



German manufacturer

Installation and operation manual for door drive LDO AC 3.0

Please read this operation manual before starting installation and start-up, make sure you understood the contents and pass the manual to others, if necessary. It provides instructions related to your safety and helps to avoid damage to the door drive.

Safety regulations

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Safety regulations

Scope of application and instructions

This operation manual is intended for all individuals who take part in installation and start-up of door drive LDO AC 3.0. Instructions contained in the operation manual must be strictly followed.

Other effective regulations

In addition to this operation manual, the following regulations must be adhered to:

- Accident prevention regulations
 - VBG 1 General regulations,
 - VBG 4 Electrical installation and tools,
 - ZH 1/228 Safety regulations for use of electrical tools in conditions of serious electrical hazard.
- Acts, regulations, safety regulations of national and international safety authorities, such as:
 - DIN VDE 0100 Construction of high voltage installations with rated voltage up to 1000 V
 - DIN VDE 0105 Operation of high voltage installations
 - DIN VDE 0106 Protection against electric currents hazardous for human body
 - Use of work equipment directive (EC Directive - 89/655/EEC)
 - Operational instructions, unless they render safety regulations of this operation manual ineffective.

Personnel assignment and competences

All operations described in this manual must be performed under guidance and supervision of a qualified technician. A qualified technician is an individual who is able to perform or to supervise performance of all operations on the door drive, in a professional manner.

In addition, the qualified technicians must:

- be of at least 18 years of age and provide a professional certificate of preventive medical examination G 20,
- obtain authorisation before the start of installation works of the entire installation of the elevator,
- read the operation manual thoroughly and understand its contents,
- is, in particular, instructed in the area of door drive technology and their cooperation with the entire elevator installation as well as their functional routines.
- has adequate knowledge of the entire elevator installation as well as of its cooperation with individual assemblies.
- can prove adequate knowledge of regulations related to safety at workplace and accident prevention, as well as of relevant technical rules and regulations.

The technical should perform and supervise only operations described in this operation manual.



All further operations which may be performed on the door drive LDO AC 3.0, should be performed only by employees of Elevator Trading GmbH.

Accident prevention

Every individual knowing and following accident prevention regulations helps with preventing accidents from happening! Precautionary measures against recognizable accident hazards may enable to avoid heavy damage.

Every employee is obliged to prevent accidents and occupational diseases from happening to the best of their ability. Recognized accident hazards must be immediately eliminated. If this is impossible, the hazardous areas must be secured, and the recognized accident hazard must be immediately reported to the supervisors.

Occupational safety

The operators have the following obligations related to ensuring occupational safety:

- to remember to follow the UVV and other regulations related to occupational safety as well as proactively prevent accidents,
- operation of accident preventing installations and devices as well as operational safety of the installation must be controlled in regular, defined intervals,
- dangerous parts of the installation must be immediately removed from operation and seized using adequate protective measures,
- deficient assemblies and installation parts as well as UVV violations must be immediately reported to the superiors,
- in case of works being performed on tools and equipment under voltage, their power supply must be switched off beforehand.

Behaviour in case of an accident at work

In case of an accident at work resulting in serious consequences, provide first aid and immediately inform emergency services (emergency doctor) about the accident. The company management must be immediately informed about every such accident. An accident report must be prepared.

Visitors

Visitors are forbidden to enter and be present in the installation works area for the entire elevator installation.

Safety markings

The following safety markings according to VBG 125 have been used on parts of the door drive as well as in the operation manual.



Warning against hazardous voltage



Switch off the power supply before work



Warning against automatic operation

Foreword

This operation manual describes the door drive for personal and cargo elevators LDO AC 3.0 according to EN81.

The operation manual is divided into chapters. In Chapter 1, the intended use of the door drive is defined in a form of a use description. In Chapter 2, technical description of the door drive is provided, ensuring a good overview of its design and operation. In addition, operating elements and indicators are explained. The most important technical data can be found in Chapter 3. Chapter 4 describes the operations required to perform the installation and assembly. Configuration of the door drive is described in Chapter 5.

◆ Because of necessity of keeping the operation manual a summarizing one, not all detailed information related to every possible implementation and design of the door drive LDO AC 3.0 and note every possible and imaginable configuration, operation or maintenance work could have been included.

Should you require further information or if particular problems occur, the required information can be obtained by contacting Elevator Trading GmbH.

◆ Elevator Trading GmbH indicates that the contents of this operation manual is not one of and should not change previous or existing agreements, promises or other legal relationships. All obligations of Elevator Trading GmbH result from every respective sales contract, which also includes complete and independently effective warranty rules. These contractual warranty regulations are neither expanded nor limited by the implementation of this operation manual.

◆ Elevator Trading GmbH is continuously working on further development of its products. It must be understood that in case of diagrams and technical data, related to the design, equipment and know-how knowledge, technical modifications are possible in the future, corresponding to new developments.

Particular emphasis was placed on user-friendly structure of the operation manual, ensured thanks to demonstrative and descriptive figures and textual information. References to figures are provided in the text using brackets. In the references, the first numbers before the dash indicate the chapter and figure number, and the second number, if any, located after the dash, indicates a reference number on the respective figure.

For example:

(Figure 3-2) means figure 2 in Chapter 3.

Important information for operators and maintenance personnel is marked with pictograms.

◆ They mark important information that the installation and maintenance personnel must pay particular attention to.



They mark work and operation methods that must be strictly followed in order to avoid damage or destruction of the door drive and of the entire elevator installation.



They mark work and operation methods that must be strictly followed in order to exclude hazard to people.

1 Definition of use

1.1 Intended use

The door drive LDO AC 3.0 manufactured by Eleveator Trading GmbH described in this operation manual is used as a control measure and as a drive of doors in electrically driven elevators as understood according to EN 81.

This operation manual describes in detail how and under observance of which regulations and conditions the door drive should be installed and operated.



Only use described in the EN81 standard should be understood as intended use. Every other use is considered unintended and is forbidden.

1.2 Unacceptable use

Every use of the door drive which is not included in uses described in this operation manual and in the EN 81 standard is considered unacceptable. This refers in particular to not observing or exceeding the limits and characteristic values provided in Chapter 3 "Technical Data".

Elevator Trading GmbH shall not be held responsible for damage which results from violation of prohibitions laid out in this operation manual.

1.3 Obligations of the installation company

The installation company that performs complete assembly and installation of an elevator installation ready for operation, performs its start-up and maintenance, bears the responsibility for the door drive to be used as understood in this operation manual and in the EN 81 standard. The installation company shall implement the entire operation manual of the door drive LDO AC 3.0 in the operation manual and operation instructions of the entire elevator installation, without changing or rendering a single point ineffective.

1.4 Expansions and amendments

Should the use and environment of the door drive change in such a manner that its function or specified limits and characteristic values can no longer correspond to regulations set forth in this operation manual, Elevator Trading GmbH should undertake appropriate adaptations and customizations. In addition, a permission of the local agencies may be required.

Unauthorized modifications and expansions of the the door drive may have inadvertent and diminishing effect on the safety, so the declaration of the manufacturer expires.

2 Technical description

2.1 System description

The door drive LDO AC 3.0 is an "intelligent" door drive. Thanks to this drive, the elevator door may be opening and closing with regulated speeds and accelerations. The maintenance-free door drive comprises of a control system which is installed inside a housing, and of a drive in the form of a gear motor. It uses a standard, alternating current, asynchronous motor with a non-self-locking gear. Toothed belts are used to transfer the driving force. The drive system can be used for operating a one-sidedly and centrally-opening doors. The driving motor can be manufactured with differently installed toothed belt pulleys, for doors opened to the right and to the left. The door drive does not require an end switch. The door width and the "open" and "closed" positions are determined automatically. The door status can be transmitted over to the master elevator control using relay contacts.

2.2 Functions

Door width determination

Door width determination must be triggered as an automatic process within the framework of assembly and installation. This operation is described in Chapter „4 Assembly and installation“ .

The „Door opening“ command

The "Door opening" command causes the door to open according to the predetermined motion curve, as long as the command is present. The "Door opening" command must be present during the entire opening motion.

The „Door closing“ command

The "Door closing" command causes the door to close according to the predetermined motion curve, as long as the command is present. The "Door closing" command must be present during the entire closing motion.



The first closing motion after a power outage takes place at slow speed.

Only if the door commands last a longer time, the door motor remains in the end positions under an acting moment.

When no holding moment exists in the "Door closed" position (the command "Door closing" is not present), the door closes automatically, when it has been opened for more than 3 increments.

Interruption and reversal of the closing motion

There are three different events that lead to interruption and reversal of the closing motion:

- A light barrier attached directly to the door drive signals an interruption of the light ray.
- The door encounters an obstacle during its closing motion.
- The door becomes blocked already in the "open" position.

If any of these three events is detected, the motion taking place shall be briefly interrupted. This interruption shall be repeated two times and then the door moves to the "Door open" position and waits 10 seconds. Next, the still present closing command is executed as normal, and the door closes in the usual manner again. In case of an interruption of the closing command, the pause ends up immediately.

The „Push“ command

In the operational state of pushing, the state of the light barrier attached directly to the door drive is not observed and the closing speed is lowered. The commands „Push“ and „Door closing“ must be present simultaneously.

Emergency release

If the door is closed, the emergency release is possible under following conditions:

- when the door is in a standstill,
- no commands from the elevator control system exist, and
- no service button of the door drive was pressed.

When the door was determined to be open by more than 20 increments (more than 14 mm) from the "Door closed position", the door recognizes this as emergency release and disconnects the automatic "Door closing" command.



The force required to open the door is smaller than 300 N.

Light barrier

A voltage ranging from 18 to 27V DC at the light barrier input is interpreted as interruption of the light ray of the light barrier. This voltage is measured against 24 V GND.

In case of closing door, interruption of the light barrier results in the closing motion being interrupted and as long as a light barrier command is present, a slow, opening motion is executed.

2.3 Operation elements and terminal layout on the board

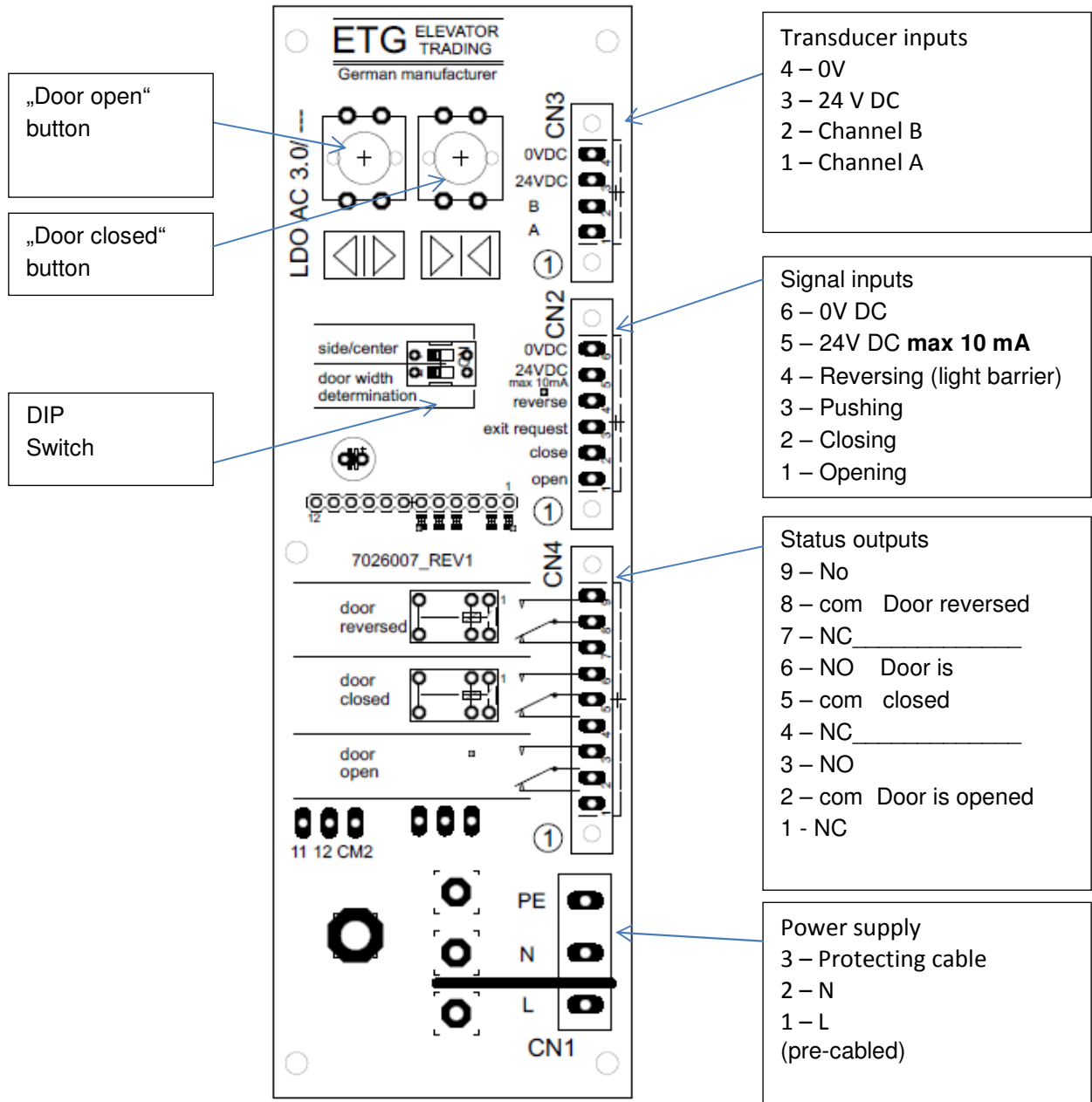


Figure 2-1 Operation elements and connector layout
Service buttons „Door open“ and „Door closed“:

Using both service buttons „Door open“ and „Door closed“ the door can be moved in both directions. The motion is being performed as long as the button is pressed.

DIP-Switch

DIP 1 : Basic data setting

A setting which decides whether basic parameters for an one-sided (DIP 1 off) or middle-opening (DIP 1 on) door are loaded into the main memory during estimation of door width.

DIP 2: Door width determination

The mechanical door width is determined using the door width determination function and it is stored in the control system.

3 Technical Data

Total

permissible door leaf	max. 200 kg in case of Type 200 max. 420 kg in case of Type 420
permissible door width	max. 4000 mm
permissible operating temperature	max. 60°C min. -10 °C

Housing

execution	zinc-plated, installed on a foot,
Housing cover lock	1 pc. Phillips screw M4
Protection type	IP 23
Protection class	1
Dimensions	W/H/D 195mm/175mm/120mm

Control

Power supply	1 x 230 V AC -15% / +10%; 50 Hz ±5%
Control inputs CN2/1-4	+ 18 V to + 27 V DC; 5 mA per input
Control outputs CN2/5	24 V DC, 0,02A
Terminals	Sockets (Phönix)

Alternating current-Asynchronous motor-Drive motor

Protection type	IP 55
Power supply	230 V Delta connection
Rated current	0,88 A Delta connection, Type 200 1.19 A Delta connection, Type 420
Power	0,12 kW for Type 200; 0.18 kW for Type 420
Rated frequency	50 Hz
Mass	4,5 kg
Output	Toothed belt pulley
Toothed profile width:	15 mm
Numer of teeth:	24

Transducer

Incremental transducer technology	Angular momentum transducer with contactless sensor
Protection type:	IP 65
Power supply voltage:	+24 V DC ±5%

4 Assembly and installation

1. Elements of the door drive should be installed on the cabin door according to local conditions or requirements. The motor must be installed at the provided location, together with substructure provided for the toothed belt tensing. Two threaded openings have been provided on transverse support 2 for control system housing, it can be also installed within a 1.4 m radius around the motor, on the cabin roof. The electrical installation must generally follow the switch plan diagram.
2. Connect the motor cable to the motor.



Before starting work on the door drive, all supplying cables must be disconnected and secured against switching the power supply on again.

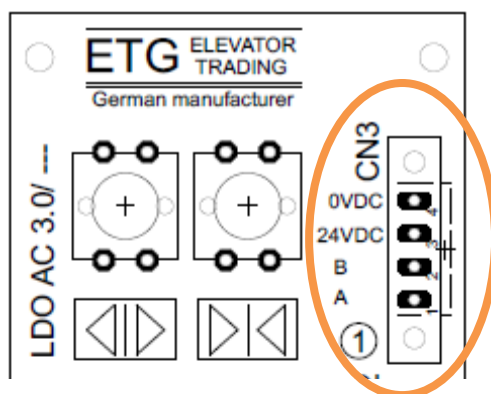
The motor must operate in a delta connection mode (factory setup).

Connect the motor cable as follows:

Motor connection		
U	V	W
1	2	3

With the determination of door width, the controller recognizes the connecting of the cables and rotates it in the inverter if necessary.

3. Open the housing cover of the door drive door drive LDO AC 3.0.
4. The incremental moment transducer is already factory installed on the drive motor after shipment and must still be connected to the CN3 connector (see Figure 4-1) (see table at 2.).



Pulse generator connection	
4 - 0 V DC and shield	[black]
3 - 24V DC	[red]
2 - Channel B	[orange]
1 - Channel A	[green]

Figure 4-1 Pulse generator connection

5. Power supply connection using the factory supplied power supply cable.



Design-wise, the power supply cable must be protected using a cable circuit breaker **3 A / C** or a power circuit breaker (motor circuit breaker) 1.6 to 2.4 A

6. Switch on the power supply.
The indicator of the converter displays „000“, the PWR-LED and the Hz-LED light up.
7. Test of rotation direction of the generator:
With the self study of the rotation direction of the motor in regard of the door width determination, the controller also recognizes the right rotation direction of the generator.
There is no need in changing the configuration of the channels A and B.
8. Check the DIP switch after supply: both switches must be placed in the "OFF" position.
If a centrally opening door is about to be driven, switch the DIP switch 1 in the "ON" position.
This causes standard parameters for centrally opening doors to be uploaded into the memory during door width estimation.

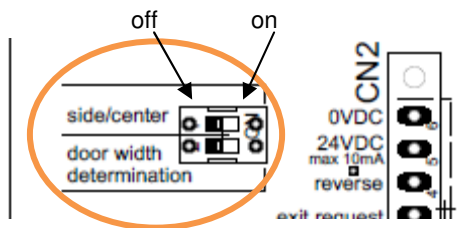


Figure 4-2 DIP switch

9. Door width determination
 - In order to begin the door width determination, both mechanical end stops (rubber buffers for "Door open" and "Door closed") must be set up.
 - To recognize the closing edge, the door has to be opened with a maximum of 5-10 cm. At first the controller is searching the closing edge and after that the door will move to the position "door open". Both positions will be stored.

Caution!

During every door width determination, **every** parameter values are overwritten with standard parameter values! The changed parameter values should be noted down prior to the operation.

Starting the door width evaluation:

Open the door not more than 5 – 10 cm, starting at the closing edge. Switch the DIP switch 2 to the „on“ position and then press and hold the „Door closed“ button (Figure 4-2/1) for over 3 seconds. The door starts moving then. The button may be released now.

The following functions are performed automatically. At first the door moves alternating to the first stop if it is necessary. This stop the control defines as closing edge.

Finally, a slow opening motion is performed in order to evaluate the "Door open" position. The estimated opening width is stored and is available also after a case of a power outage.

After a successful door width evaluation, the DIP switch 2 must be again switched into the "off" position. Finally, the control moves to the "Door open" status.

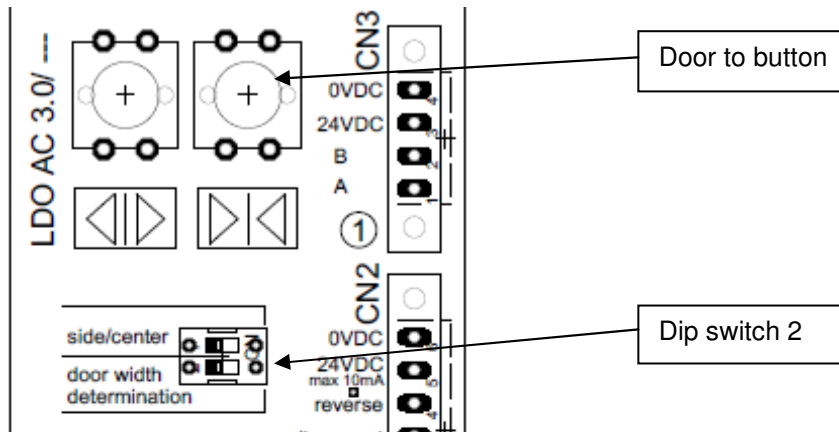


Figure 4-3 Controls used during door width estimation

The door can be closed or opened using service buttons “Door closed” and “Door open”. In case of all door motions performed using the service buttons “Door closed” and “Door open”, the respective service buttons must be held until the “open” or “closed” state is reached. Otherwise, the door motion shall stop. The service buttons are located in parallel to control inputs at CN2.

10. Layout of elevator control commands and status outputs for the elevator control system

Input signals „Open“, „Close“, „Push“ and „Light barrier“ are switched at the CN2 socket, at the respective pins, see Figure 4-4.

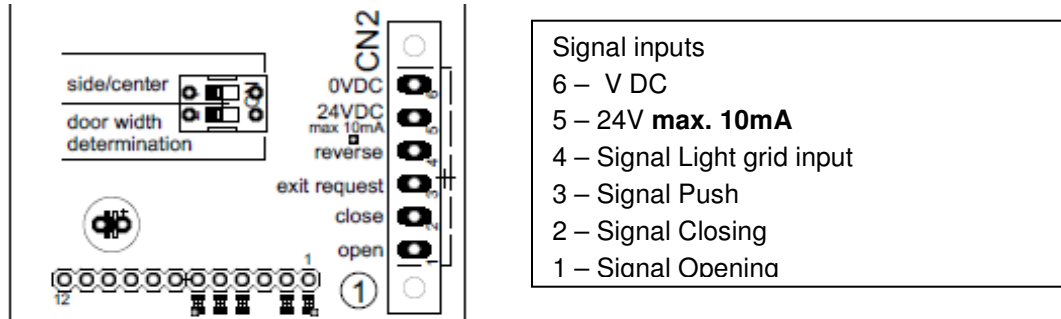


Figure 4-4 Control signal inputs

Input voltage of inputs 1-4: +18V to +27V; 5mA per input

Caution!

The 24V DC voltage output is provided for relay input wiring (when necessary). It should not be used as a power supply for the light grid or other elements. The max. load is 20 mA!

The status signals “open” “close” and “reversing” required for the elevator control system are generated by the door drive and are available at voltage-free relay contacts, CN4 socket (see Figure 4-5).

Relay contact „closed“

When the door is closed, the corresponding opening contact at CN4 connector is closed (pins 4 and 5), while the closing contact is open (pins 5 and 6). If the door is not in that state, the opening contact is open and the closing contact is closed.

Relay contact “open”

When the door is open, the corresponding opening contact at CN4 connector is closed (pins 1 and 2), while the closing contact is open (pins 2 and 3). If the door is not in that state, the opening contact is open and the closing contact is closed.

Relay contact “reversing”

When the door is reversing, the corresponding opening contact at CN4 connector is closed (pins 7 and 8), while the closing contact is open (pins 8 and 9). If the door is not in that state, the opening contact is open and the closing contact is closed.

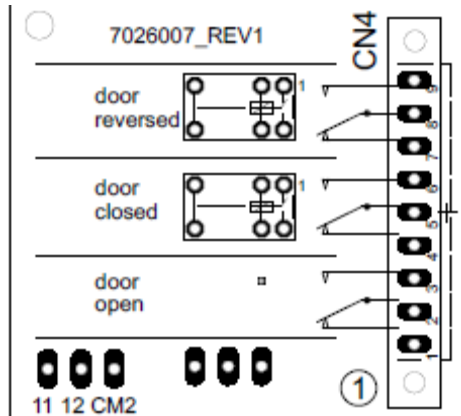


Figure 4-5 Relay contacts

Control outputs at the CN4 connector: max. 30V 0.5A

The door drive is now ready for operation using factory preset parameters. Both braking points must still be defined. They must be set in such a manner that the slow motion distance in the end positions does not exceed 50 mm. Other parameters can also be modified. Desired motion characteristics can be configured using configuration settings (see Chapter “5 Configuration”, page 15).

11. Position finding after a power outage or power network disconnection

The door position is found after a power supply interruption using the “Door closed” command until the elevator control recognizes “Door closed” as door position. In this position, the control system presses twice against the end stop, only then the position is recognized as “Door closed”. The “Door closed” command must be present until completion of this program step. Otherwise, the control system does not recognize the end position and moves only at slow speed.

5 Configuration

The door drive can be influenced using the following parameters:

Parameter			Standard 120 W		Standard 180 W	
Indicator	Description	Setting range	one-sided	middle	one-sided	middle
A021	Max. opening speed	5.00 – 50.00 Hz	35	35	30	30
A022	Max. closing speed	5.00 – 50.00 Hz	20	20	20	20
A023	Max. speed of door width motion / position evaluation	3.00 – 10.00 Hz	6	4		
A024	Speed during blade opening / closing	2.00 – 7.00 Hz	3	2		
A025	Pushing speed	3.00 – 20.00 Hz	8	8		
A026	Slow motion speed (door opening)	2.00 – 10.00 Hz	5	3		
A027	Slow motion speed (door closing)	2.00 – 10.00 Hz	3	2		
A028	Torque during opening	10.00 – 40.00 (10% - 100%)	20	30	35	35
A029	Torque during closing	10.00 – 40.00 (10% - 100%)	11	25	30	30
A031	Torque reduction after blade closing	1.500 – 10.00 (10% - 25%)	3	3		
A032	Starting ramp opening / closing	1.00 – 7.00	2	2		
A033	Braking ramp opening / closing	1.00 – 7.00	2	2		
A034	Functional combination switch	0 – 79	0	0	0	0
P064	Position during slow motion upon opening, in pulses	Door width – 20 Puls. (1 pulse = 0.7 mm)	300	350		
P065	Position during slow motion upon closing, in pulses	10 Puls. - Door width (1 pulse = 0.7 mm)	160	180		
P066	Blade length: opening- quick from here, closing- slow from here	0 - 40mm	10	10		

Table 5-1 Configurable parameters

Parameter A034

Function	description	value	function	value	function
		65	1	72	4
1	relax at determination of position "off"	66	2	73	1+4
		67	1+2	74	2+4
2	determination of position with pulse	68	3	75	1+2+4
		69	1+3	76	3+4
3	free	70	2+3	77	1+3+4
		71	1+2+3	78	2+3+4
4	free			79	1+2+3+4

Indicator parameters:

Parameter			
Prm	Description		
D001	Frequency indicator	the actual basic indication- will be set by pressing the blue button and holding it for a while.	
D002	Actual current indicator		
D026	Step chain indicator		
D030	Encoder pulse		
D005	Input status		
D006	Output status		
P062	estimated "Door closed" position		
P063	estimated "Door open" position		
A035	Version number		

Table 5-2 Indicator parameters

Motion curve LDO AC 3.0

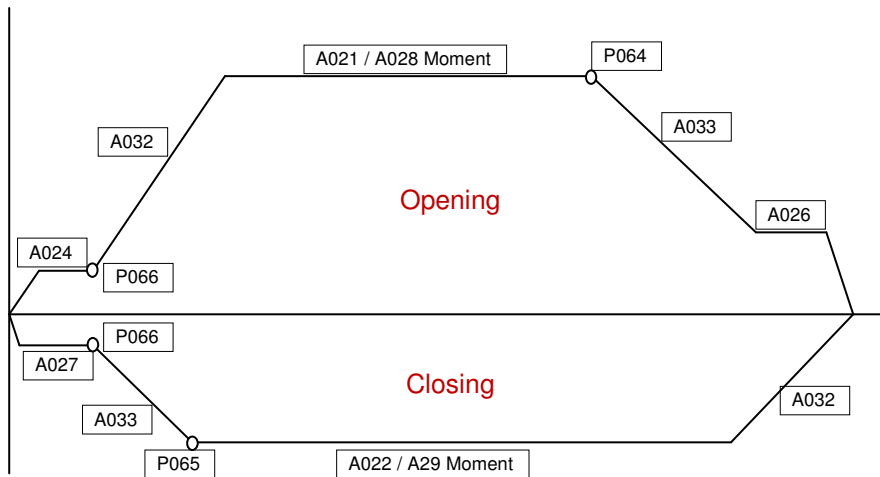


Figure 5-1 Motion curve for door motion

Operation field for parameter configuration



Figure 5-3 Button field at the converter

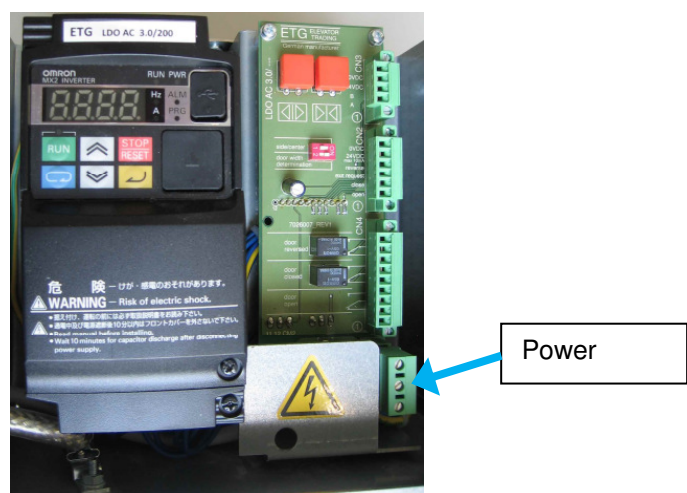








Figure 5-4 General view of the control system

	Navigation button	Moves to the first parameter in the next group (function mode) Cancels parameter change Moves the cursor one digit to the right (digit input mode) Pressing and holding the button for 1s results in return to d001 parameter
	Forward button	This button enables parameter changing or selection (increasing values). If the Backward button is pressed simultaneously, digit input mode is started.
	Backward button	This button enables parameter changing or selection (increasing values). If the Forward button is pressed simultaneously, digit input mode is started.
	ENTER button	Moves from parameter number to parameter contents Saves modified parameter and returns to parameter number Moves the cursor one digit to the left (digit input mode)
	START button	This button causes the frequency converter to start execution of corresponding program
	STOP/RESET button	This button causes the frequency converter to stop execution of corresponding program and resets potential errors

The „**Stop/Reset**“ button is an emergency switch for the converter. Pressing the button causes the program for door motion to come to an end. After pressing the button, the plug must be pulled out from the socket and the program has to be restarted. The „**Run**“ button is available for the converter, but not for the door program. After a power outage, the door control system must obtain a „**Door closed**“ signal in order to determine the door position.

Course of configuration



During configuration setting, no control signals of the elevator control must be present. If necessary, the CN2 connector must be disconnected.

- select the desired parameter using the navigation buttons and select the exact parameter value using plus and minus buttons
(parameter overview, see table 5.1, configurable parameters15)
- pressing the Enter button causes the configured value to be displayed
- change the value using both green arrow buttons
- confirm the changed value using the Enter button
- move the doors using both service buttons "Door open" and "Door close", and test the change
- Connect the CN2 connector again (when necessary)



If the A021 and/or A022 parameters are going to be increased, the P065 and /or P064 parameter must be increased before!!!



The maximum static closing force of 150 N should not be exceeded.

6 Generator:

The generator is located in the drive opposite the gear wheel. A magnet is mounted on the elongated output shaft using a magnet holder, which analyzes the magnetic field of the generator. The magnet holder can be axially slipped onto the shaft in order to define the separation distance.

Generator mounting / configuration:

Attach the foundation plate of the generator to the drive using spacers. Before tightening the screws, the thread must be centered using the magnet holder. In order to define separation distances between magnets, the magnet holder must be slightly protruding. In order to ensure this, a small piece of paper is placed in the recess of the generator. Using the generator, the magnets are pressed onto the shaft, in the direction of the drive. Before the generator is tightened, the paper is removed and thus the separation distance between the magnets is defined. Testing the generator, see Chapter 4 point 7.

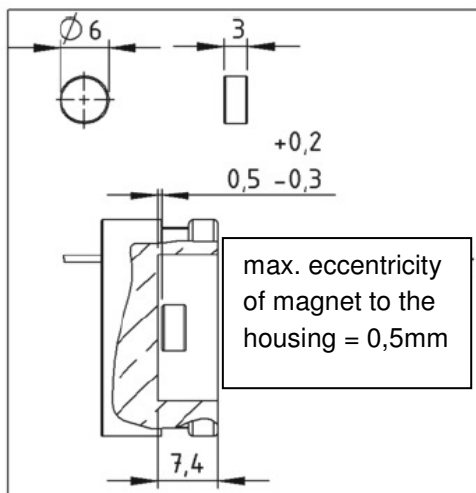


Figure 5-5 Separation distance of generator magnets (max. magnet eccentricity towards housing = 0,5 mm)

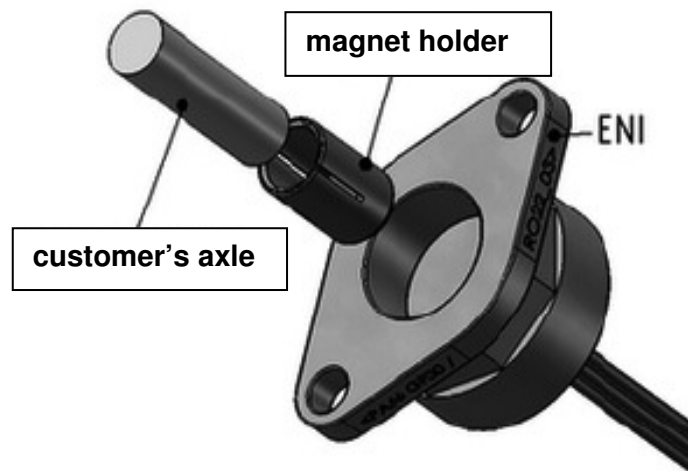


Figure: 5-6 Generator (customer's axle, magnet holder, ENI)

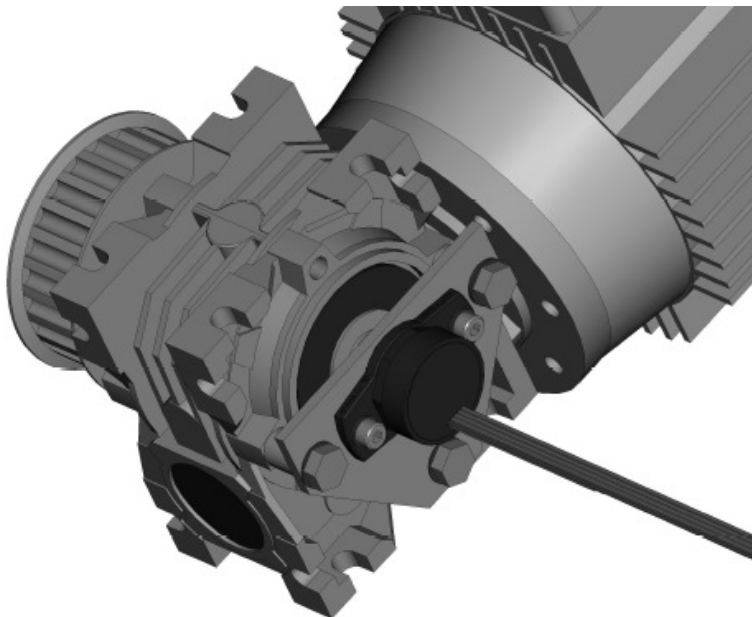


Figure 5-7 Motor with the generator

7 Error messages

Error	Error cause	Remedy
The door does not move	No power supply at the drive	Check connection to the power supply network
	No commands are issued from the elevator control system.	If the door is moved using the service buttons, the drive operates correctly. Check commands of the elevator control system.
Moving direction disaccords to the buttons "door opened" an "door closed"	When determinate the door width, the position of the door was not observed	Execute a new determination of door width with start position, door opened not more than 5-10 cm
The door does not find a position.	The elevator control system breaks the command, before the end position is reach.	Disconnect the commands of the elevator system (CN2 socket), close the door using the "Door closed" button and hold the button pressed for ca. 3 seconds longer.
The door stops closing and starts reopening.	Higher mechanical resistance results in reversing.	Change the mechanical settings of the door. Remove dirt from the running tracks or nuts.
The door hits the end positions "Door open" or "Door closed".	The positioning does not match	repeat door width estimation
	Braking points do not match the speed	Change braking points or reduce speed
Door opens or closes at low speed	After power supply disconnection it is necessary to perform the position evaluation (reference motion).	Send the "Door closed" commany until the door control reports the "Door closed" message.
	The moment is too small for this motion.	Increase parameter A028 or A029.
The door opens or closes only slightly (ca. 10 cm).	No pulse is detected at the generator.	Check the D030 parameter, whether generator value changes, 1 pulse corresponds to ca. 0.7 mm or in case of D300, check the generator input. If necessary, reposition the generator magnet (see Generator configuration).

Converter error messages:

Directly readable at the screen after an error occurs

Error messages are displayed with an error code E01.o – E83.o on the display. The digit after the decimal point indicates converter status at the time of error occurrence.

.0 during the initialisation process at power supply switching or a RESET signal

.1 during STOP status

.2 during braking phase

.3 during constant speed phase

.4 during acceleration phase

.5 during the START at the correct value of 0 Hz

.6 during the start-up

.7 during DC limiting

.8 during overload limiting

.9 during positioning

Possible error codes

Error code	Meaning
E01.	Overcurrent, converter output current reaches 200% of the rated current during continuous motion
E02.	Overcurrent, converter output current reaches 200% of the rated current during braking
E03.	Overcurrent, converter output current reaches 200% of the rated current during acceleration
E04.	Overcurrent, converter output current reaches 200% of the rated current under other conditions Meanings
E05.	Thermal overload of the motor, detected by electronic motor protection
E07.	Overvoltage in the intermediate circuit, results in braking energy being too high
E08.	Błąd pamięci EEPROM
E09.	Overvoltage in the intermediate circuit, possible reason is too low voltage in the power supply network.
E10.	Current measurement error, defective current measurement
E11.	CPU Error
E13.	Network power supply was switched while the START signal was active
E14.	Earthing current failure
E15.	Overvoltage at input
E21.	Excessive converter temperature
E22.	CPU - communication error
E25.	Error in the control board
E30.	Error in the IGBT drivers
E37.	EMERGENCY switch
E38.	Overload in frequency range < 2.0 Hz
E41.	Error in communication mode
E43. -45.	Internal data error
E50. -69.	Internal data error
E80.	Encoder error
E81.	Excessive rotation speed

Checking the input signals :

The D005 parameter indicates status of the input signal. The upper bar shows that there is no signal. The lower bar shows that a signal exists.

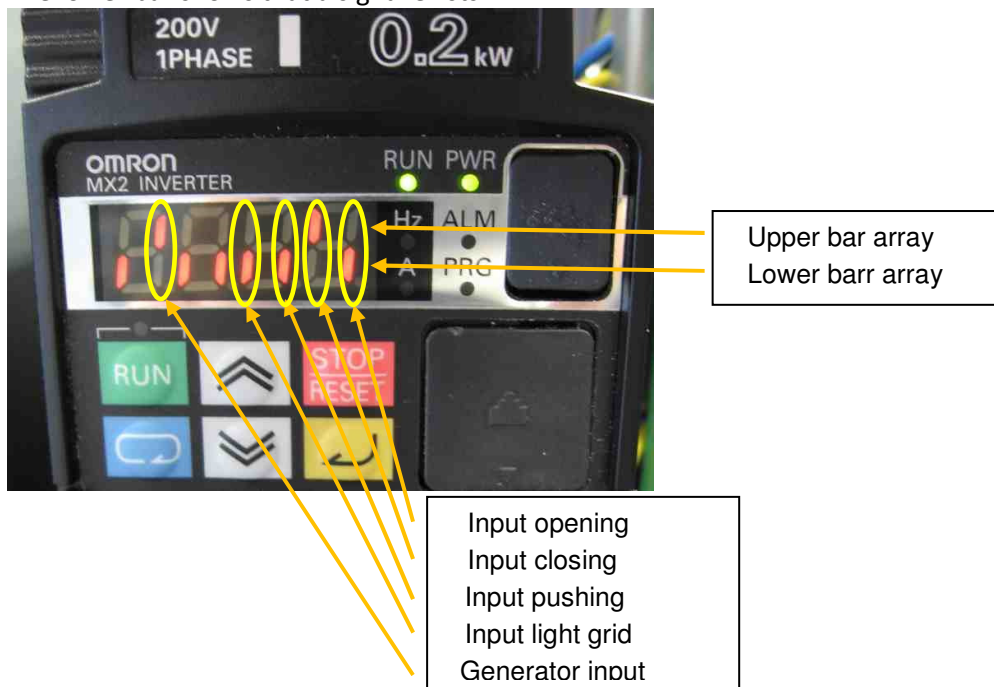


Figure 6-1 Indications on the converter with the D005 parameter

- Meaning of positions counted from the right:
- | | |
|---------|------------------|
| 1 | Input opening |
| 2 | Input closing |
| 3 | Input pushing |
| 4 | Input light grid |
| 7 | Generator input |
| 5, 6, 8 | without meaning |

Checking the output signals :

The D006 parameter indicates status of the output signal. The upper bar shows that there is no signal. The lower bar shows that a signal exists.

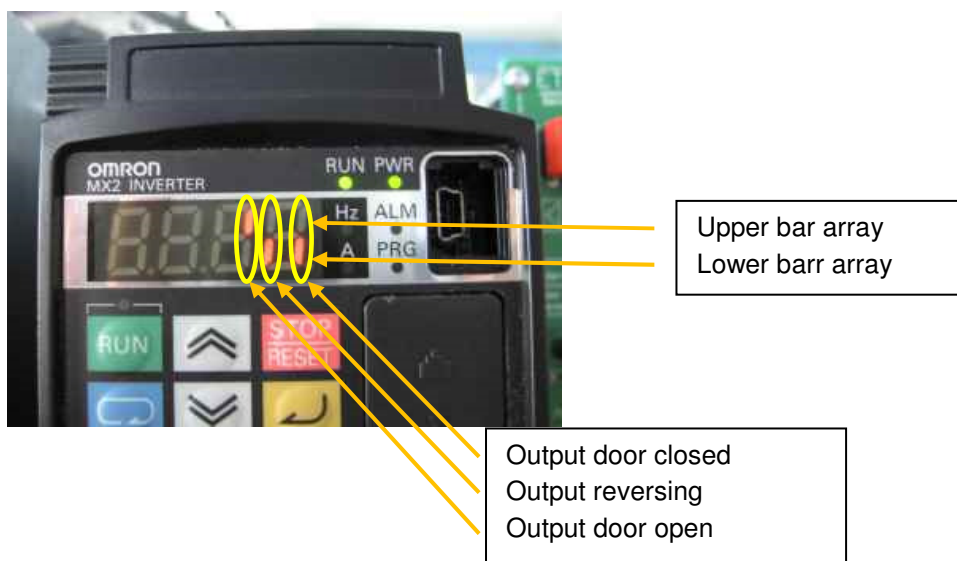


Figure 6-2 Indications on the converter with the D006 parameter

Meaning of positions counted from the right: 1 Output door closed
2 Output reversing
3 Output door open

Notes:

Set values:

A021

A022

A023

A024

A025

A026

A027

A028

A029

A030

A031

A032

A033

A034

P064

P065

P065

Contents of a complete control unit

Control system LDO AC 3.0/200

or

Control system LDO AC 3.0/420

Drive motor

Toothed belts

Accessories kit

Cat.No.:	Part	Qty
50100120	Screw M6x25 8.8 zn	4
50100175	U-disc DIN 125 A6.4	4
50110023	Verbus Ripp washer M6	6
50105310	Verbus Ripp screw M6x12 8.8 zn	4
50105321	Verbus Ripp screw M8x20 8.8 zn	2
50110027	Verbus Ripp nut M8 zn	2
50105315	Verbus Ripp screw M6x12 8.8 zn	2

Motor foundation plate

Toothed belt cover