MiDrive twinCAN
Door drive system

MEILLER Aufzugtüren GmbH • Ambossstr 4 • D-80997 München
Telefon 00 49 - 89 / 14 87 - 0 • Fax 00 49 - 89 / 14 87 - 15 66 • www.meiller-aufzugtueren.de

Table of contents

M EN 8200 3006 015

1 Introduction

We are delighted that you have decided to purchase one of our products. As a result, you will benefit from maximum operational reliability and incredibly easy maintenance, at the high level of MEILLER quality you have come to expect.

We trust that the unit will give you trouble-free and successful service.

Do you have any questions? We look forward to hearing from you.

MEILLER Aufzugtüren GmbH

Ambossstr. 4
80997 Munich, Germany

Tel.	+49	(0)89	1487 - 0
Fax	+49	(0)89	1487 - 1566

info@meiller-aufzugtueren.de
www.meiller-aufzugtueren.de

M EN 8200 3006 015

1.1 Information on these instructions

1.1.1 General information

These installation and adjustment instructions contain all the information and descriptions you will need to use your products. We have drawn up this documentation with due care. We would appreciate any comments or suggestions you may have.
To make it easier to follow the information given, the description is accompanied by graphics and schematic illustrations of the sliding door or its assemblies.

1.1.2 Symbols used

The following symbols are used in these instructions:

ATTENTION: This symbol warns against a hazard to persons and equipment

ATTENTION: This symbol warns against a hazard to persons and equipment posed by crushing

NOTE: Technical notes to which you must pay close attention

Fig. 1	Number of an illustration
(23)	Reference in the text to a key number in an illustration
•	Action, sequence of activities
-	List
italic	Label on a (control) button of the operating software or a cross-reference in the text to another identically worded passage in the document
<*Stop*>	Requesting the operation of a (control) button of the operating software. See also the example on page 14

1.1.3 Brand names and trademarks

Product designations and/or company names mentioned in this documentation may be registered trademarks of their respective companies.
The same also applies to abbreviations and acronyms for the product (usually commercial or colloquial).

2 Product description

The “MEILLER intelligence Drive” (MiDrive twinCAN door drive system, referred to below as MiDrive). It consists of the door control (control unit) and the drive motor.

It is an intelligent door drive system for our correspondingly prepared lift doors that can be configured quickly and easily with a smartphone. In the process, the settings relevant to the product are automatically configured. An automatic door recognition detects and stores all essential parameters during commissioning.

The configuration profile can be stored and reinstalled later. A transfer to other doors is thus also possible. Monitoring makes it possible to view all essential functions during the door operation.

The configuration can be done from inside the lift car by using a smartphone. It is not necessary to remain on the roof of the car.

Terminal for configuration	Operating system	Interface to the door control
Smartphone	iOS version 7 or later/Android version 5.0 or later	Bluetooth/QR code*

* Direct input possible without the QR code

The MEILLER cloud
The control unit has a diagnostic memory. The contents of the diagnostic memory are transferred to the MEILLER cloud when connected to a smartphone with simultaneous Internet connection. By doing so, statements about the current condition of the door drive can be made and faults prevented if necessary.

Note: The data make a statement about theoretical future faults possible. It is not possible to guarantee the accuracy of the predictions. Thus, for instance, it is possible that a door motor which is rated as "Critical" may be operational for longer. The risk of a breakdown is significantly increased, however.

No personal data will be collected (see MEILLER data privacy statement).

M EN 8200 3006 015

2.1 Operating and display elements, connections

All elements are accessible after lifting the two housing covers (A).

Connections

1	Power	Torroidal core transformer
2	BATTERY	Input for 24 V emergency power source
3	Motor	Meiller CAN-BUS motor
4	Close	Changeover relay for door end position CLOSE
5	Open	Changeover relay for door end position OPEN
6	Rev	Changeover-relay for door revision
7	Temp/Fail	Changeover relay for excessive motor temperature/drive control
8	Power 2	Torroidal core transformer 2
9	Motor 2	Meiller CAN-BUS motor 2
10	AUX	24 V (output, not stabilised)
11	Door Lock	Electrical door lock
12	Input	Control signals (door OPEN, CLOSE etc.)
13	Digital I/O	Digital reserve inputs, 24 V DC
14	FingerGuard	Meiller FingerGuard sensors
15	Optical link	Optically couple two drives
16	DS417	CANopen Lift connection as terminal
17	R145 DS417	CANopen Lift connection as plug
18	USB B	
19	USB A[1)]	Connection of USB stick (update/data log)
20	Digital I/O	Digital reserve outputs, 24 V DC
21	Analogue I/O	Analogue reserve input (0-10 V DC)
22		Analogue reserve output (0-10 V DC)

[1)] Can be used for USB charging (e.g. smartphone)

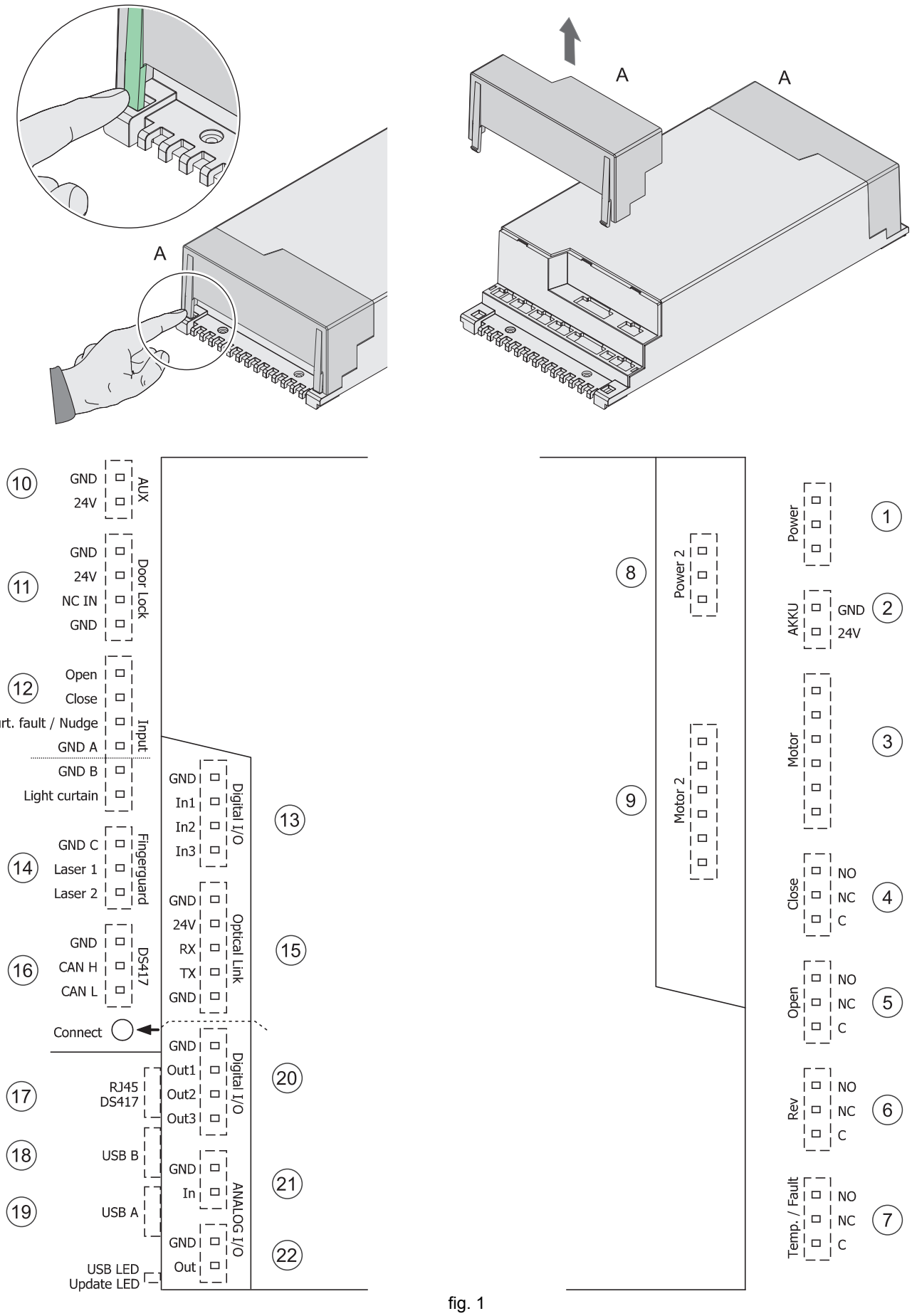

A
A
A
10
GND
24V
AUX
11
GND
24V
NC IN
GND
Door Lock
12
Open
Close
Curt. fault / Nudge
GND A
GND B
Light curtain
Input
14
GND C
Laser 1
Laser 2
Fingerguard
16
GND
CAN H
CAN L
DS417
Connect
17
RJ45
DS417
18
USB B
19
USB A
USB LED
Update LED
GND
In1
In2
In3
Digital I/O
13
GND
24V
RX
TX
GND
Optical Link
15
GND
Out1
Out2
Out3
Digital I/O
20
GND
In
ANALOG I/O
21
GND
Out
22
8
Power 2
9
Motor 2
Power
1
AKKU
GND
24V
2
Motor
3
Close
NO
NC
C
4
Open
NO
NC
C
5
Rev
NO
NC
C
6
Temp. / Fault
NO
NC
C
7

fig. 1

Operating elements and displays

24	LED	Power (power supply connected)
25	"Connect" push-button	1x press = Bluetooth ON/OFF1x press and hold >5 <20 seconds = Commissioning without terminal for configuration (smartphone) 1x press and hold >20 seconds = Reset to factory settings
26	USB LED Status LED	Status for firmware update

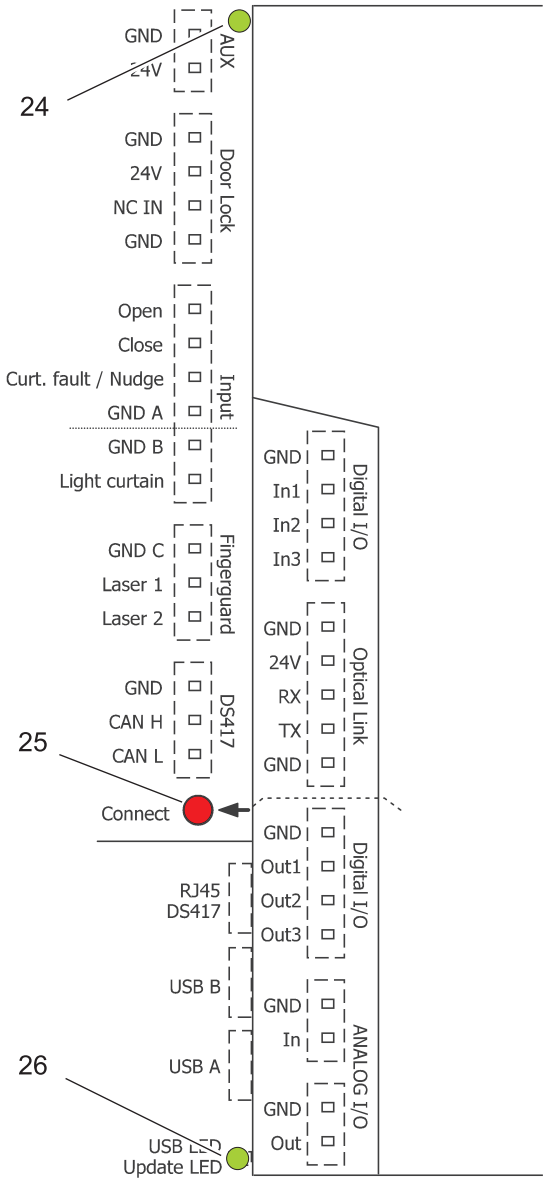


fig. 2

3 Safety information

If MEILLER stickers (CE and test number) are removed, the approval of the door drive system will be rendered void.

3.1 General safety information

Accident prevention regulations
The general accident prevention regulations (UVV in Germany) for construction must be complied with.

Residual voltage
After switching off the main switch, residual voltage can still be present due to charged capacitors.

Electrical safety
When working on the door mechanism and the door drive system, switch off the main switch or power supply and secure against unintentional restarting.

During operation, all covers on the control unit must be closed.

Closing forces
In accordance with EN81-20, the maximum closing force (incl. the closing weights of the landing door) must not exceed 150 N and the maximum closing energy must not exceed 10 J. Otherwise, the lift door is considered to be unsafe. For glass doors, this also applies to the opening direction under certain conditions.

We recommend measuring and recording these values with a suitable measuring device during commissioning.

Emergency stop function of the door control
The torroidal transformer for the MiDrive twinCAN door drive is equipped with an earthed plug pursuant to VDE. This plug ensures the functioning of the all-pin shut-down (emergency stop).

3.2 Safety information for installation

Risk of falling! During installation, all landing sliding doors and wall openings must be secured by suitable aids such as barriers and signs in such a way as to preclude the opening or passage of persons who are not responsible for the installation.

Commissioning of the lift system and doors is only permitted after acceptance by the designated official body.

Risk of accident! The lift system must be secured against unauthorised operation throughout the entire installation period.

The relevant safety regulations for dealing with lift systems must be observed. The wearing of personal protective equipment by the installation personnel is taken for granted.

M EN 8200 3006 015

3.3 Selection and qualifications of personnel

People working on our lift sliding doors must be:

- At least 18 years of age.
- Adequately trained to perform the relevant activities.
- Familiar with the applicable technical rules and safety regulations and follow these at all times.

The installation company must make sure that only trained, skilled personnel work on the lift sliding doors and that all work is carried out in compliance with all relevant accident prevention regulations.

Persons who are to be trained, apprenticed or instructed, or who are receiving general education, may only work on the lift sliding doors under the constant supervision of an experienced person.

4 Intended use

Our door drive systems are suitable for use in our lift systems in accordance with EN81-20. Any use that goes beyond this is classed as other than intended.

5 Warranty

The warranty may be voided by any
- conversions or modifications,
- use of non-original spare parts,
- repairs by persons or organisations not authorised by the manufacturer,

that are done without the explicit and written approval of the manufacturer.

No liability can be accepted for damage
- caused by the operating and maintenance instructions not being complied with,
- arising from technical defects in the lift system or from structural deformations that have occurred during use,
- resulting from improper maintenance of the lift shaft and its components.

The warranty period stated in our general terms and conditions shall apply. Wearing parts are excluded from the warranty.

M EN 8200 3006 015

6 Notes on installation

Details on the installation of the door drive system can be found in chapter 10. The very wide range of different prerequisites and conditions that can be found on site are not covered in great detail. Suitable fixing and safety measures must be selected and taken into account in line with the building specification and local requirements.

The illustrations found in these installation instructions are schematic and shall be understood as general guides relating to the individual steps.

Any work and adjustments that go beyond the scope of what is described in these instructions can lead to the type examination certificate (TÜV) being revoked. In case of doubt, please contact us.

Adjustment work can be avoided by preparing for work thoroughly and performing it diligently.

6.1 Items supplied

See the packing list, which forms part of the delivery.

7 Commissioning the door drive system

Descriptions of details that can be considered common and obvious when dealing with a software interface have been left out in the interests of clarity.

If a certain switch (button) is pressed, for example, what is generally intelligible is not mentioned; the necessary action and the resulting predictable event is described in a shortened version.

Example

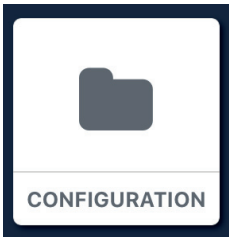
Detailed	Shortened version
Click on the button “Save” with the left mouse button, the window XY will be opened.	<*Save*> ► XY opens

M EN 8200 3006 015

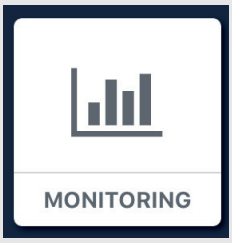
7.1 Configuration with smartphone (Bluetooth)

7.1.1 App features

Main menu[1)]



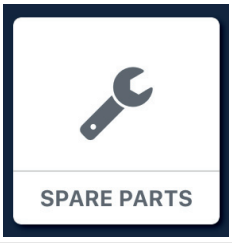
CONFIGURATION
Access to the configuration parameter settings of the control unit *.
See chapter 7.5



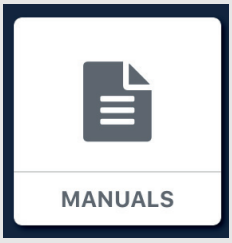
MONITORING
Visualisation of all operationally relevant data */**.
See chapter 7.5

COMMISSIONING
Initialisation and storage of the data required for door operation in the control unit *.
See chapter 7.1.2

FIRMWARE UPDATE
View, download (Internet connection necessary) and update the firmware version of the control unit. */**.



REPLACEMENT PARTS
Order replacement parts by e-mail, including the order data relevant for the lift door ***.



INSTRUCTIONS
If you have an Internet connection, all the instructions for that type of door will be downloaded to your smartphone. They can be updated at any time.

***** Possible if you have a Bluetooth connection to the control unit
** Possible following successful commissioning
*** By scanning the QR code, the order data are added to the order

[1)] If a menu item is greyed out, it cannot be activated because the prerequisites are missing (e.g. the Bluetooth connection is missing)

7.1.2 Initialisation

Preparation

- Make sure that the power supply of the door drive system is switched on (LED AUX, pos. 24, Abb. 2)
- Turn on the Bluetooth connection on your smartphone

Connecting a smartphone to the control unit

- Start the MEILLER app
- Press the "Connect" button on the control unit briefly (pos. 25, Abb. 2); a connection to the smartphone is established and the configuration and status data are transferred to the smartphone. The LED indicated by pos. 26, Abb. 2 flashes and the app displays “Connected”

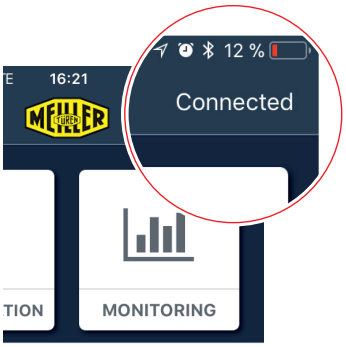


fig. 3

Configuring with QR code

- <Commissioning> ► QR code scanner is displayed

- Scan the QR code (inside the transom); an important note on commissioning is displayed and the setup drive can be started

- <Start commissioning> ► The following warning notice is displayed:



CAUTION There is a danger of crushing from the lift door which is moved by the drive motor. The drive motor starts immediately when the “Start” button is pressed. Keep a sufficient safety distance and do not touch any of the door mechanism’s moving parts.


- <Start> ► The door drive system learns the time, distance and force data during an initial run, after which *Successful* is displayed

fig. 4


If errors occur during the initial run, or if the data of the QR code do not match those of the door, “Code does not match the door” is displayed. The configuration can now be performed as described below under *Configuring without QR code*

- <Successful> ► Main menu is displayed. Verify the closing forces of the door as described under 7.2

M EN 8200 3006 015

Configuring without QR code

- <Commissioning> ► QR code scanner is displayed

- <Do you not have a QR code? ► Dialogue for inputting the order number is displayed

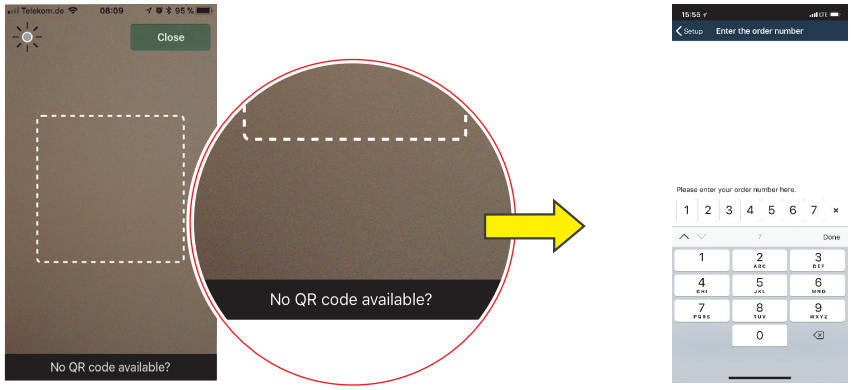


fig. 5

- Input order number (for a 6-digit order number: 1st digit = 0)[1)], the button *Perform commissioning* is displayed

If the order number is not entered correctly, not all functions of the control unit may be available in some circumstances.

- <Start commissioning> ► The following warning notice is displayed:

CAUTION There is a danger of crushing from the lift door which is moved by the drive motor. The drive motor starts immediately when the “Start” button is pressed. Keep a sufficient safety distance and do not touch any of the door mechanism’s moving parts.

- <Start> ► The door drive system learns the time, distance and force data during an initial run, after which *Successful* is displayed

fig. 6

- <Successful> ► Main menu is displayed

[1)] Each digit position must be completed. Skipping a digit position results in an error message

- <Configuration> ► for each of the following
  - <Settings> ► <Drive parameters>
  - <Settings> ► <Configure inputs-outputs>
  - <Drive profile settings>
    Ensure that the values set match those of the door

For each setting made, the counter (1) increases by one value. Changes are only saved (transmitted to the control unit), when *Send* (2) is pressed

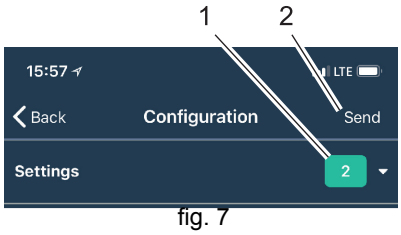


fig. 7

- <Configuration> ► <Commissioning of the door without QR code> ► Select the type of door to be configured, start the setup drive, “selected door type” is displayed

- <Execute> the door drive system learns the time, distance and force data during an initial run, after which *Action performed* is displayed for a few seconds

- Verify the closing forces of the door as described under 7.2

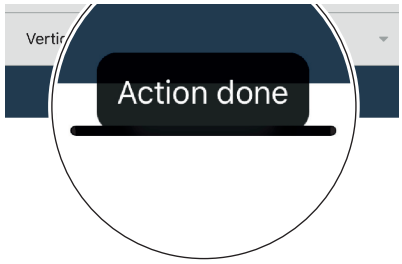


fig. 8

Commissioning without a terminal for configuration

If there is no terminal (smartphone) available for configuration, the door drive system can be taught-in as follows:

CAUTION There is a danger of crushing from the lift door which is moved by the drive motor. The drive motor starts immediately on activation after releasing the “Connect” push-button. Keep a sufficient safety distance and do not touch any of the door mechanism’s moving parts.

- Press the "Connect" push-button (pos. 25, Abb. 2) >5 <20 seconds; the drive motor moves the lift door and the time, distance and force data are learned-in.

M EN 8200 3006 015

7.2 Measuring closing forces

- Measuring and recording closure forces and, if necessary, opening forces

7.3 Menu structure

The menu always matches the door drive system connected to the app. The appropriate settings can be made.

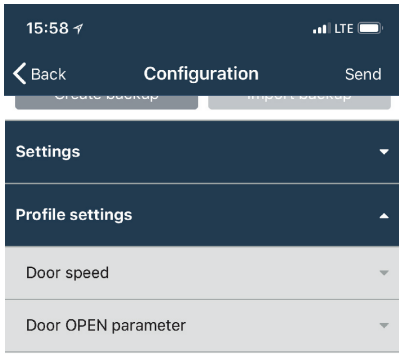


fig. 9

7.4 Monitoring menu

The monitoring feature allows a real-time view of all door data during the operation of the door. The values listed in this menu item correspond to the respective door type.

➡ The “Life-Cycle Door-Drive” value, expressed as a percentage, corresponds to our empirical values. The actual value may differ from this because the operating environment, such as the climate and degree of contamination, are not taken into account.

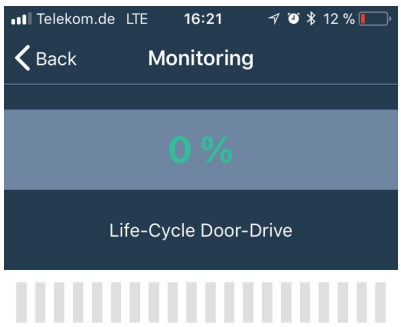


fig. 10

7.5 Configuration menu

➡ For each setting made, the counter (1) increases by one value. Changes are only saved (transmitted to the control unit), when *Send* (2) is pressed

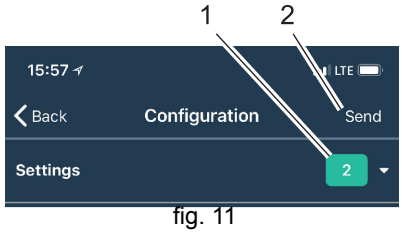
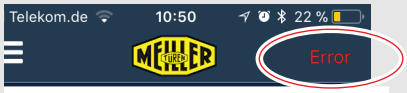


fig. 11

7.6 Error messages

Smartphone

Error description	Possible errors/remedies
Display message “Error” = No Bluetooth connection to the control unit present  fig. 12	- Switch on the Bluetooth function on the smartphone - Reduce the distance to the control unit - First, set up the power supply of the control unit (transformer mains plug, transformer cable connection to the control unit), then start the app in the smartphone. When starting the app, ensure that no Bluetooth connection from a previous data exchange is still active. If there is such a connection, then an error message can occur when starting the app.

M EN 8200 3006 015

8 Declaring operational readiness

Prerequisites for the operational readiness of the door drive system:

- The installation and function check of the entire lift system has been completed without flaws.

- The closure forces and, if required, the opening forces of the door leaves are in the regions that are specified by the standards.

We recommend that the installation company document the condition of the lift system in writing and prepare a transfer protocol when handing over to the operator.

9 Connection examples

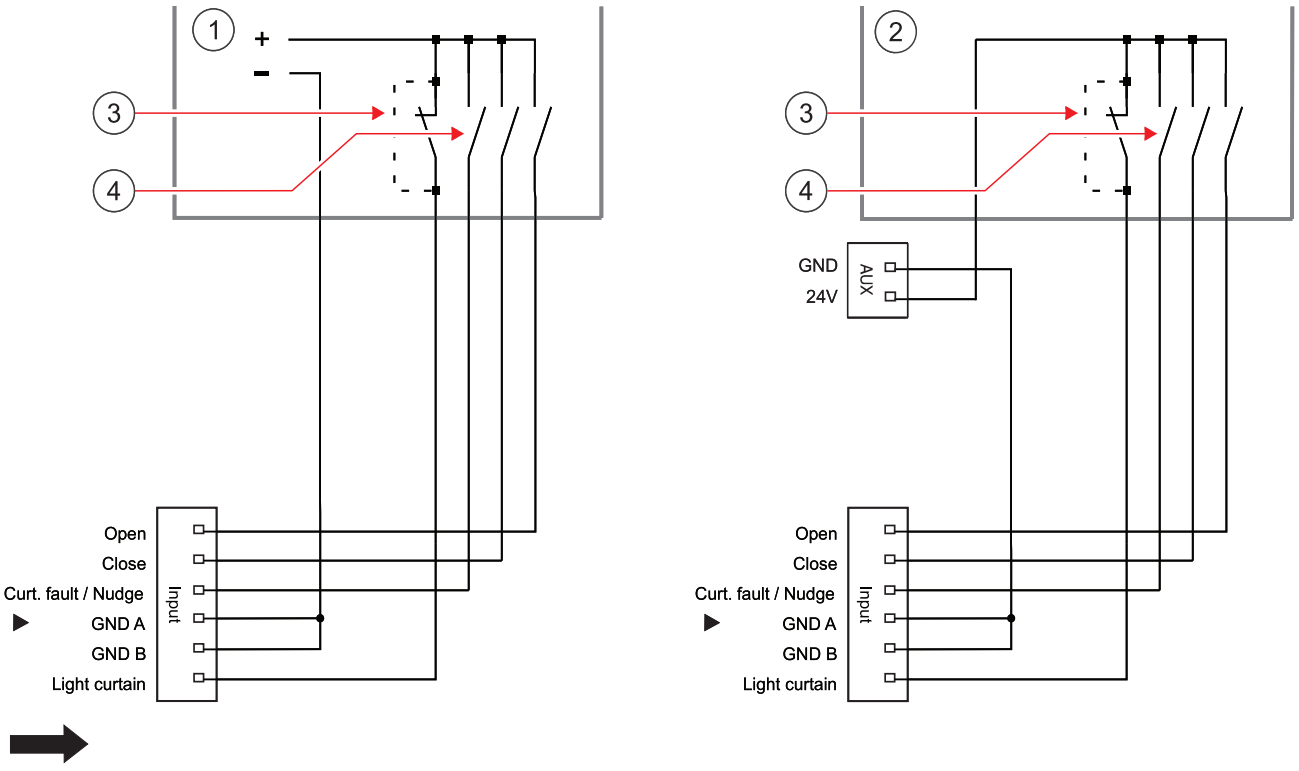
9.1 General

Two different options for connecting to the lift control are described (see also Abb. 13):

- Lift control (control voltage) = +24 V DC/27 mA per input
- Lift control (relay contact) = Potential-free relay contacts in the control

9.2 Control unit to the lift control

1	Lift control (control voltage)	3	Light curtain/ safety edge, or 2nd door width
2	Lift control (relay contacts)	4	Nudging or light curtain fault



- Do not mix potentials with each other.
- The AUX slot is an output; do not apply external voltage.
- If malfunctions occur, this may be due to a lack of connection between GND A and GND B.

fig. 13

M EN 8200 3006 015

9.3 Light curtain/safety edge

1	Lift control (control voltage)
2	Lift control (relay contacts)
3	OUTPUT (black)
5	Transmitter for light curtain/safety edge
6	Receiver for light curtain/safety edge
7	Negative (blue)
8	Positive (brown)

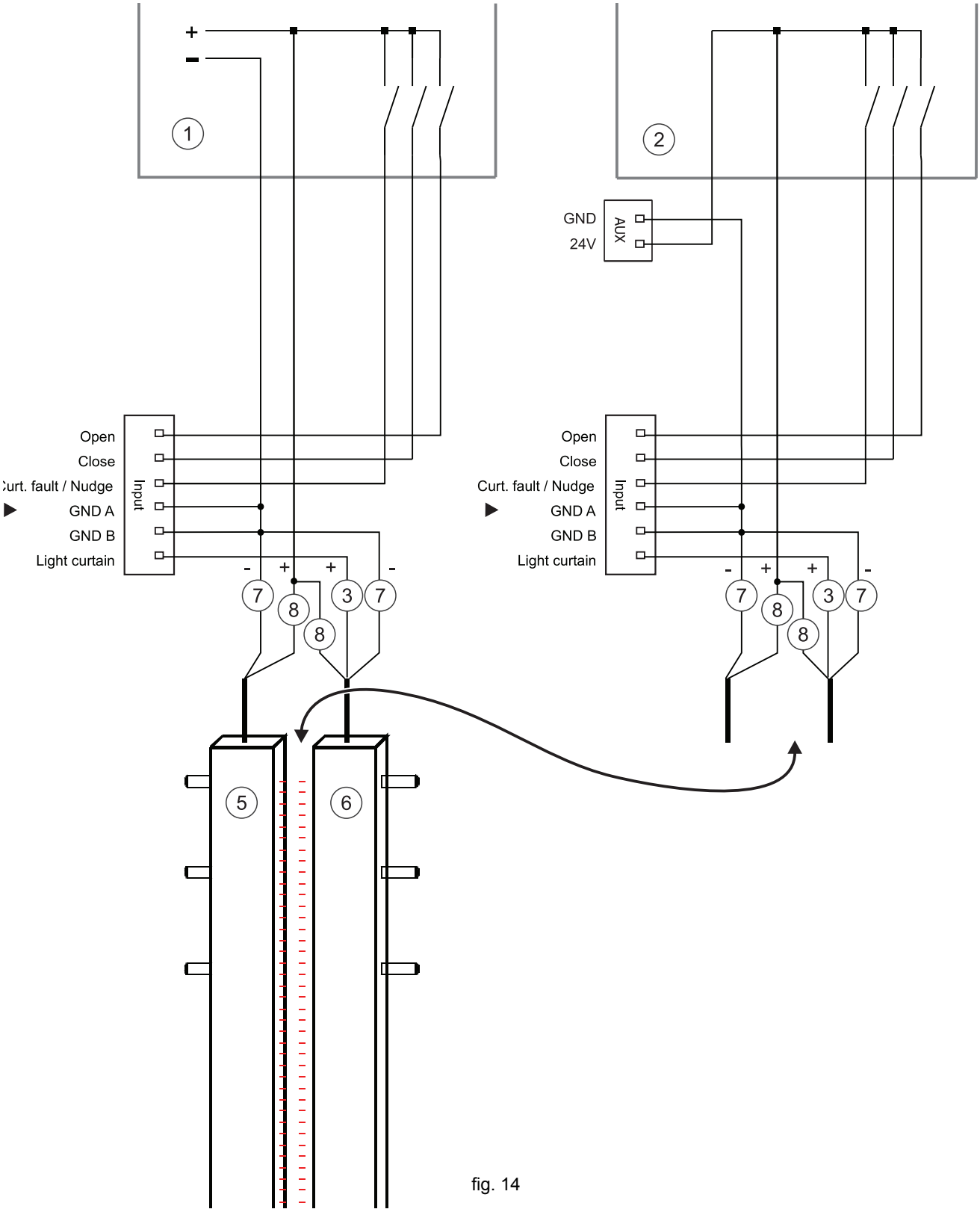


fig. 14

9.4 Light curtain/ safety edge, with fault message output

1	Lift control (control voltage)	5	Transmitter for light curtain/ safety edge
2	Lift control (relay contacts)	6	Receiver for light curtain/ safety edge
3	OUTPUT (black)	7	Negative (blue)
4	Beam Fault (yellow)	8	Positive (brown)

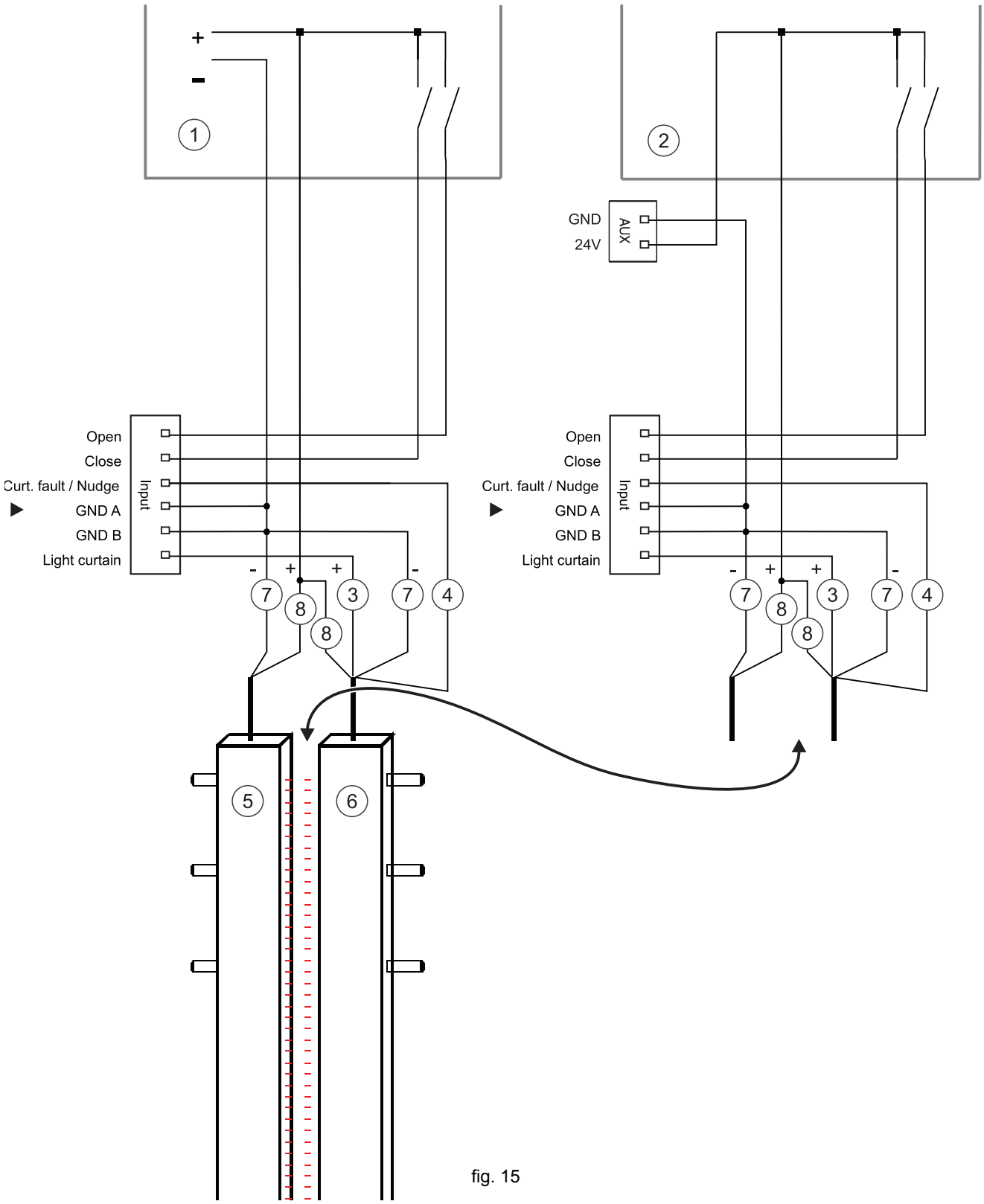
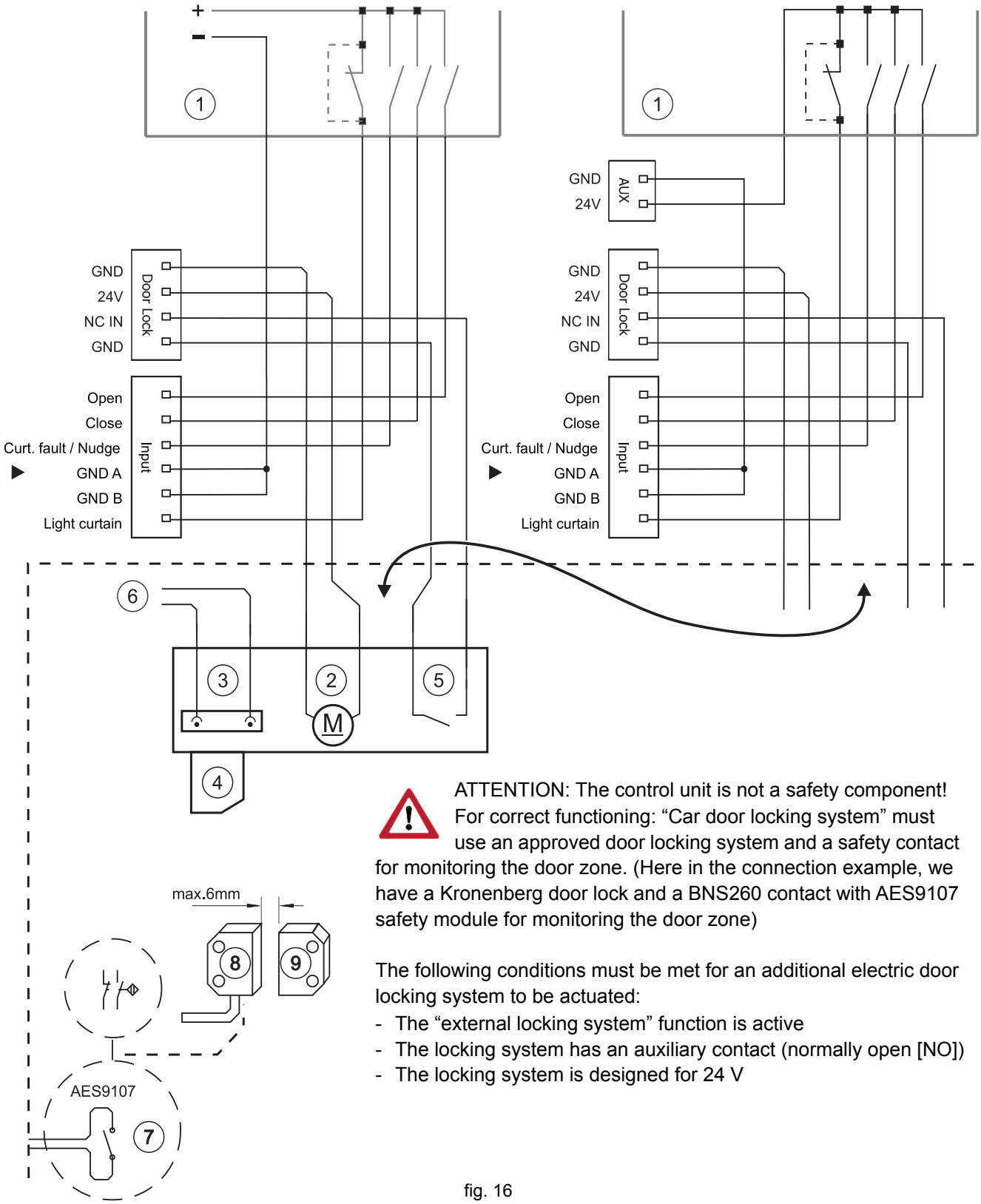


fig. 15

M EN 8200 3006 015

9.5 External door locking systems

1	Lift control (control voltage)	5	Auxiliary contact
2	Lift control (relay contacts)	6	Safety circuit
3	Locking device switch for safety circuit	7	Safety switch, door zone monitoring
4	Locking device	8	Car
		9	Shaft



ATTENTION: The control unit is not a safety component! For correct functioning: “Car door locking system” must use an approved door locking system and a safety contact for monitoring the door zone. (Here in the connection example, we have a Kronenberg door lock and a BNS260 contact with AES9107 safety module for monitoring the door zone)

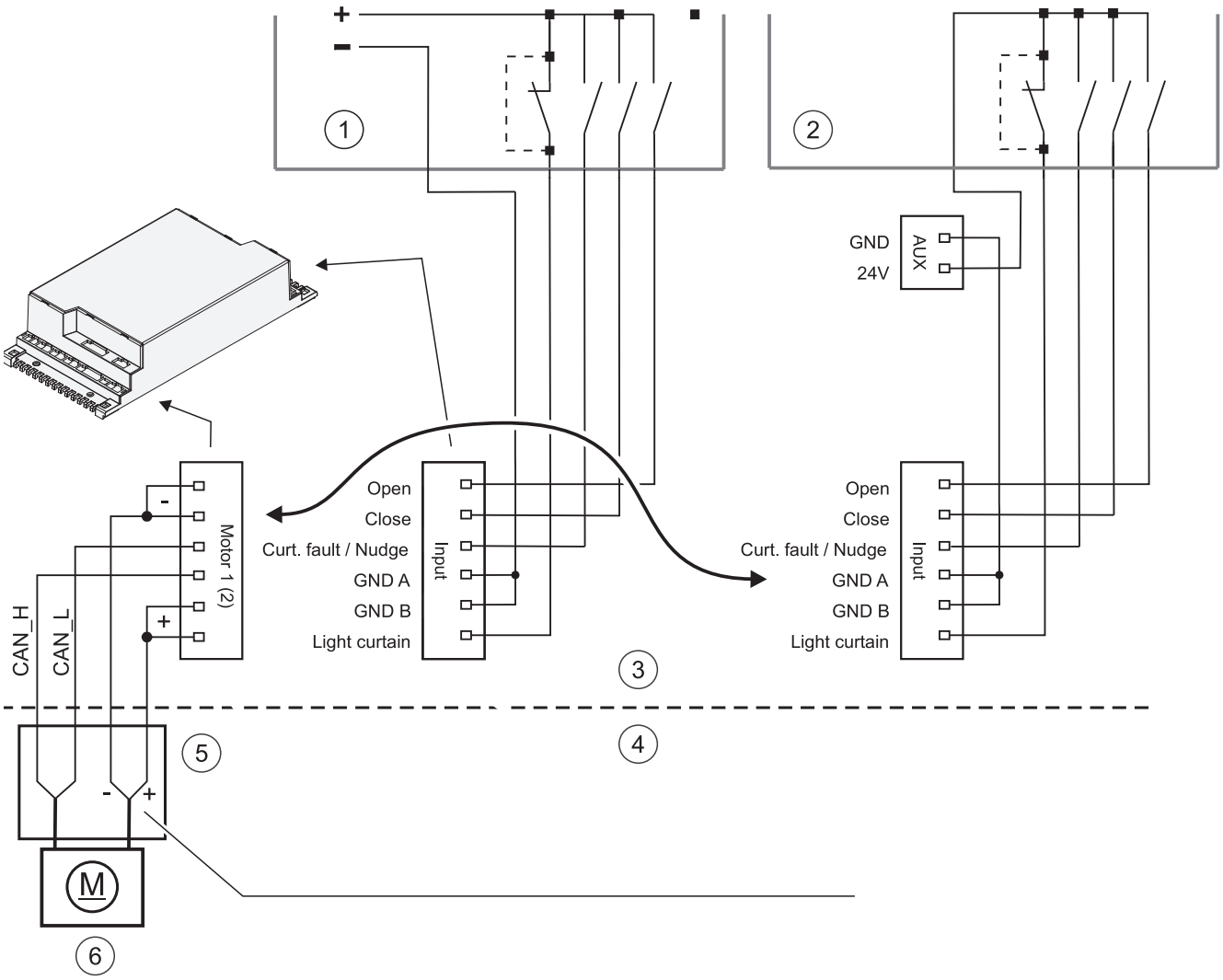
The following conditions must be met for an additional electric door locking system to be actuated:

- The “external locking system” function is active
- The locking system has an auxiliary contact (normally open [NO])
- The locking system is designed for 24 V

fig. 16

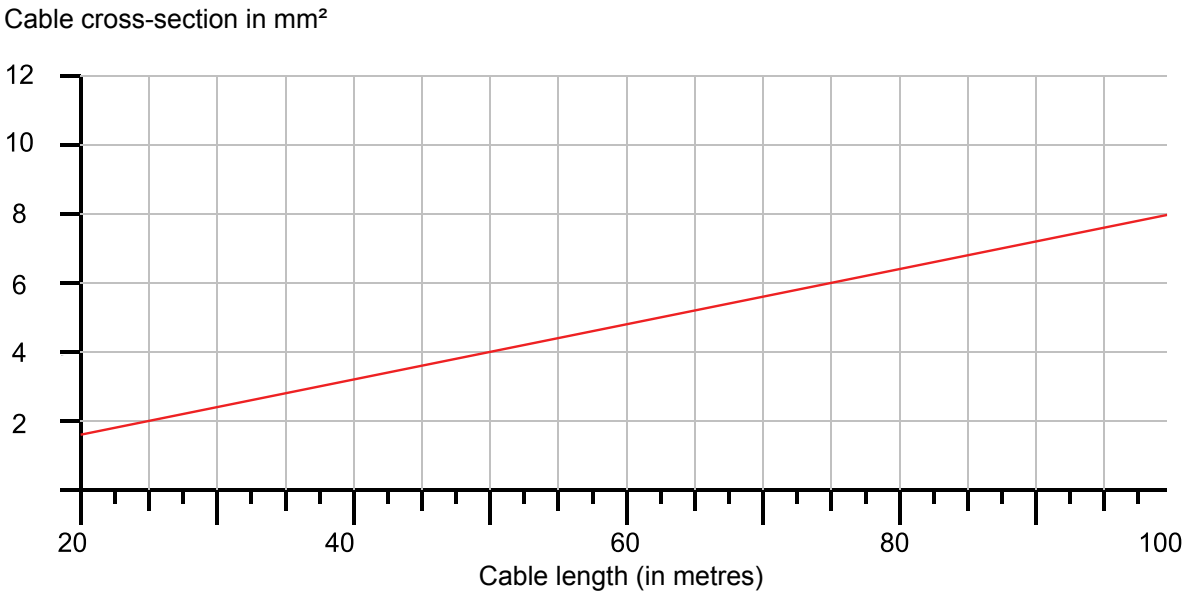
9.6 EX door drive

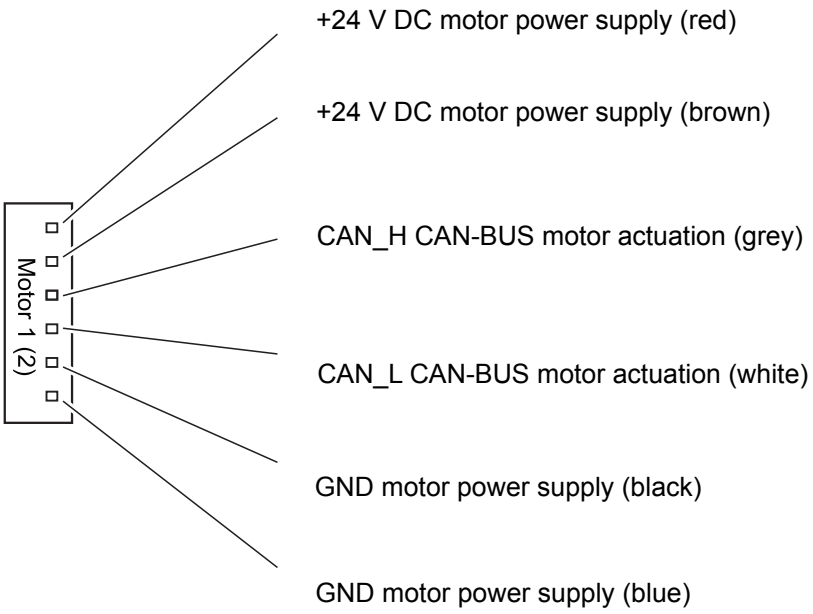
1	Lift control (control voltage)	4	EX zone (shaft)
2	Lift control (relay contacts)	5	Motor connection box
3	Engine room	6	EX door motor



- Do not mix potentials with each other
- The [+] and [-] wires must correspond to the required cable cross-section
- The 24 V for the motor must be taken from the control unit because the control unit controls the motor current
- Additional or alternative sources of voltage can damage the motor or the control unit
- For actuating the motor [CAN_H] and [CAN_L], use shielded CAN-BUS cable
- Only the Ex motor and the motor connection box are intended for the Ex area – i.e. hazardous area. The control unit must be in the non-Ex area, i.e. non-hazardous area
- Connect the motor via separate cables

fig. 17





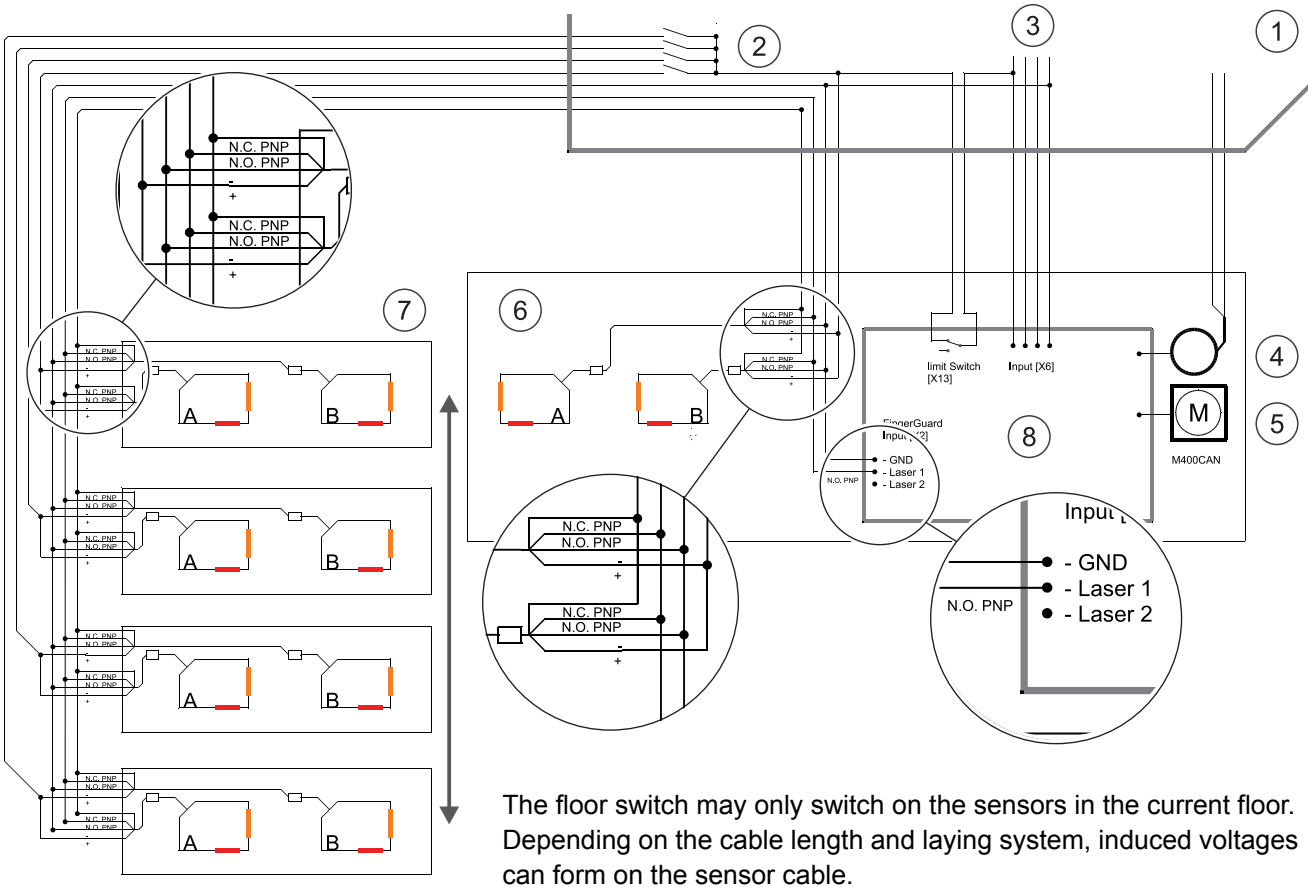
Motor connector for connection to the control unit

fig. 18

9.7 FingerGuard sensors

1	Lift control *	5	Door motor
2	Floor switch *	6	Car door
3	Door signals *	7	Landing doors
4	Transformer	8	Control unit

* On-site



The floor switch may only switch on the sensors in the current floor. Depending on the cable length and laying system, induced voltages can form on the sensor cable.

This can be diverted with a resistor or relay if necessary. (e.g. a 24 V DC relay coil between the terminal laser 1 and GND on the control unit)

Protection against manipulation/defect: If a sensor is triggered when the door is opened, the door movement stops. The position is stored and hidden on the next run. If no sensor is triggered when the location is subsequently passed over, the area is displayed again.

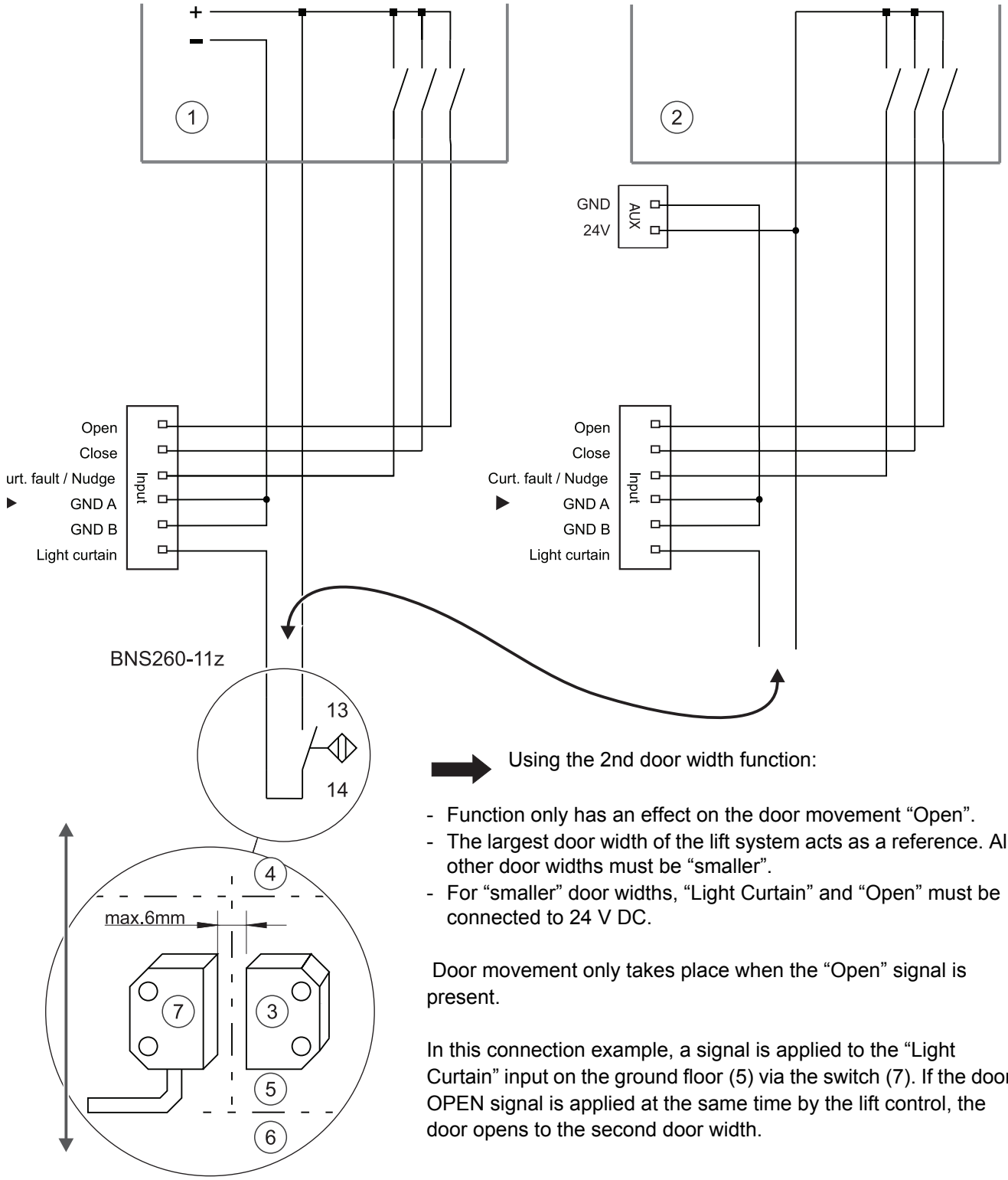
➡ If a sensor is triggered when the door movement begins, the movement occurs at nudge speed. If the FingerGuard function is not required, it should be deactivated to prevent faults. If a certain number of FingerGuard emergency stops is reached, the control unit issues a warning message via the monitoring function. All safety-relevant components of the door must then be checked and replaced if necessary.
The door motor must be replaced in any event. A replacement on the warranty is not possible if the permitted number of emergency stops has been exceeded.

fig. 19

M EN 8200 3006 015

9.8 2nd door width function (reduced opening)

1	Lift control (control voltage)	4	1st upper floor
2	Lift control (relay contacts)	5	Ground floor with 2nd door width
3	Landing doors	6	Basement
		7	Car door



Using the 2nd door width function:

- Function only has an effect on the door movement “Open”.
- The largest door width of the lift system acts as a reference. All other door widths must be “smaller”.
- For “smaller” door widths, “Light Curtain” and “Open” must be connected to 24 V DC.

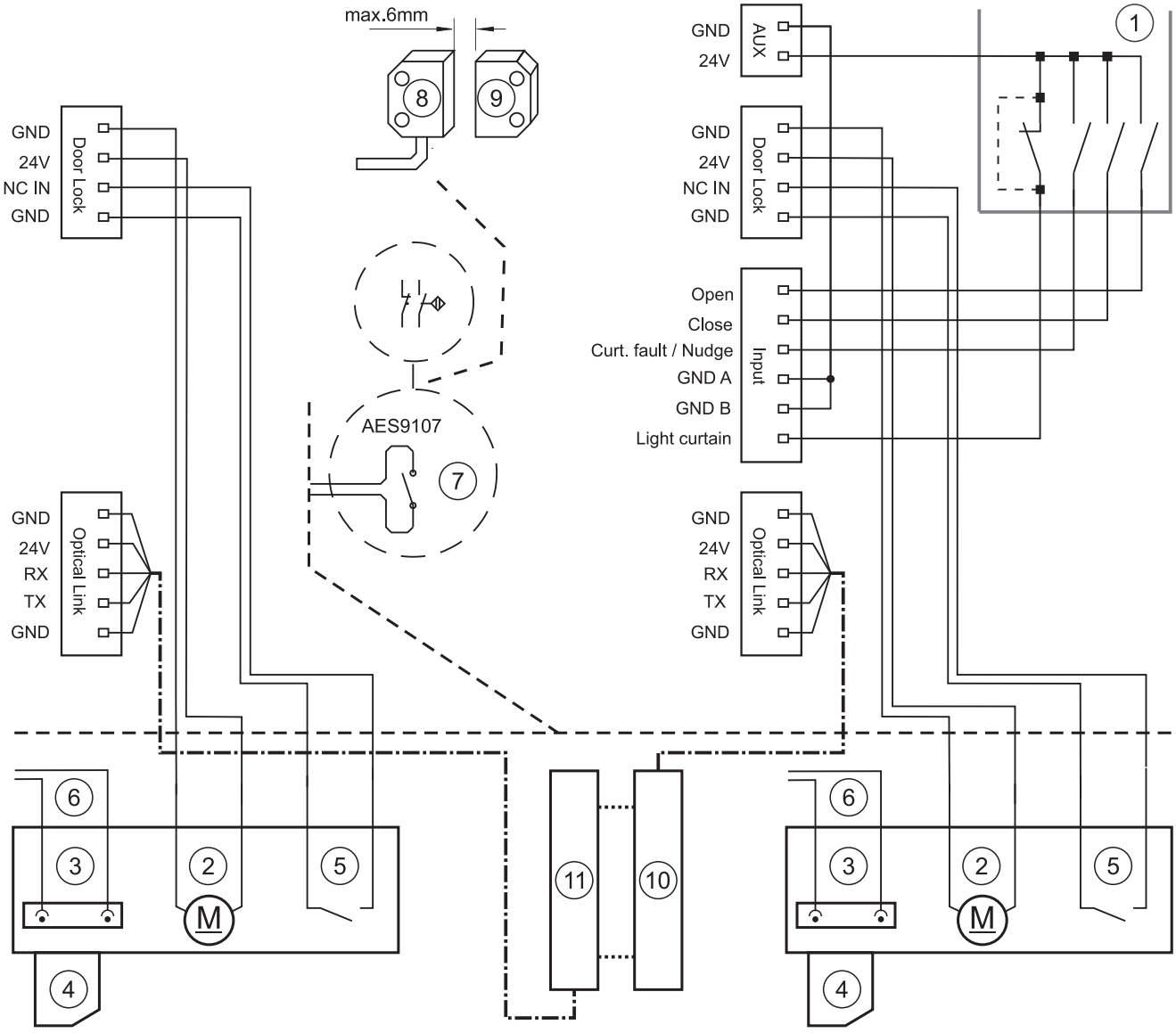
Door movement only takes place when the “Open” signal is present.

In this connection example, a signal is applied to the “Light Curtain” input on the ground floor (5) via the switch (7). If the door OPEN signal is applied at the same time by the lift control, the door opens to the second door width.

fig. 20

9.9 Optical coupling

1	Lift control (example relay contacts) Example of control voltage: Pos. 1, Abb. 20
2	Locking device drive
3	Locking device switch for safety circuit
4	Locking device
5	Auxiliary contact
6	Safety circuit
7	Safety switch, door zone monitoring
8	Car
9	Shaft
10	IR-COM, car
11	IR-COM, shaft



For powered landing doors
The car door control unit communicates with the landing door control unit via an infra-red communication bar connected to “Optical link”.

The landing door control unit assumes the driving parameters of the car door control unit. Changes to the driving profile must therefore be made only on the car door control unit.
If the connection is disconnected during a door cycle, the landing door always has the “urge” to close the door (closing weight function).

fig. 21

M EN 8200 3006 015

10 Installation

10.1 Prerequisites for installation

- 1 earthed socket (protected with C16 circuit breaker) for each torroidal core transformer (1 unit per door drive system)
- Suitable installation site for the torroidal core transformer. Weight approx. 4.5 kg. Ensure installation is secured against slipping and falling, and that there is sufficient distance from flammable materials. Access to the safety fuse must be guaranteed.
- Suitable installation site for the control unit. It must be securely fastened to prevent slipping and falling.
- Ensure that the maximum door leaf weight per drive motor is not exceeded.
- Ensure that the gearbox output is on the correct side.

10.2 Tightening torques for screws and nuts

All screw connections used for installing our products, for which there is no separate specification concerning the tightening torque, must be tightened to the torque specified in the table below.

Specification in Nm

Screw	max	min	Locking screws and nuts
M3	1.1	0.9	
M4	2.6	2.1	
M5	5.1	4.1	11.0
M6	9.0	7.0	19.0
M8	21.0	17.0	42.0

➡ Note: Check the tightness of all screw connections!

➡ Self-locking elements must be replaced with new, equivalent elements after being undone and, if necessary, identified with sealing wax after proper installation.

The door drive concept includes a wide range of motors that are addressed and controlled exclusively via CANopen. This makes it possible to use a wide variety of electric drives. The standard uses DC motors with gearboxes optimised for operation. At the same time, motors with EC technology or explosion protection are also available.
Thanks to the end position relay technology, the information door OPEN and door CLOSE is also available without a limit switch on the control unit.

Header Installation and adjustment instructions for the door drive system