink code starts anew.

8. Adjustment at operator

Use the user interface at the operator to perform the following tasks:

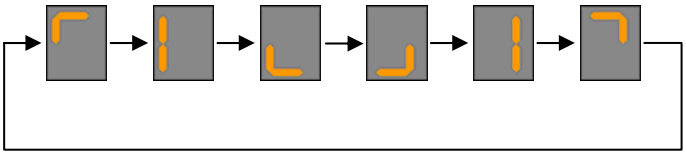
- Configuration of control unit and reading out the error log
- Maintenance
- System reset to original settings
- Starting a learning cycle
- Reset of maintenance parameters
- Indication of X-position (= locked position)
- Indication of warning messages

General information

- Parameter symbols: they do not blink, with decimal point
- Number of current position: they blink, without decimal point
- Current value, error symbol: they do not blink, without decimal point
- Initialisation, X-position: all segments light up

Displaying the learning cycle and the positioning cycle

During the learning cycle and during the positioning cycle, the display shows a rotating circle.



Standard display

Following the learning cycle, the positioning cycle, the initialisation, after you have quit the menu or if no key has been activated for 20 sec., the system automatically switches to standard display.

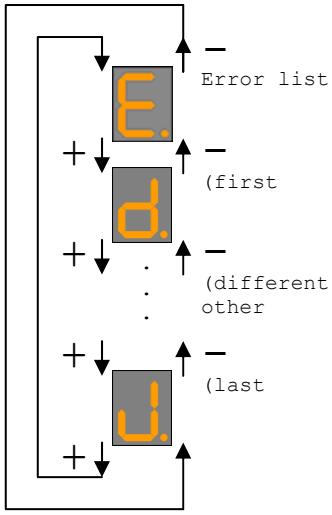
Situation	Display
There is at least one error.	Error symbol
There is no error, but at least one warning.	Warning symbol(s)
There is no error and no warning message.	No symbol, a dot (not blinking). 

Use "Select" key to get to parameter selection.

Parameter selection

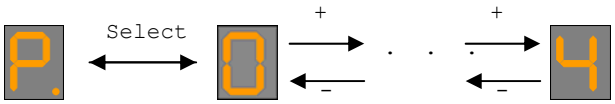
With the aid of the "+" and "-" key, you may select the different symbols for the individual parameters. The order corresponds to the order of the parameter list.
If there is an unacknowledged error, a blinking "E" will appear automatically. Before adjusting any parameter, press "Select" to have the current error displayed. Press "Select" again to switch to parameter selection.
Once you have left the parameter setting, the parameter selection displays the symbol of the last parameter that has been adjusted.
In case there is no error message on hand, the system automatically switches to standard display after no key has been activated for 20 seconds.

8.1 Standard menu



Adjustment of single-digit parameters

As soon as the symbol of the desired parameter is displayed, you may have its current value indicated by pressing the "Select" key.
Use the "+" and the "-" keys to change the value within the predetermined limits.
Use "Select" key to get back to parameter selection. The system returns to the standard display as soon as no key has been activated for 20 seconds. The new parameter value will be stored in both cases.



Some parameters may be displayed but cannot be adjusted, see parametrisation list.

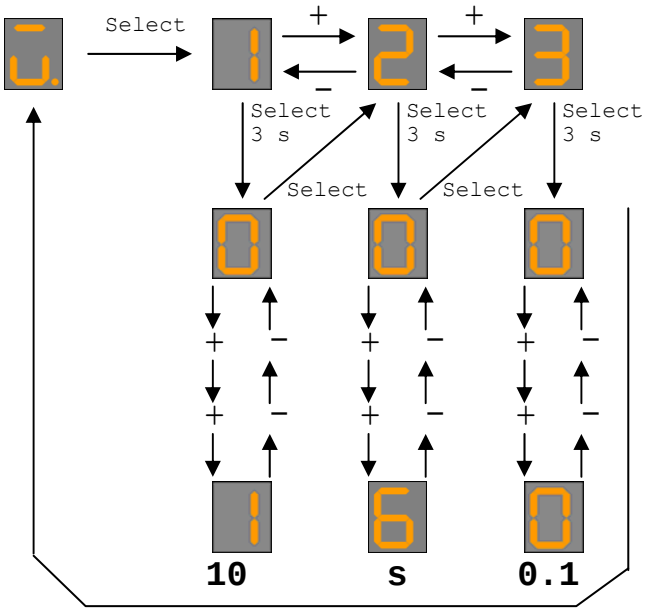
Adjustment of multi-digit parameters

As soon as the symbol of the desired parameter is displayed, you may have its current value indicated (digit by digit) by pressing the Select key.

You have to press the "Select" key twice for each digit: The system indicates the value of the current digit on the first activation of the "Select" key. The value is adjustable via the "+" and the "-" key. As soon as you have activated the "Select" key the second time or after 3 seconds, the value of the current digit is indicated. Use the "+" and the "-" key to change the value within the predetermined limits.

The system saves the new parameter setting as soon as you have confirmed the last digit with the aid of the "Select" key. Then the system returns to parameter selection. If no key has been activated for 20 seconds, the system automatically returns to the standard display; in this case the system does not save the new parameter value.

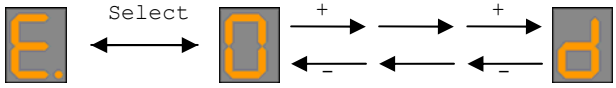
8.2 Adjustment of multi-digit parameters such as SlowStop time of door panel sensor



Some parameters may only be displayed but cannot be changed.

Reading-out the error log

While the display shows the "error" symbol, press "Select" key to have the symbol for the current error indicated. Use the"+" and the "-" key to display all errors in the error list.
Press "Select" key to return to parameter selection.



The malfunction table explains the meaning of the different error symbols.
When no key has been activated for 20 seconds, the system automatically switches to the standard display.

Display in the event of a malfunction

If the system detects a malfunction, an  blinks on the standard display.
Press "Select" key to get to the error log.

Maintenance parameter selection

(Maintenance parameters the control unit updates automatically)

Parameter designation, text on Palm	Symbol	Description	Unit	Range
?		Number of revolutions	1000	5-digit, i . e. 100 million
?		Number of electric brake activations	1	8-digit, i . e. 100 million

Whenever you press and hold "+" and "-" keys simultaneously for three seconds while you are in the parameter selection, a minus will appear; as soon as you have released the keys, the display shows the symbol of the first maintenance parameter.
Select the maintenance parameter with the aid of the "+" and the "-" key. Press the "Select" key several times in a row in order to have the respective value indicated digit by digit.

Please note that you have to activate the "Select" key twice for each digit: The system indicates the value of the current digit on the first activation of the "Select" key. The value is adjustable via the "+" and the "-" key. As soon as you have activated the "Select" key the second time or after 3 seconds, the value of the current digit is indicated. When you have left the last digit, you will get back to the selection of the maintenance parameters.
Whenever no key has been activated for 20 seconds, the current symbol disappears and is replaced by a dot. You get back to the selection of the maintenance parameters by

pressing the "Select" key within 20 seconds. If you do not press the key again within the above-mentioned period of time, you will automatically get back to the parameter selection.

Reset of maintenance parameters

In order to reset all maintenance parameters, press and hold "+" and "Select" key simultaneously for three seconds while the system is in parameter selection mode. As soon as all parameters have been reset, the display indicates a  , which disappears as soon as you release one of the two keys.

Parameters

Parameter designation	Symbol	Description	Unit	Range	Original setting	Palm	Central system	Learning cycle	Original	Wiring
Current error status		Error list				-	-	-	-	-
Door diameter		Door diameter	mm	2000 .. 6500	**(system learns diameter)**	-	-	C	-	-
#el. locking devices		Electromechanical bolt locking device no = 0, yes = 1		0 .. 1	**0**	U	U	-	C	-
Hold after stop		Time until the el. brake is released after an Emergency Stop 0 = brake never released, 1 - 9 = after... sec.	sec	(0 .. 9) sec	**1**	U	U	-	C	-
#X-Pos Auto 1 - 2		Number of starting positions in Automatic 1 or 2		2 .. 5	**2**	U	U	-	C	-
SlowStop canopy		SlowStop time of canopy-integrated sensors	sec	(0 .. 15) sec 16 = ∞	**16**	U	U	-	C	-
SlowStop wing		SlowStop time of wing sensor	0.1 sec	(0 .. 15.9) sec 16.0 = ∞	**16.0**	U	U	-	C	-
Hold after stop		Time until the door starts after a safety stop	0.1 sec	(0 .. 9.9) sec	**1.0**	U	U	-	C	-
Sec. area stop		Detection range of canopy-integrated sensor in security area for SlowStop	mm	(d * (pi/3) .. 500) mm	**700**	U	U	-	C	-
Summer configuration		Starting-positions: 0°/180°			**(system reads X-positions)**	-	-	-	-	U
Starting position Summer		Starting-positions: 90°/270° [0], 60°/240° [1]		0 .. 1	**0**	U	U	-	C	-
PosV after safety stop		Time system operates in positioning speed after leaving the stationary position following a safety stop	0.1 sec	(0.0 .. 2.9) sec	**1.0**	U	U	-	C	-
A/M lighting		Automatic/manual lighting control		0 ... 1	**0 (auto)**	U	U	-	C	-
FUT warm air curtain		Follow-up time of warm air curtain	sec	0 ... 600	**10**	U	U	-	C	-

Caption:
U = adjustable value
C = resettable value
- = non-adjustable value

8.4 Parameter adjustment of frequency converter

Frequency converter codes

See appendix or order for specified parameter settings.
Adjustable parameters:

CODE No.:	**CODE designation**
C0007	Fixed configuration for digital inputs
C0010	Minimum output frequency
C0011	Maximum output frequency
C0012	**Nominal run-up time**
C0013	Nominal elapsed time
C0014	Operation mode (U/f-characteristic)
C0015	U/f-rated frequency
C0016	**Increase in rpm**
C0018	Switching frequency
C0019	Reaction point of Auto-DCB
C0021	Slip compensation
C0022	Imax-limit (motor)
C0023	Imax-limit (generator)
C0035	DCB selection
C0036	Voltage/DCB current
C0037	**JOG 1 (positioning speed)**
C0038	**JOG 2 (low speed for disabled users)**
C0039	**JOG 3 (walking speed)**
C0084	Stator resistance of motor
C0087	Rated speed of motor
C0088	Rated current of motor
C0089	Rated frequency of motor
C0090	Rated voltage of motor
C0091	Motor-cosφ
C0092	Stator inductance of motor
C0106	Hold-time of auto-DCB
C0107	Hold-time of external Auto-DCB
C0119	Configuration of PTC input/...

8.5 Operating status indicators

During operation, two LEDs indicate the operation status of the motion control (no keypad has been connected).

Green LED	Red LED	Operation status
On	Off	Motion control ready for operation.
On	On	The power supply is switched on and the automatic starting function is disabled.
Blinks	Off	Motion control disabled
Off	Blinks in intervals of 1 second	Malfunction, control in C0161
Off	Blinks in intervals of 0.4 second	Switch off due to low voltage
Blinks rapidly	Off	Identification of motor parameter in progress

8.6 Changing the code values

1st Connect keypad.
2nd Wait for 5 sec.
3rd Push (1←→2) key.
4th Push ↑ or ↓ until a 2 (parameter set 2) appears.
5th Push → twice until **USER** appears on the display.
6th Push ↑ or ↓ until **ALL** appears on the display.
7th Push (1←→2) key.
8th Push → until **Code** appears on the display.
9th Use ↑ or ↓ to change the code. (e. g. 0039 (blinks))
10th Push → key. Now the value blinks. (e. g. 35.00 Hz)
11th Change value with ↑ or ↓.
12th Push ← twice.

Please note: CODES No. 7, 14 and 119 have to be confirmed with the ENTER key.

8.78 Changing the parameter set

1st Press and hold (1←→2) key until a 2 appears on the display.
2nd Use ← or → to select parameter set **PS**.
3rd Use ↑ or ↓ to select the parameter set you want to change.
4th Press and hold (1←→2) key until a 1 appears on the display.

8.8 Transferring parameter sets

When transferring parameter sets, make sure that every frequency converter has its own keypad. Transferring the wrong parameter sets may cause serious malfunctions.

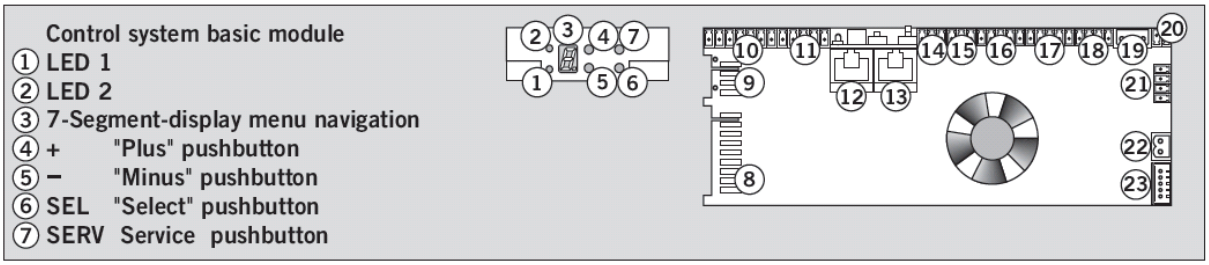
1st Press and hold 1←→2 key until a 2 appears on the display.
2nd Use ← or → → to get to the menu.
3rd Use ↑ to select ALL (list of all codes).
4th Press and hold 1←→2 key until a 1 appears on the display.
5th Disable the motion control by activating the STOP key. [■] and [■] appears on the display.
6th Adjust Code C0002 as explained above.
7th Enter **10** to transfer the parameter sets from the keypad onto the motion control.
Enter **20** if you want to transfer the values from the motion control onto the keypad.
8th ENTER Press ENTER key to start the data transfer. LOAD or SAVE appears on the display. (Do not proceed until LOAD or SAVE have disappeared.)
9th Press and hold 1←→2 key until a 2 appears on the display.
10th Use ← or → to get to the menu.
11th Select ↓ USER (list of preferred codes).
12th Press and hold 1←→2 key until a 1 appears on the display.
13th Enable the motion control by activating the RUN key.

8.9 Standard frequency converter adjustment

plant :

CODE		settings	
Nr.:	CODE designation	PAR 1	PAR 2
C0007	Fixed configuration for digital inputs	1	1
C0010	Minimum output frequency	0 Hz	0 Hz
C0011	Maximum output frequency	20 Hz	5,96 Hz
C0012	Nominal run-up time	0,0 sec.	2,8 sec.
C0013	Nominal elapsed time	0 sec.	1,8 sec.
C0014	Operation mode (U/f-characteristic)	2	2
C0015	U/f-rated frequency	100 Hz	100 Hz
C0016	Increase in rpm	0 %	0 %
C0018	Switching frequency	2	2
C0019	Reaction point of Auto-DCB	20 Hz	1,0 Hz
C0021	Slip compensation	5,83 %	5,83 %
C0022	Imax-limit (motor)	150 %	75 %
C0023	Imax-limit (generator)	150 %	150 %
C0035	DCB selection	0	0
C0036	Voltage/DCB current	50 %	0 %
C0037	JOG 1 (positioning speed)	0 Hz	12,25 Hz
C0038	JOG 2 (low speed for disabled users)	0 Hz	18,38 Hz
C0039	JOG 3 (walking speed)	0 Hz	45,96 Hz
C0084	Stator resistance of motor	60 Ohm	60 Ohm
C0087	Rated speed of motor	2825 rpm/min	2825 rpm/min
C0088	Rated current of motor	3 A	3 A
C0089	Rated frequency of motor	100 Hz	100 Hz
C0090	Rated voltage of motor	230 VAC	230 VAC
C0091	Motor-cosφ	0,7	0,7
C0092	Stator inductance of motor	70 mH	70 mH
C0106	Hold-time of auto-DCB	1 sec.	0 sec.
C0107	Hold-time of external Auto-DCB	999 sec.	999 sec.
C0119	Configuration of PTC input/...	3	3

9. Commissioning of sliding door (optional)



Original settings and learning cycle

In the course of the first commissioning, the system should be reset to original settings.
A reset to original settings is normally only required if various settings have been changed and the door no longer works properly.
If you reset the system to original settings, the adjusted country mode P = 0 remains unchanged:

- Activate pushbutton for Emergency Stop function
- Move revolving door to summer configuration.
- Set KT program switch to "summer configuration".
- The infrared sensors must be bridged (terminals 21 - 23, 26 - 28 at ES 200) or de-activated (LEDs 1 + 2 are on).
- Disconnect the ES 200 basic module from power supply (if the system is equipped with a rechargeable battery pack, it has to be disconnected from the control unit as well).
- Program switch for sliding door is in "OFF" position (check).
- Open the door panels by 50 % (unlock the door manually, if required)
- Press and hold service key while plugging in the mains plug.
- Press and hold service key until the 7-segment display starts rotating.
- The door starts a closing cycle. (If the door opens, activate the "minus key (-)" on the control unit ones in order to change the rotation direction of the motor.)

The learning cycle starts from “closed” position. First the door opens at high speed (amongst others to determine the door weight), then it closes (amongst others to determine the keep-closed force).
The learning cycle has been completed as soon as the 7-segment display stops rotating.

In case the toothed belt derails several times during the learning cycle, re-tension the belt and reset the system to original settings.

After the system has been reset to original settings, all settings that vary from the original settings (such as motor type, door type) have to be adjusted manually via the keys on the control unit or with the aid of a PDA (parametrisation).

- With the aid of the red "SERV key" you may trigger a Night-/Bank pulse, in order to test the sliding door and the infrared sensors.
- Re-activate bridged infrared safety sensors (terminal 21 - 23; 26 - 28 at ES 200) as required and check for proper functioning.

Adjustment of sliding door parameters

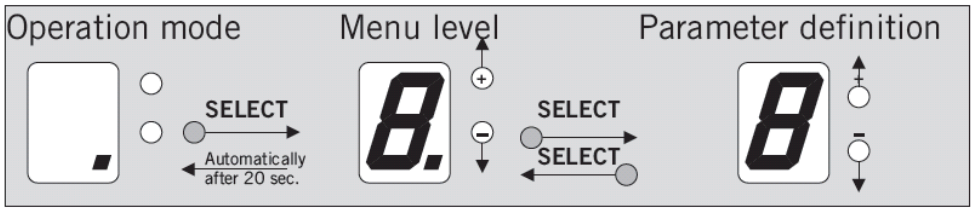
Menu configuration description

Display in operation mode
Basic setting of the display by error-free operation of the drive unit

Basic setting of the display by faulty operation of the drive unit (display is flashing)

Parameter Display
Menu to choose the parameter that has to be checked or changed

Value Display
Readout of the value that has been chosen via the display "parameter before.



Meaning of display codes	Display codes
Error	0 - F
Program mode country specific	0
Locking in Program switch settings	0
Locking type	0 - 4
Battery operation	0
Night-bank-hold open time	0 - F
Hold open time	0 - F
Motor type	0, 1
Opening speed	9 - d
Closing speed	0 - 8
Settings locked	0, 1

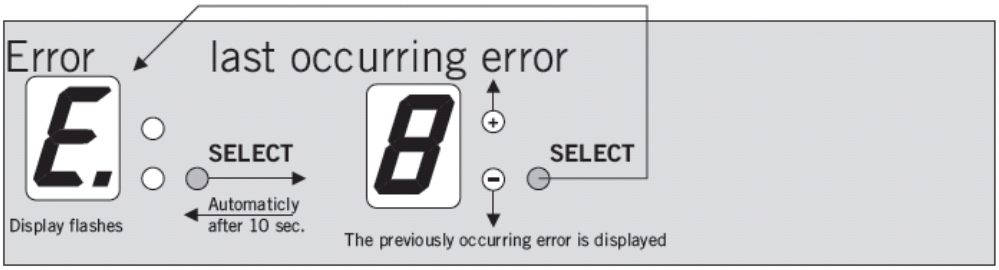
Basic setting for systems with a diameter of 4.2 m

Parameter name Palm/ASP	Setting	Parameter name on display	Setting
Motor type	63 x 55/30 V	b	1
Locking device	bistable	L	1
Opening width in Exit Only	full	-	-
Number of door panels	For double-panel door systems	-	-
Program mode	Standard	P	0
Acceleration OPEN	7		
Opening speed	40 cm/s	O	6
Deceleration ramp OPEN	9		
Creep distance OPEN	30 cm		
Creep speed OPEN	9cm/s		
Force limitation OPEN	100 N		
PARTIAL OPEN	80 cm		
PARTIAL OPEN/PDA	No		
Hold-open time	0 s	d	0
Acceleration CLOSE	7		
Closing speed	30 cm/s	C	4
Deceleration ramp CLOSE	6		
Creep distance CLOSE	10 cm		
Creep speed CLOSE	6 cm/s		
Force limitation CLOSE	150		
Latching action CLOSE	6		
Hold-open time NB	0 s	o	0
Delayed opening	0 s		
Obstruction time	150 ms		
		r	0
		A	0

Original settings
Se parametrisation instructions of ES 200 control unit for further adjustments and ASP for ES 200 instructions for PDA adjustment.

Query of error messages

Only the current error can be acknowledged
(The errors must be rectified irrespective of acknowledgement)
Up to 10 errors can be stored (irrespective of type)



Meaning of display codes

0	No error in memory
1	Obstruction
2	Lock
3	Program switch
4	Light barrier
5	Incremental encoder
6	Battery
7	System
8	EMERGENCY OFF active
9	Learning cycle parameter
A	Motor fault
c	Force test
d	Motor overcurrent
F	DCW
H	FST
L	Relay test fault

Additional errors can be displayed via organiser

10. Commissioning of revolving door

Starting the learning cycle

During the learning cycle, the door learns the diameter of the door. The system therefore counts the incremental encoder pulses the system requires to perform a complete revolution. A full revolution corresponds to the interval between two starting point signals.

Requirements

The system has not reached "locked" position (the door system is adjusted as indicated on page 13).
There is no malfunction of the incremental encoder, the X-position or the frequency converter.
For systems with optional sliding door, always perform commissioning of sliding door first.

Procedure

The revolving door moves at positioning speed until the door has reached its "locked" position for the second time. In case a locking device has been configured, the system will demand a test. The display shows a rotating circle.
The electric brake is switched off. The motor contactor is switched on.

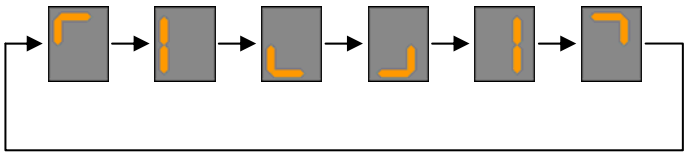
Approach

- The pushbutton for the Emergency Stop function has been activated.
- The control unit is switched on.
- The program switch for the revolving door is adjusted to Automatic 1.
- The sliding door panels and the showcase doors are closed.
- The frequency converter and the control unit have been parametrised.
- The infrared sensors have been configured or are bridged as follows:
  -X101: 23 - 24; -X101: 25 - 26; -X101: 27 - 28; -X101: 29 - 30
  -X401: OUT 1 (RD) -IN 1 (GY); -X401: OUT 2 (RD) -IN 2 (GY)

  In this case the cables of the corresponding sensors must not be connected to the terminal.
- Check if all inputs are properly connected (see "The following inputs are required to perform a successful learning cycle.").
- The door system is in summer position.
- Press and hold "Select" key for 4 seconds.
- Then unlatch the pushbutton for the Emergency Stop function.
- The system starts the learning cycle.

Displaying the learning cycle and the positioning cycle

During the learning cycle and during the positioning cycle, the display shows a rotating circle.



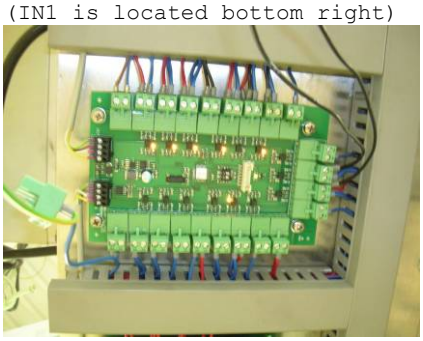
- The door system revolves at positioning speed
- The door performs at least one full revolution
- After the door has completed the cycle it resumes function in standard mode
- All functions have to be checked with the aid of the original operating instructions or the attached table.
- Make sure that the control unit has learned the correct diameter during the learning cycle. Check with parameter  .

The following inputs (marked green) are required to perform a successful learning cycle.

CPU to –X101

Input module "I1" to –X101
(IN1 is located bottom right)

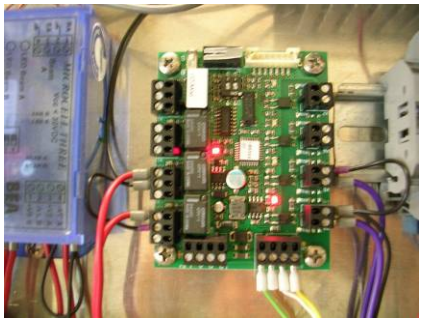
Input module "I2" to –X401
(IN1 is located bottom right)



Control for locking device (optional)

Input	Remark input module I1	Function
IN 1	Presence sensor door wing/top of showcase 1 (NC)	SlowStop
IN 2	Presence sensor door wing/top of showcase 2 (NC)	SlowStop
IN 3	Pre-detection sensor at night shield 1 (NC)	SlowStop
IN 4	Pre-detection sensor at night shield 2 (NC)	SlowStop
IN 5	Light barrier 1 (NC)	Stop
IN 6	Light barrier 2 (NC)	Stop
IN 7	Safety contact strips, thermo, showcase (NC)	Stop
IN 8	Sliding door is locked	Stop
IN 9	Lighting on (switch on/off, external)	To switch on lighting via radio module; Adjustment via system configuration
IN 10	Low battery: USV emergency power supply unit	System revolves to summer configuration when adjusted to Auto 1/2
IN 11	Power failure of USV emergency power supply unit	System revolves to summer configuration when adjusted to Auto 1/2
IN 12	Malfunction of sliding door	Via program switch for sliding door, red LED is on

Input	Remark input module I2	Function
IN 1	Canopy sensor, inside (NC)	SlowStop
IN 2	Canopy sensor, outside (NC)	SlowStop
IN 3	Safety contact strip, inside (NC)	Stop
IN 4	Safety contact strip, outside (NC)	Stop
IN 5	PGS OFF/locked	Only if program switch is connected
IN 6	PGS Auto 1	Only if program switch is connected
IN 7	PGS Auto 2	Only if program switch is connected
IN 8	PGS Summer	Only if program switch is connected
IN 9	Night-/Bank (NO)	Activator for sliding door (to open the door)
IN 10	Motion detector, inside (NO)	Activator for revolving/sliding door (to open the door)
IN 11	Motion detector, outside (NO)	Activator for revolving/sliding door (to open the door)
IN 12	Disabled access pushbutton (NO)	Activator to reduce the door speed for disabled users
IN 13	Winter (NO)	Switch to stop the revolving door in winter/summer starting position (program switch adjusted to AUTO 1)
IN 14	Fire detector input (NC)	Switch for central fire detection system
IN 15	Smoke extraction (NC)	Switch for central fire detection system



Input	Remark	Function
IN 1	Limit switch for locking device 1 is unlocked	(NO contact) locking device is unlocked
IN 2	Limit switch for locking device 1 is locked	(NO contact) locking device is locked
IN 3	Door panel is closed	Stop
OUT 1	(Relay) motor of locking device	Motor of locking device 1 unlocked
OUT 2	(Relay) motor of locking device	Motor of locking device 1 locked
OUT 3	Wind brake control	Wind brake control
OUT 4	Stop	

11. Functional testing

All functions of the door system must be checked for proper functioning.

Test the safety sensors with the aid of the below table (see point 14):

#	Sensor	Activation area	Activation period	Behaviour on activation	Test	Allocation
1	Canopy presence sensor outside/inside	(-60° .. -500 mm) up to +60° (until the night shield has completely entered the drum wall)	Permanently; not during learning and positioning cycle	Safety SlowStop	After system was in summer configu-ation	Rigid, Slow stop
2	Safety contact strip at internal/external door post	500 mm in front of safety contact strip (until the night shield has completely entered the drum wall)	Permanently; not during learning cycle	Safety Stop	After system was in summer configu-ration	Rigid, stop
3 4 6	Horizontal safety contact strip at bottom of door wing 1/2 Vertical safety contact strip at side of night shield 1/2 Limit switch for deflection device of showcase 1/2	Any door position	Always	Safety Stop	Before the door leaves stationary position	Revolving; stop
5	Pushbutton for Emergency Stop function at external door post	Any door position	Always	Error stop	Watchdog test	-
7	Horizontal light barrier at bottom of door wing 1/2	Any door position	Permanently; not during learning cycle	Safety Stop	every time the door leaves stationary position	Revolving; stop (light barrier)
8 9	Presence sensor at top of door wing/showcase 1/2 Pre-detection sensor 1/2 at revolving lower ceiling	Any door position	Permanently; not during learning cycle	Safety SlowStop	Before the door leaves stationary position	Revolving; SlowStop
1 0	Safety sensors for sliding door	Main closing edge of sliding door	Depending on function of ES 200	Reversing	ES 200 performs independent test	-

12. Functional characteristics

12.1Revolving door

You may select the operation modes "PGS_OFF", "PGS_Auto1", "PGS_Auto2" and "PGS_Summer" via the program switch of the revolving door.

PGS OFF

If the door is not already in "locked" position, it travels to "locked" position at positioning speed and stops.
The electromagnetic brake is activated.
In case the system is equipped with an electromechanical bolt locking device that has already been properly adjusted, the door will lock.
The lights switch off automatically.
The optional sliding door operator is de-activated.

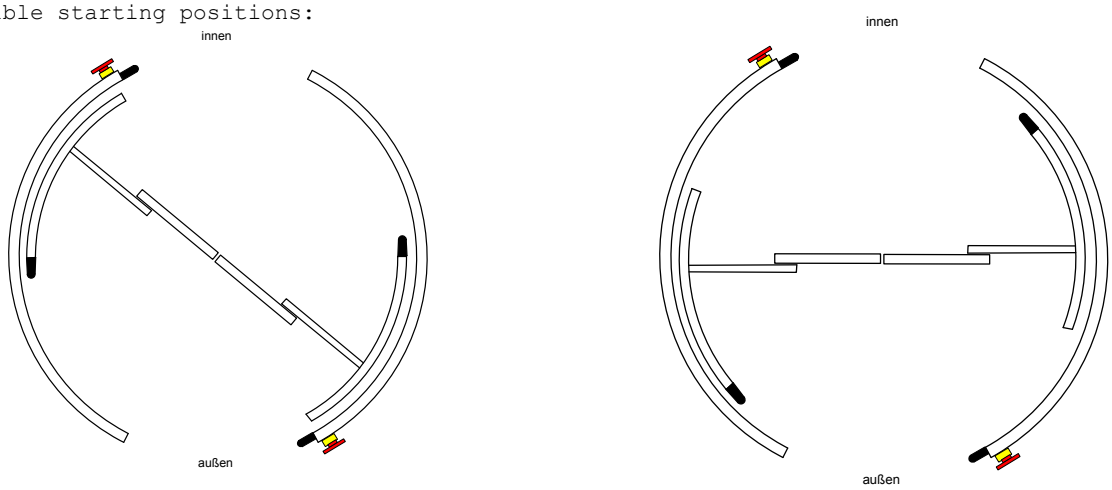
PGS Automatic 1

The locking device is not locked.
The lights are switched on.
The optional sliding door operator is de-activated.
As soon as the activator is triggered, the door starts revolving.

- When one of the motion detectors is triggered:
  The system revolves at walking speed as long as the detector is activated. As soon as the activators are no longer triggered, the door moves at walking speed "#X-pos. auto" (X-positions). Then the system automatically switches to positioning speed and stops as soon as it has reached the next starting position.
  Whenever the disabled access pushbutton has been triggered during a cycle, the driving speed is reduced to low speed for disabled users for the next 360°. If the system has already passed the starting position, the door automatically switches to positioning speed and stops as soon as it has reached the next starting position.

#X-Pos Auto 1 - 2	P.	Number of starting positions in Automatic 1 or 2	2 = 360°

Possible starting positions:



Starting position Summer	2.	Starting-positions: 90°/270° [0], 60°/240° [1]		0 .. 1	0 = right picture 1 = left picture

- When the disabled access pushbutton is triggered:
  The door moves at low speed for disabled users as long as the function of the pushbutton is activated. As soon as all activators are de-activated, the door moves the next 360° at reduced speed for disabled users. Then it automatically switches to positioning speed and stops at the next starting position.

PGS Automatic 2
The lights are switched on.
The optional sliding door operator is de-activated.
The door constantly revolves at positioning speed. The speed increases as soon as the activator is triggered.

- When one of the motion detectors is triggered:
  The system increases speed to walking speed and remains at this speed while the motion detector is activated. As soon as the activator is no longer triggered, the door moves at walking speed "#X-pos. auto" (X-positions) and then automatically resumes operation at positioning speed.
  Whenever the disabled access pushbutton has been triggered during a cycle, the driving speed is reduced to "disabled speed" for the next 360°. If the system has already passed the starting positions, the door automatically switches to positioning speed.

#X-Pos Auto 1 - 2		Number of starting positions in Automatic 1 or 2	2 = 360° Walking speed

- When the disabled access pushbutton is triggered:
  The door moves at low speed for disabled users as long as the function of the pushbutton is activated. As soon as the activator is no longer triggered, the door moves the next 360° at reduced speed for disabled users. Then it automatically switches to positioning speed.

PGS Summer
The door revolves at positioning speed and stops at the next possible summer configuration position.

12.2Sliding door

While the revolving door is operated in standard mode, the sliding door is closed and locked.
The sliding door may only be operated via the ST program switch while the revolving door is adjusted to summer configuration or when the smoke and fire detector inputs are not activated and the door is in its "safe position".
Following a power failure, the sliding door will resume operation in its previously adjusted operation mode.

As soon as the program switch of the sliding door is adjusted to any other function but OFF, the DCW program switch of the revolving door is automatically adjusted to summer configuration and remains in this position, even if the program switch of the sliding door is adjusted to OFF.
Please also consider control of the automatic sliding door.

Starting pulse (I2: IN 10 + 11)
If a starting pulse is triggered while the program switch is adjusted to PGS_Auto1 or PGS_Auto2, the system will perform a standard cycle. The pulse may be triggered at:

- The internal motion detector input
- The external motion detector input
- The hand-held
- The radar motion detector input of the control unit

Night-/Bank (optional) (I2: IN 9)
The Night-/Bank function is available for the following operation modes:
The program switch of the revolving door is adjusted to PGS_Summer; the door is in the respective summer configuration position.
The ES 200 program switch is adjusted to PGS_Off. As soon as a Night-/Bank pulse is triggered, the sliding door opens and then closes and locks on expiry of the adjusted hold-open time.

Smoke extraction (I2: IN 15)
As soon as one of the smoke detector inputs is triggered, the revolving door immediately moves to its "safe position", no matter which operation mode is adjusted. When the system has reached its "safe position", the ST-PGS indicates PERMANENT OPEN and the automatic sliding door opens and remains open.

As soon as the input is de-activated, the control unit resumes operation in the previously adjusted operation mode.

Fire detection (I2: IN 14)
On activation of the fire detector input, the revolving door moves to its "safe position" if the program switch is adjusted to PGS_Auto1, PGS_Auto2 and PGS_Summer. When the system has reached its "safe position", the ST-PGS indicates PERMANENT OPEN and the automatic sliding door opens and remains open.
As soon as the input is de-activated, the control unit resumes operation in the previously adjusted operation mode.

Lighting

Depending on the respective configuration, the lights are either switched on and off automatically (original settings) or via an external switch (optional):

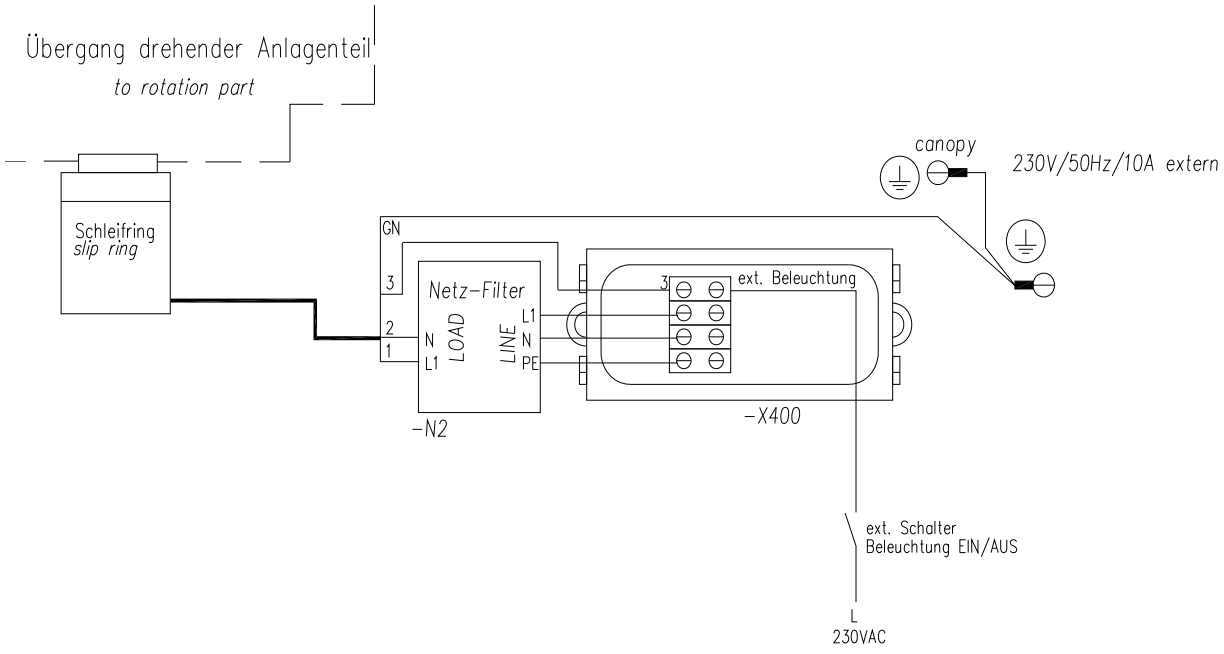
Automatically

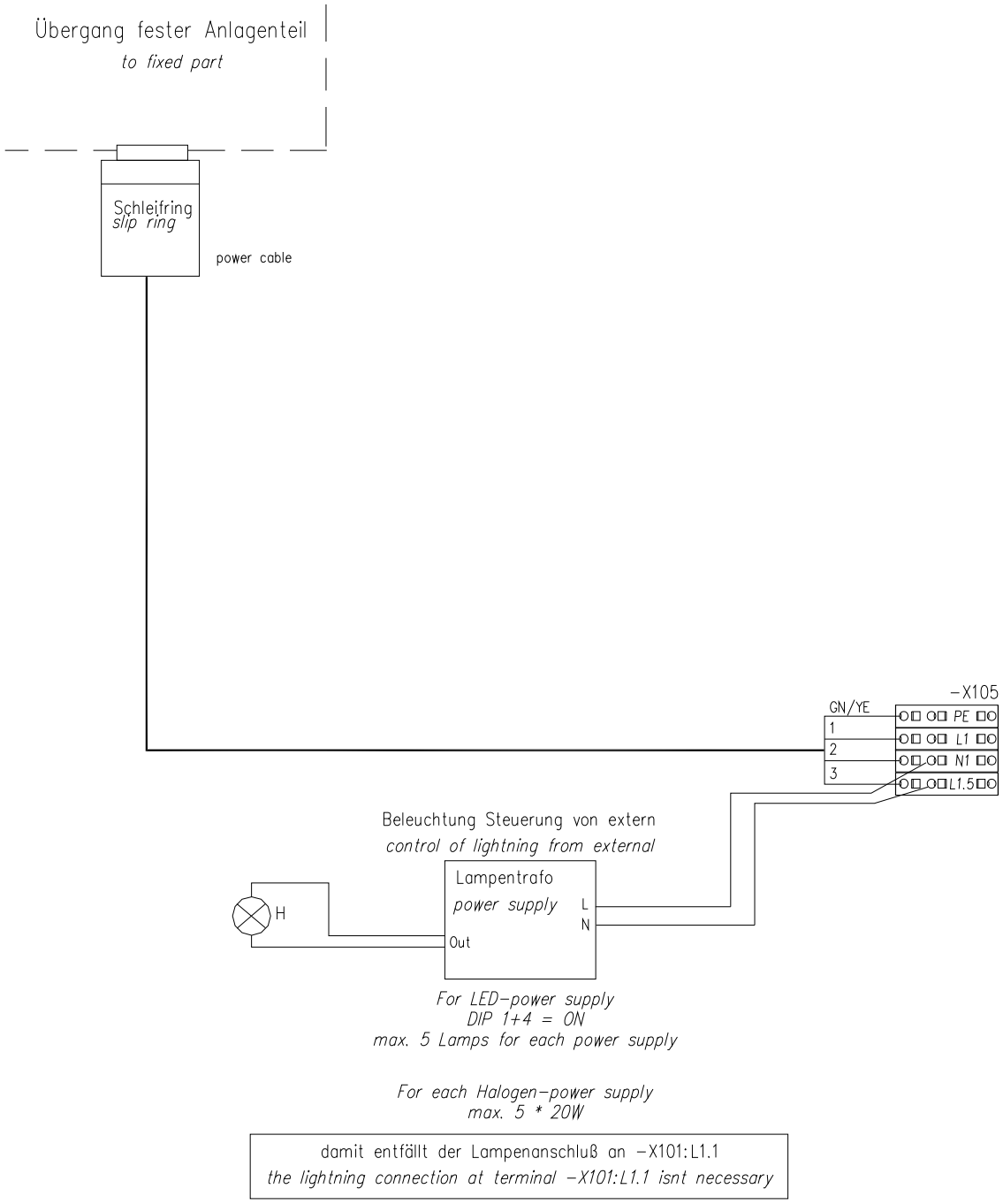
The lights are only out if the door is locked in the corresponding "locked position" for a sustained period of time.

Via external switch

The lights may be switched on and off via an external ON/OFF switch.

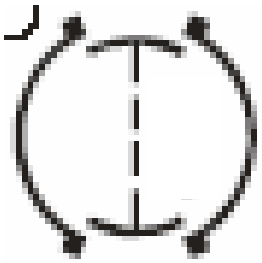
Proceed as follows:

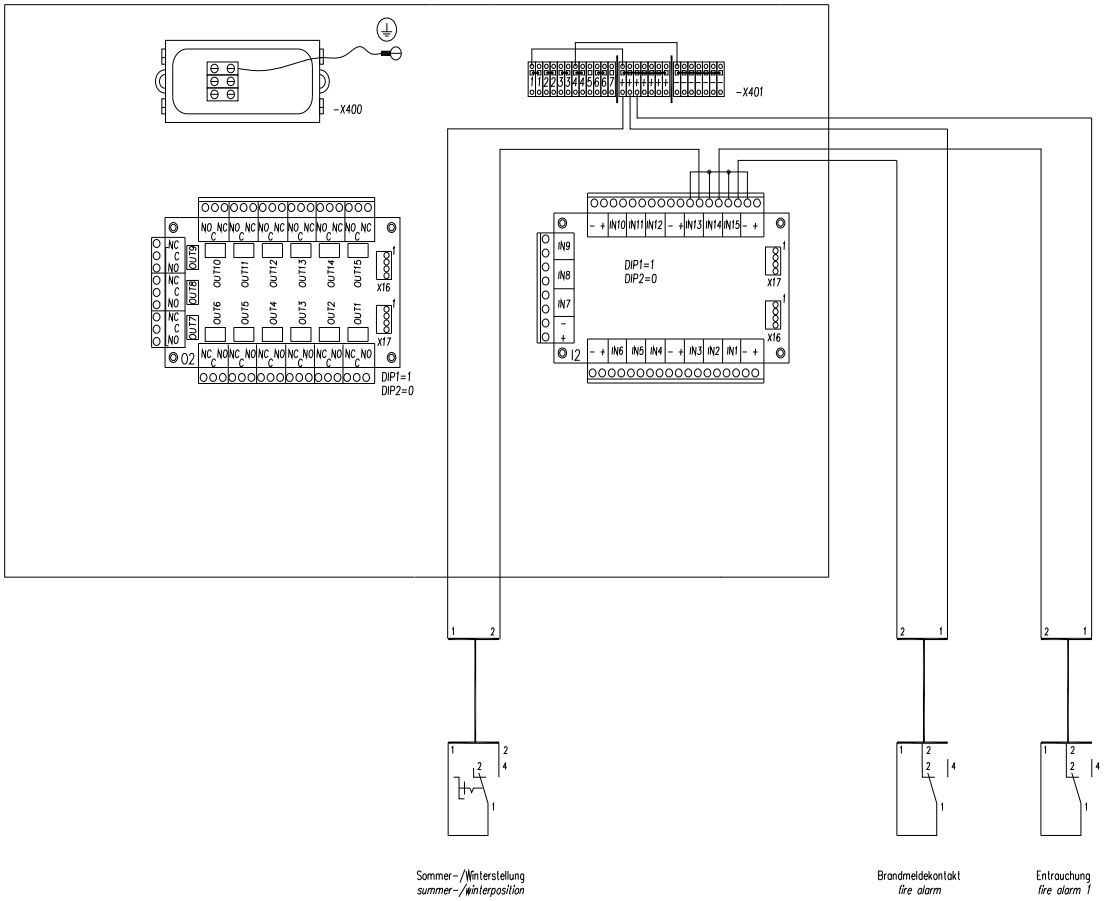




Disabled access pushbutton (I2: IN 12)
By activating the disabled access pushbutton while the system is adjusted to "Automatic 1" and "Automatic 2", the revolving door immediately reduces speed in order to provide safe access for disabled users.

Winter pos (I2: IN 13)
If this input is provided with an additional +24 V, the door system remains locked (while the program switch is adjusted to PGS_Auto 1) unless a starting pulse is triggered.



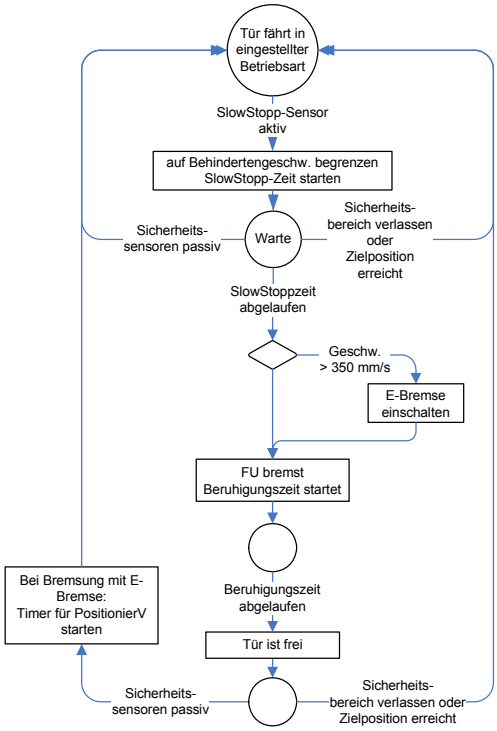


13. Further functions of revolving door

13.1 SlowStop

As soon and as long as the safety sensor is activated in its respective detection area, the door speed is limited to low speed for disabled users. The speed is reduced for a fixed period of time – depending on which sensor triggered the SlowStop time (canopy-integrated sensor or wing sensor).
If the safety sensors are de-activated before expiry of the SlowStop time, the door will resume operation in the previously adjusted operation mode.

Please note that the system stops if the sensors are still triggered on expiry of the SlowStop time. In this case, the revolving door remains de-activated for as long as the sensors are triggered; however, at least for a certain settling time. As soon as the safety sensors are no longer triggered, the door resumes operation in the previously adjusted operation mode while the door speed is limited to positioning speed for the "posV after stop" time (positioning speed after safety stop).



SlowStop canopy	u.t.	SlowStop time of canopy-integrated sensors	sec	(0 .. 15) sec 16 = ∞	16
SlowStop wing	u.t.	SlowStop time of wing sensor	0.1 sec	(0 .. 15.9) sec 16.0 = ∞	16.0

13.2 Obstruction stop

Whenever the door speed falls below 60 mm/s – in conjunction with further conditions – and the system therefore assumes the door is obstructed, the electromagnetic brake and the frequency converter stop the door. Then the revolving door remains de-activated for at least three seconds. After this time, the door resumes operation in the adjusted operation mode while the door speed is limited to positioning speed for "PosV after stop" time (positioning speed after safety stop).

13.3 Error stop

The door stops and then the system is de-activated.

13.4 Emergency stop

The door stops and operates adjusted under parameter "n".

Hold after stop	n.	Time until the el. brake is released after an Emergency Stop 0 = brake never released, 1 - 9 = after... sec.	1

13.5 Safety stop

The frequency converter stops the system as soon as the safety sensor is activated. The electric brake decelerates the system if the speed exceeds 350 mm/s or whenever a horizontal stop sensor at the night shield and a horizontal stop sensor at one of the door posts are triggered simultaneously. In this case, the revolving door is de-activated for as long as the sensors are triggered; however, at least for a certain settling time "Waiting after stop". As soon as the safety sensors are no longer triggered, the door resumes operation in the previously adjusted operation mode. The door speed is limited to positioning speed for "posV after stop" time (positioning speed after safety stop) whenever the system has been stopped with the aid of the electric brake.

Hold after stop		Time until the door starts after a safety stop	0.1 sec	(0 .. 9.9) sec	2.0
PosV after safety stop		Time system operates in positioning speed after leaving the stationary position following a safety stop	0.1 sec	(0.0 .. 2.9) sec	1.0

13.6 Locking/unlocking

With locking device

In case a locking function has been configured, the I/O-4-module controls the locking device, and reads the position of the limit switches.
If no locking function has been configured, the system unlocks the electrical locking device — if available. The door does not move until the limit switches have communicated that the door is unlocked.

#el. locking devices		Electromechanical bolt locking device no = 0, yes = 1	1

Status

The status of two limit switches determines the locking status. The door may either be “locked”, “unlocked” or in an “undefined status”.
The system may only be locked while the door is in "locked position". The locking device must unlock automatically as soon as the door leaves "locked position".

Locking procedure

The door will lock if the locking status indicates that the system is "unlocked".
The locking procedure has been completed as soon as the locking status switches to “locked”.
In case it takes more than three seconds until the limit switch confirms that the door is locked, the door unlocks again and then retries to lock. The system will try to lock up to three times.

Unlocking procedure

The door will unlock if the locking status indicates that the system is not locked.
The unlocking procedure has been completed as soon as the locking status switches to “unlocked”.
In case it takes more than three seconds until the limit switch confirms that the door is "unlocked", the door locks again and then retries to unlock. The system will try to unlock up to three times.

Without locking device

If the locking device cannot lock as it is defective or as no locking device has been configured or as there is no I/O-4-module or as the module is defective, the revolving door is locked in position with the aid of the electromagnetic brake. In functional respects, this means that the door is locked. The door may be opened as soon as the electromagnetic brake is switched off.

#el. locking devices		Electromechanical bolt locking device no = 0, yes = 1	0

Behaviour of the door if parameter "Electromech. bolt locking device” no = 0, yes = 1" is adjusted

If the revolving door is in "locked position" while you adjust the parameter, the system immediately adapts the new status. This means if you switch parameter "L" from 0 to 1, the electric brake will be de-activated and the system locks with the aid of the motor. If you switch parameter "L" from 1 to 0, the electric brake is activated while the locking function of the motor is de-activated.

13.7 Control of automatic sliding door

The control unit of the revolving door operates the automatic sliding door via the inputs of the program switch and the activator inputs. The sliding door monitors its main closing edge independent of the revolving door.

- The control unit of the revolving door sends the signals of the internal and external motion detectors to the corresponding activator inputs of the sliding door.
- As soon and as long as the revolving door is in its "safe position" and the smoke extraction and fire detection contacts are activated, the activation inputs of the sliding door are adjusted to PGS_Permanent_Open.
- • As soon and as long as the revolving door is in its "safe position" and the smoke extraction and fire detection contacts are de-activated, all adjustments of the respective program switch are passed on to the inputs of the sliding door's control unit.
- As soon and as long as the revolving door is adjusted to summer configuration and the door is in the corresponding position (without any kind of malfunction), the respective program switch adjustment for the sliding door is passed on to the inputs of the sliding door's control unit.
- In any other event, the program switch inputs at the control unit of the sliding door are adjusted to PGS_Off.

13.8 Output functions

Potential-free (floating) contacts (DCW modules with changeover contacts) emit the following signals for the static part of the revolving door: Max. load current: 24 V DC/500 mA (Ohm)

10.1 Activation of warm air curtain (O2:OUT 11)

The contact is activated as long as the revolving door moves automatically and while the sliding door is open. The contact is automatically de-activated on expiry of an adjustable run-down time (0 s - 600 s) of the warm air curtain.

FUT warm air curtain		Follow-up time of warm air curtain	sec	0 ... 600 sec.	10 sec.

Error indication (O2: OUT 5)

This contact is only activated during a malfunction of the revolving door.

Locking status indicator (O2: OUT 6)

This contact is activated while the revolving door is locked, otherwise it is de-activated.

Walking speed (O2: OUT 12)

This contact is activated while the revolving door revolves at walking speed, otherwise it is de-activated.

Low speed for disabled users (O2: OUT 13)

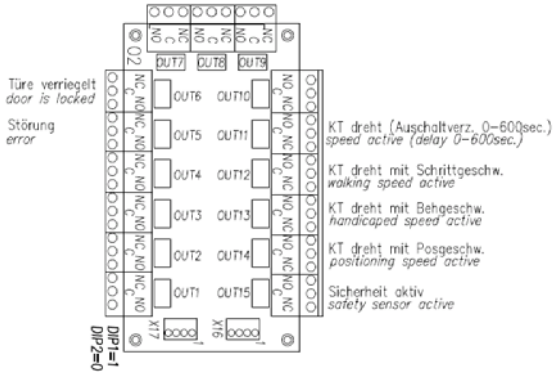
This contact is activated while the revolving door revolves at low speed for disabled users, otherwise it is de-activated.

Positioning speed (O2: OUT 14)

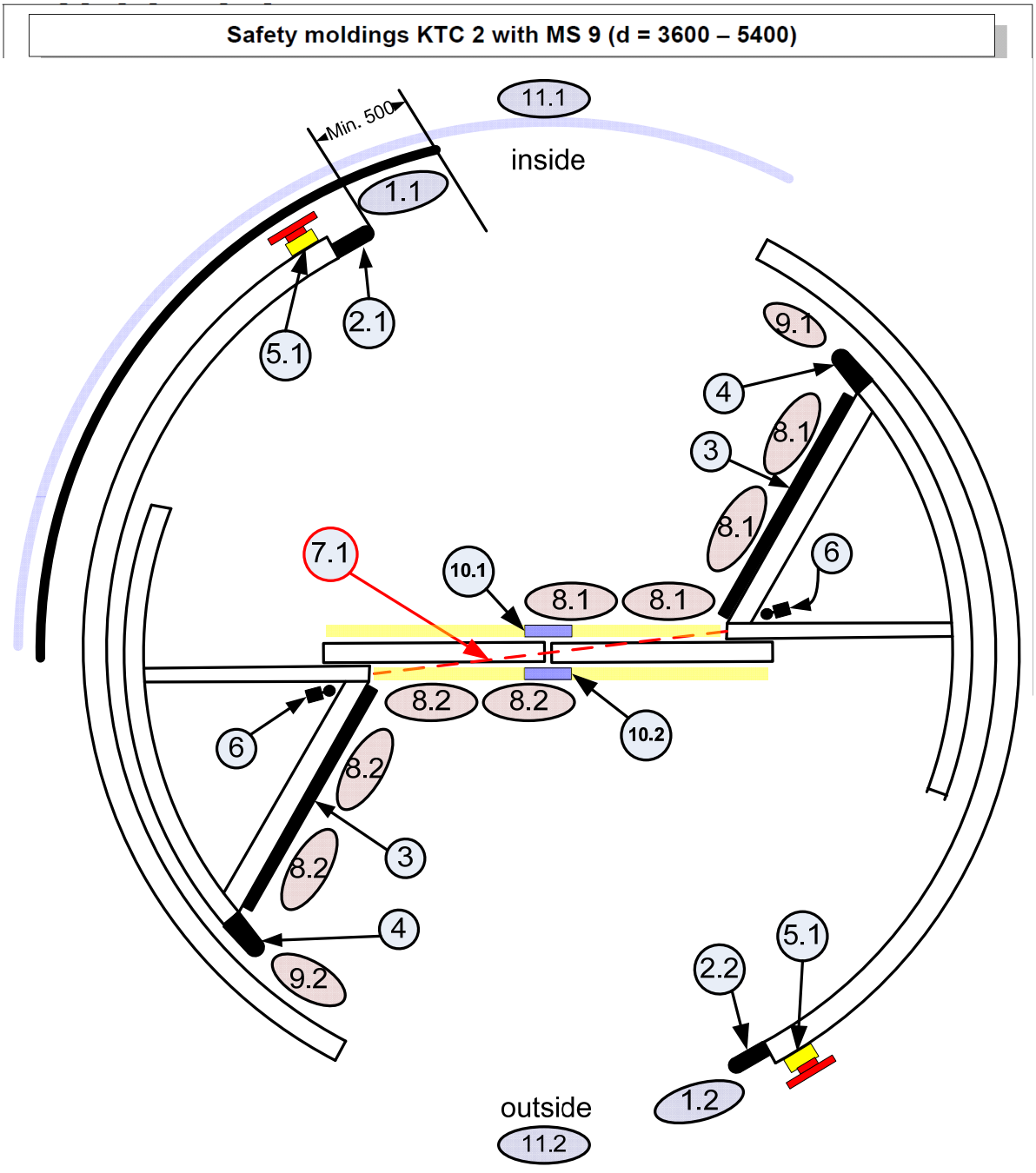
This contact is activated while the revolving door revolves at positioning speed, otherwise it is de-activated.

Safety sensor activated (O2: OUT 15)

This contact is activated as soon as at least one of the safety sensors detects an obstruction, otherwise it is de-activated.



14. Safety equipment



Caption KTC 2 safety equipment with MS 9

① **Safety sensors at canopy**

- Adjustable activation range

Sec. area stop		Detection range of canopy-integrated sensor in security area for SlowStop	mm	(d * (pi/3) .. 500) mm	500 mm

- Sensor test after system was adjusted to summer configuration

Function:
On activation of the sensor, the turnstile reduces speed to "low speed for disabled users" and stops after the adjusted time (15 sec).
As soon as the night shield enters the drum wall, the system switches to "low speed for disabled users" until the night shield has completely entered the drum wall.

② **Vertical safety contact strips (at door posts)**

- Activation range: 500 mm in front of safety contact strip (until the night shield has completely entered the drum wall)
- Test of electronic components after system was adjusted to summer configuration

Function:
The turnstile stops as soon as the safety contact strips are triggered.

③ **Horizontal safety contact strips at bottom of door wing**

- permanently activated
- the electromagnetic brake is activated as soon as the sensor is triggered

Function:
The turnstile stops as soon as the safety contact strips are triggered.

④ **Vertical safety contact strips at night shield**

- permanently activated
- the electromagnetic brake is activated as soon as the sensor is triggered

Function:
The turnstile stops as soon as the safety contact strips are triggered.

⑤ **Pushbutton for Emergency Stop function at door posts**

- permanently activated
- As soon as the pushbutton is activated, the motor is disconnected from power supply while the electro-magnetic brake is activated.

Function:
The turnstile stops as soon as the pushbutton is activated.

⑥ **Limit switch for deflection device**

"- as explained under "4"

⑦ **Light barriers**

- as explained under "4"
The system tests the light barriers before the door leaves stationary position

⑧ **Presence sensors at door wings and at top of showcase**

- permanently activated

The system tests the sensors before the door leaves stationary position
Function:
On activation of the sensor, the turnstile reduces speed to "low speed for disabled users" and stops after the adjusted time (time is infinitely adjustable).

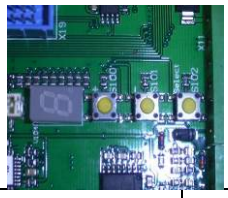
⑨ **Pre-detection sensors in the revolving lower ceiling**

- "- as explained under "8"

⑩ **Safety sensor for sliding door**

- This sensor monitors the main closing edge while the automatic sliding door is activated.
  The control unit of the sliding door (ES 200) performs the respective test.

15. Error display/warning messages



15.1Error indication via seven-segment display at CPU "Z1"

Acknowledgement
M = Manually
A=Automatically

L = By performing a learning cycle
- = By resetting the power supply

	Name	SUB error code	Sub-error name, cause, situation	Behaviour of door system The system always displays an error message.	Acknowledge-ment
0	No error				
1	Watchdog error	101	Watchdog error	Emergency stop	M
2	Error of locking device	202	The door is in "locked position" and has already tried three times to unlock.	The door may only be moved by hand after it was unlocked manually.	M
		203	Both limit switches are closed		
3	Program switch error	301	Program switch of revolving door either defective or not connected	Door revolves to "safe position" at positioning speed	A
		302	Revolving door program switch is connected although a DCW sliding door program switch is already connected		
4	Sensor error	401	SlowStop test of internal canopy-integrated sensor failed	The door revolves at positioning speed to "locked position" and locks although system is adjusted to "PGS_Off" In any other mode, the door revolves to "safe position" at positioning speed	M
		402	SlowStop test of external canopy-integrated sensor failed		
		403	Test of door wing sensor 1 failed		
		404	Test of door wing sensor 2 failed		
		405	Test failed: safety contact strip at horizontal night shield, 2 x safety contact strip at bottom of wing, limit switch for deflection device	Emergency stop	
		406	Test of light barrier 1 failed		
		407	Test of light barrier 2 failed		
		408	Test of pre-detection sensor at night shield 1 failed	The door revolves at positioning speed to "locked position" and locks although system is adjusted to "PGS_Off" In any other mode, the door revolves to "safe position" at positioning speed	
		409	Test of pre-detection sensor at night shield 2 failed		
		410	Test of vertical safety contact strip at internal post failed	Emergency stop	
		411	Test of vertical safety contact strip at external post failed		
5	Incremental encoder error	501	No incremental encoder signal following three unsuccessful driving attempts due to obstructions — see "Error caused by obstruction"	While system is adjusted to PGS_OFF, the door travels to "locked position" and locks. In any other PGS mode: Emergency stop	M
		502	Short-circuit between the channels		
		503	A channel is missing		
6	Frequency converter error	601	Frequency converter was not ready for ≥ 6.5 seconds	Emergency stop	M
7	CPU error	701	Defective CPU	Motor will be disconnected from motor controller Error display does not blink	-
		702	Defective EEPROM (impossible to describe)		
		703	EEPROM error (incorrect checksum)	Motor will be disconnected from motor controller	
9	Learning cycle error	901	Too many incremental encoder pulses between two X-positions	Emergency stop	L

	Name	SUB error code	Sub-error name, cause, situation	Behaviour of door system The system always displays an error message.	Acknowledge-ment
		902	Too many incremental encoder pulses between two X-positions		
		903	Wrong rotation direction		
A0	DCW error	1001	Time-out at input module 1	Emergency stop	M
		1002	Time-out at output module 1		
		1003	Time-out at input module 2		
		1004	Time-out at output module 2		
b0	X-position error	1102	More than two revolutions without X-position Possible cause: Defective X-position sensor	Emergency stop	M
c0	Brake error	1201	Electrical test of electric brake failed	Door is ready for operation but only at positioning speed	M
		1202	Mechanical test of electric brake failed (braking distance test)	Door is ready for operation but only at positioning speed	-
d0	Circum ferential speed error	1301	Circumferential speed is too high Possible cause: defective frequency converter, vandalism	Emergency stop	M
E0	Obstruction error	1401	The door was blocked by an obstruction more than three times	Emergency stop	M
L0	Braking speed error	1501	Residual speed is too high when braking to stop	Door is ready for operation but only at positioning speed	-
		1502	Residual speed is too high when braking with reduced speed for disabled users		
F0	Sliding door error	1701	Automatic sliding door emits error signal during standard operation while adjusted to Automatic 1 or Automatic 2 mode	The door revolves to its "safe position" at positioning speed	M
		1702	The manually-operated sliding door is not closed while PGS_Auto1 or BPGS_Auto2 is adjusted		
U0	Power failure	1801	Power failure although a USV (emergency power supply unit) is connected	While system is adjusted to PGS_Off, the door travels to "locked position" and locks The door moves to its "safe position" in any other PGS mode	A
H0	Error Rechargeable battery pack of USV (emergency power supply unit)	1901	USV indicates an error of the rechargeable battery pack such as "low bat."	The door revolves to its "safe position" at positioning speed	M

15.2 Warnings

In case there is no error but a warning, the respective warning message is indicated on the display:
Every three seconds, the dot (not blinking) is replaced by the error symbol for 500 msec.
In case there are several warnings, they are indicated one after the other.

Example

	Period of time [s]							
Warnings	0.5	2.5	0.5	2.5	0.5	2.5	0.5	2.5
none								
1	1		1		1		1	
3 and G	3		G		3		G	

List of warnings given

1	No learning cycle has been performed
3	Locking device registered but no IO4 module available/defective module
8	Emergency stop function activated
F	System learned program switch for sliding door, but no switch available/switch defective
G	Electro-magnetic brake does not work properly

15.3 External seven-segment display

The seven-segment display is located at the internal door post.
The display is controlled via the four outputs of a DCW output module.
Every combination corresponds to a symbol (number or letter).

Every symbol indicates a status according to the following list.
If several of these errors occur at the same time, they are indicated one after the other.

OUT				Display	Message	Indication
10	9	8	7			
–	–	–	–	**0**	No message	always
–	–	–	x	**1**	No learning cycle has been performed	always
–	–	x	–	**2**	Low battery, emergency power supply unit	always
–	–	x	x	**3**	Defective locking device	The electromechanical locking device is connected and the learning cycle has been performed.
–	x	–	–	**4**	Canopy-integrated sensors activated	always, after a learning cycle has been performed within the detection range
–	x	–	x	**5**	Safety contact strips/limit switch for deflection device activated	always
–	x	x	–	**6**	Safety contact strips at door posts activated	always, after a learning cycle has been performed within the detection range
–	x	x	x	**7**	Wing sensors at revolving part activated	always, after a learning cycle
x	–	–	–	**8**	Emergency Stop function activated	always
x	–	–	x	**9**	Light barrier at revolving part activated	always, after a learning cycle
x	–	x	–	**A**	Radar motion detector activated	always
x	–	x	x	**b**	System revolves too fast	The maximum speed is too high after the learning cycle has been performed
x	x	–	–	**C**	Sliding door not closed	always
x	x	–	x	**d**	Sensor test error	always, after a learning cycle
x	x	x	–	**E**	X-position sensor not OK	always, after a learning cycle
x	x	x	x	**F**	Read-in of program switch not possible	If a learnt PGS-combination has changed so that there is no clear PGS setting for the revolving or sliding door

15.4 Display at program switch for revolving door

The red LED at the DCW program switch for the revolving door only lights up in the event of a malfunction
The table will help you to analyse the respective blink code

CPU display	Name	Malfunction indicator (LED) at electronic Program switch
	No error	
	Watchdog error	1
	Locking device error	2
	Program switch error	3
	Sensor error	4
	Incremental encoder error	5
	Frequency converter error	6
	CPU error	7
	Learning cycle error	9
	DCW error	10
	X-position error	~~11~~
	Brake error	12
	Circumferential speed error	13
	Obstruction error	14
	Braking speed error	15
	Sliding door error	17
	Power failure	18
	Error of USV power supply unit	19

15.5 Malfunction table for sliding door

Errors displayed at the PDA are covered by the instruction ASP for ES 200

Meaning of display codes	Additional errors via organiser
1 Obstruction	23
A Motor fault	10
C Force test	12
d Motor overcurrent	13
F DCW	29
H FST	14, 17, 18, 19, 20, 24, 25, 26, 27, 28, 30, 31
L Relay test fault	21

Message	Error	Method of acknowledgement
0	No error in memory	
1	Obstruction	Self-knowledgement
2	Lock	Turn Program switch to OFF
3	Program switch	Turn Program switch to OFF
4	Light barrier	Turn Program switch to OFF
5	Incremental encoder	Self-knowledgement
6	Back up accumulator	Turn Program switch to OFF
7	EEPROM	Cycle mains
8	EMERGENCY OFF	Release EMERGENCY OFF
9	Learning cycle parameter	Turn Program switch to OFF
A	Motor fault	Self-knowledgement
b	Force test	Self-knowledgement
c	Overcurrent at motor	Turn Program switch to OFF
d	DCW	Cycle mains and reset to original settings
H	FST	Turn Program switch to OFF
L	Relay test	Cycle mains
	Commissioning error	Change direction of motor rotation During commissioning, door panels open During the cycle press 

16. Further information

16.1 Position overview

Angle	Position in summer configuration	Position in winter configuration	PGS adjustment
0°	"Locked position"		PGS_Off
0°		X-position	PGS_Auto1
60°	X-position 1		PGS_Auto1
90°	X-position 2		PGS_Auto1
90°	Summer configuration		PGS_Summer
90°	"Safe position"		not PGS_Off
180°		X-position	PGS_Auto1
240°	X-position 1		PGS_Auto1
270°	X-position 2		PGS_Auto1

16.2 Warning

A warning informs the facility operator about possible functional impairments, malfunctions or damage. The warning disappears as soon as the cause of the possible functional impairment, malfunction or damage has been removed. In contrast to an error, the system may still be operated.

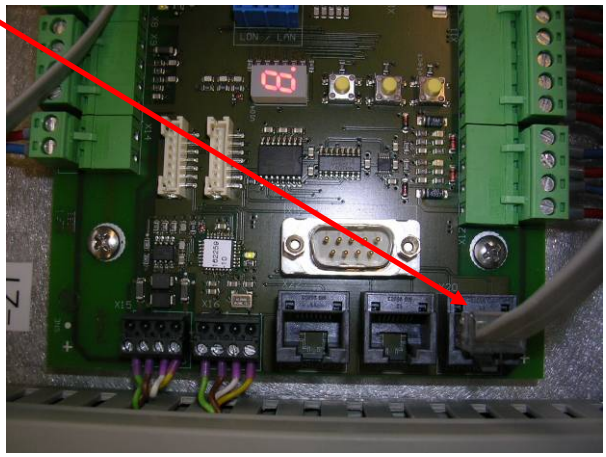
16.3 Parametrisation menus for hand-held (PDA)

Settings			
Designation	**Description**	**Unit**	**Range**
# locking devices	Number of locking devices (0 = no locking device)		0 .. 1
Release electr. brake	Time until the electromagnetic brake is released after an Emergency Stop via the electr. brake	sec	(0 .. 9) sec
Ext. lights on	Switch lighting on or off via external switch		Off On
Air curtain delay	Adjustment of follow-up time for warm air curtain	sec	(0 …60) sec
Driving operation			
Designation	**Description**	**Unit**	**Range**
# X-pos. auto1 - 2	Number of starting positions in Automatic 1 or 2		2 .. 5
SlowStop canopy	SlowStop time of canopy-integrated sensors	0.1 s	(0.0 – max.15.9, then infinitely) sec
SlowStop wing	SlowStop time for door wing sensor and pre-detection sensor	sec	(0 – max.15, then infinitely) sec
Hold after stop	Time until the door starts after a safety stop	0.1 s	(0 .. 9.9) sec
Sec. area stop	Canopy sensor in security area SlowStop	mm	(min. 500 .. 6999 limited to max. passage width) mm
PosV after stop	Time the system moves at positioning speed after leaving stationary position following a safety stop	0.1 s	(0.0 .. 2.9) sec
Special functions			
Designation	**Description**	**Unit**	**Range**
Original setting	Command: Reset system to original settings! All parameters are automatically reset to original settings.		
Learning cycle	Command: Start learning cycle!		
Error reset	Command: Acknowledge error!		
Locking procedure	Command: Lock!		
Unlocking procedure	Command: Unlock!		
Wing sens. act.	De-activates the door wing sensors and the pre-detection sensors in the revolving part of the door		No Yes
SCS at door act.	De-activates the safety contact strips (SCS) and light barriers at the door		No Yes
Ext. SCS act.	De-activates the safety contact strips (SCS) on the outside		No Yes

Int. SCS act.	De-activates the safety contact strips (SCS) on the inside		No Yes
Ext. CS act.	De-activates the canopy sensors (CS) on the outside		No Yes
Int. CS act.	De-activates the canopy sensors (CS) on the inside		No Yes
Key lock	Enables/disables the keypad		Off On
Online status indicator			
Designation	Description	**Unit**	**Range**
Software version	Indicates the current software version of the control unit	yyxx	e. g. 0100 = version 1.00
Current error status	Indicates the current error status		0 = no error, see error list in MS9 documentation
Revolutions cur.	Revolutions at current error	Number	the 5. position is rounded off
Error log1 - 9	Error log: This log stores errors that have occurred in the past		0 = no error, see error list in MS9 documentation
Revolutions log 1 - 9	Revolutions during former error 1	Number	the 5. position is rounded off
Service reset!	Command: Resets the error log and the maintenance parameters (current revolutions, vandalism brake, clutch and wind brake activations)		security moldings
Electr. brake cycles	Indicates how often the electromagnetic brake has been activated		the 5. position is rounded off
# revolutions	Indicates the number of revolutions the door has made so far		the 5. position is rounded off
Maintenance date	Indicates the date of the last service	mmyy	1003 = October 2003
Door diameter	Indicates the diameter of the door	mm	4-digit display
Door position	Indicates the current door position	°degrees	(0 .. 360) °
Speed	Indicates the current door speed	mm/s	4-digit display
Locked	Locked?		No Yes
Unlocked	Unlocked?		No Yes
SCS inside door	Indicates status of safety contact strips (SCS) in the revolving part of the door		Activated OK
Wing sensor	Indicates status of door wing sensor and pre-detection sensors for SlowStop (inside door)		OK Activated
Ext. CS Slow	Indicates status of canopy sensor (CS) for SlowStop (outside) (canopy sensor outside SlowStop)		Activated OK
Int. CS Slow	Indicates status of canopy sensor for SlowStop (inside) (canopy sensor inside SlowStop)		activated OK
Int. radar	Indicates status of radar detector (inside)		OK Activated
Ext. radar	Indicates status of radar detector (outside)		OK Activated
X-pos. sensor	Indicates status of X-position sensor		Activated OK
Emergency stop	Emergency Stop pushbutton activated?		activated OK
Disabl. pushb.	Pushbutton to reduce speed to "low speed for disabled users" activated?		OK Activated
PGS OFF	Input status of wired program switch, program switch adjusted to OFF?		de-activated activated
PGS Auto 1	Input status of wired program switch, program switch adjusted to AUTOMATIC 1?		de-activated activated
PGS Auto 2	Input status of wired program switch, program switch adjusted to AUTOMATIC 2?		de-activated activated
PGS Summer	Input status of wired program switch, program switch adjusted to SUMMER?		de-activated activated
DCW reset	Command: Initialise DCW bus Systems checks how many DCW components are connected		
DCW list	Indicates number of logged-in DCW bus components		

16.4Connection handheld

connection of the datacable



16.5 Access to parametriermenu

Please switch on the handheld and follow the next pictures.

Code = 123456

Download the settings from the CPU

Here you can set/change the parameters

DORMA

www.dorma.com

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