



German manufacturer

User manual for the door drive LDO DC 2.0

Please read the manual before assembly, installation and start-up, that serve your own security and you avoid damage to the door drive.

Elevator Trading GmbH
Mittelfeld 14
04509 Krostitz / Hohenossig
Bundesrepublik Deutschland
Telefon: +49 (0)3 42 94 / 850 300
FAX: +49 (0)3 42 94 / 850 333
www.elevator-trading.de

Artikelnummer: 27120388

Stand: 10/2007

Inhaltsverzeichnis

1	Quick Overview	4
2	Safety restrictions.....	V
3	Preliminary Remarks	7
4	Regulations for utilisation.....	8
4.1	Authorised utilisation	8
4.2	Unauthorised utilisation	8
4.3	Commitment by the company in charge of the installation.....	8
4.4	Modifications and add-ons.....	8
5	Technical description	9
5.1	System description	9
5.2	Scope of supply	9
5.3	Functions	9
5.4	Operational control and display elements	11
5.5	Status display.....	12
5.6	DIP switches.....	13
6	Technical data	14
7	Assembly and installation.....	15
8	Adjustment	18
9	Event memory	21
10	Relay points.....	23
11	Annex	24

Disposal of the packing

With the packing the components of the door drive are protected during transport and the storage. The material of the packing was selected in such a way that a pollution free disposal is possible by recycling. Waive the packing for the later use or dispose you these in agreement with the local regulations.

Disposal of the old door drive

The old equipment can still contain valuable materials and should therefore according to the valid in each case local regulations into the material cycle be led back.

1 Quick Overview

Motoranschluss

- Spannungsfreiheit herstellen!
- Anklemmen der Leitungen. Polarität und Kleinanzuordnung beachten. Steuerleitungen nicht anschliessen!
- Versorgungsspannung ein- "Türwele" halten.
- Türwelemermittlung: Taste "Türwele" halten. Taste "Reset" drücken und loslassen. Bei Türbewegung Taste "Türwele" aus.
- Messvorgang abwarten. Dadurch werden Standardparameter eingestellt.
- Tasten "Auf" und "Zur" bewegen Tür. Evtl. Motorprotaktät ändern (X2).
- Eventuell Parameter anpassen und letzten Schritt wiederholen.
- Steuerleitungen anschliessen.

Signalansgänge

Ändern von Parametern (siehe Kap. 9)

- Taste "Reset" -> aktuelle Türposition
- Taste "Mode" -> Parameternummer P1
- Taste "Auf" (n mal -> Parameter Pn)
- Taste "Freigabe" -> Pn + Parameterinhalt
- Tasten "Auf" oder "Ab" -> +/-
- Taste "Freigabe" -> Parameternummer Pn

ETG ELEVATOR TRADING
German manufacturer

LDO DC 2.0

Parameterstanz

Parameter	Min.	Max.	Standard	eingestellt
P1 Öffnungsgeschw.	2	80	60 cm/s	
P2 Schließgeschw.	2	80	45 cm/s	
P3 Schließgeschw.	2	80	3 cm/s	
P4 Drängelgeschw.	2	64	36 cm/s	
P5 Rampe Beschleunigung	1	500	120 cm/s²	
P6 Rampe Bremsen	1	500	40 cm/s²	
P7 Schwerstrecke ZU	0	250	12 mm	
P8 Schwerstrecke AUF	0	250	10 mm	
P9 Maximale Schließkraft	70	215	140 N	
P0 Schließstr.AUF-Richtig	0	250	10 mm	

Datum: _____

DC Ausgang

Steuereingänge

Lichtschranke

Inkrementalgeber

Türwele

RESET

Mode **Auf** **Ab** **Freigabe**

Geschwindigkeitsprofil

Abbildungshinweise (siehe Kap. 8)

- Spannungsfreiheit herstellen!
- Anklemmen der Leitungen. Polarität und Kleinanzuordnung beachten. Steuerleitungen nicht anschliessen!
- Versorgungsspannung ein- "Türwele" halten.
- Türwelemermittlung: Taste "Türwele" halten. Taste "Reset" drücken und loslassen. Bei Türbewegung Taste "Türwele" aus.
- Messvorgang abwarten. Dadurch werden Standardparameter eingestellt.
- Tasten "Auf" und "Zur" bewegen Tür. Evtl. Motorprotaktät ändern (X2).
- Eventuell Parameter anpassen und letzten Schritt wiederholen.
- Steuerleitungen anschliessen.

Ser.-Nr.: 52401-

2 Safety restrictions

Read before the assembly, installation and start-up of the door drive this manual. You will receive important notes for the use and security. These references protect you and the door drive. Waive the manual, and pass these on if required.

Area of application and regulations

Present operating instructions apply to everyone involved in the installation and operation of the door drive LDO DC 2.0. It is imperative to act in strict compliance with the operating instructions at all times.

Further applicable regulations

Complementary to present instructions, the regulations listed below must be acted upon:

- Accident prevention regulations
 - VBG 1 General regulations
 - VBG 4 Electrical units and equipment
 - ZH 1/228 Safety regulations for the utilisation of electrical equipment constituting a significant electrical hazard
- Laws, regulations, safety rules issued by national and international safety institutions such as:
 - DIN VDE 0100 Set up of high voltage units with a nominal voltage of up to 1000 V
 - DIN VDE 0105 Operation of high-voltage units
 - DIN VDE 0106 Protection of the human body from dangerous contact with high voltage
 - Directive on utilisation of electrical equipment (EEC directive 89/655/EWG)
- In-house requirements, to the extent that they do not invalidate the safety regulations contained herein

Authorized Labour, Responsibility

All activities described herein must be performed under the direction and supervision of a qualified professional. Only those are to be considered qualified professionals, and therefore authorised to perform aforementioned activities, who are able to perform or supervise the entire set of activities required as described herein. In addition, the qualified professional must:

- be at least 18 years of age physically fit (have successfully passed the German preventive medical check-up G 20 certified by a doctor specialising in industrial medicine)
- be authorised by the company in charge of the installation of the elevator
- have read all of the operating instructions and understood them fully
- have received instruction on the particular technical features of this door drive and their interaction with the other components and functioning of the elevator unit
- have acquired sufficient knowledge about the entire elevator unit and the interaction between its individual components
- have proof of sufficient knowledge about safety regulations and accident prevention regulations as well as the relevant factual knowledge of technology

The qualified professional must only supervise and perform those activities that are described herein.



Any further work and activities required for the door drive LDO DC 2.0, that are beyond of the scope of activities contained herein, must only be performed by High Content GmbH.

Accident prevention

Only by knowing the procedures of accident prevention and acting upon them it is possible to create a safer work environment! By taking preventive action as soon as health hazards are recognised, severe damage in physical health and material can be avoided. Every employee is obliged to do all in their power to prevent accidents or damage to anyone's health. Health hazards must be eliminated as soon as they are detected. Should their immediate elimination be impossible, the recognised danger spot has to be marked and closed off, and the situation is to be reported to the hierarchy.

Health and safety regulations

Each employee's obligations to create a safe work environment include:

- the compliance with accident prevention rules as well with all other rules geared towards the creation of a safe work environment; the elimination of health hazards
- regular check-ups of the functioning of all accident preventing equipment and devices, as well as the safety of operation of the unit
- immediate shut down of faulty equipment and subsequent appropriate accident prevention steps
- immediate reporting to the hierarchy of defects in material or equipment as well as of events of non-compliance with health and safety regulations
- power must be disconnected before starting to work on any energised parts or material

What to do after an accident

In the event of an accident with significant injury, perform first aid and call an ambulance right away (emergency doctor). Every accident has to be reported to the management. An accident report must be written.

Outside persons

Outside persons are not allowed on site during elevator assembly and installation.

Safety symbols

The following safety symbols were used to mark individual components of the elevator drive as per VGB 125 and are also contained herein.



Caution: dangerous voltage



de-energise before working on



Caution: randomly starting moving parts

3 Preliminary Remarks

In the available manual the door drive for person and freight elevators LDO DC 2.0, in accordance with EN81 is described.

The manual is arranged into chapters. In chapter 4 in form of a description of employment the intended use of the door drive is defined. In chapter 5 the door drive is technically described, so that you receive a good overview of structure and impact. Further the serving and display elements are described. The most important technical data you can find in chapter 6. Chapter 7 describes the activities, which are necessary for the assembly and installation. The parameter attitude of the door drive describes chapter 8, the selection of the event memory chapter 9. Chapter 10 contains information to the relay contacts for the expenditure for status. The plants belonging to the door drive are arranged in chapter 11.

- + *For reasons of clarity, these operating instructions do not contain detailed information about all types of the door drive LDO DC 2.0 and do not consider all conceivably possible types of application, operation or maintenance.
Should you require any particular further information or should you encounter any particular problems, please do not hesitate to contact our company High Content GmbH.*
- + *High Content GmbH would like to point out to you that the contents of present instructions do not form part of or alter any previous or existing agreement, warrant or legal relationship. The only commitments for High Content GmbH shall be arising out of the respective sales agreement, which will also contain the only complete and valid warranty regulations. These legal warranty regulations shall neither be restricted nor extended by present Operating instructions*
- + *High Content GmbH is continuously working on the further development of their products. Thank you for your understanding for the fact that pictures and figures may become subject to changes in shape, size, equipment, technology and know how due to technical enhancement.*

It has been our goal to make these operating instructions as user-friendly as possible by including illustrative charts and figures and clear text information. References to charts and figures have been put into brackets. The numbers before the slash indicate the number of the Section and the chart or figure; the number behind the slash indicates the respective position within the chart or figure.

For example:

(Fig. 3-2/1) Means: Fig. 2 in Section 3, item number 1

(Fig. 3-2/3,6) Means: Fig. 2 in Section 3, items number 3 und 6

Particularly important pieces of information for maintenance and operating personnel are marked by pictograms:



This symbol indicates important information for the maintenance and operating personnel.



This symbol indicates a procedure which must be acted upon in strict compliance in order to avoid damage to the door drive or the entire elevator unit.



This symbol indicates a procedure which must be acted upon in strict compliance in order to eliminate a severe health hazard.

4 Regulations for utilisation

4.1 Authorised utilisation

The door drive LDO 2.2 made by High Content GmbH, described in the present operating instructions, is to be used to drive and control doors of electrically driven elevators pursuant to the EN 81.

Present Operating instructions describe in detail how the door drive LDO DC 2.0 is to be installed and operated and which regulations and requirements must be complied with.



Only operation of the unit within the scope of the EN81 shall be considered as compliance with the regulations for utilisation. Any other operation beyond the scope shall be considered non-compliance with the regulations for utilisation and is not authorised.

4.2 Unauthorised utilisation

Any operation of the unit beyond the scope of aforementioned EEC standard or present operating instructions shall not be permissible. This particularly applies to the parameters given in Section 3 „Technical Data“. High Content GmbH shall refuse liability for any damage caused by non-compliance with regulations contained herein.

4.3 Commitment by the company in charge of the installation

The company in charge of the complete and final installation of the elevator unit, as well of its maintenance, is fully responsible for the compliance of the door drive's utilisation with the operating instructions contained herein as well as with the EN81. The company in charge of installation will incorporate the operating instructions of the door drive into those of the entire elevator unit without altering, omitting or invalidating any requirement contained herein.

4.4 Modifications and add-ons

In the event that utilisation or ambient conditions should change to the extent that the functioning of the door drive and its parameters do no longer comply with the regulations of present operating instructions, High Content GmbH shall have the exclusive right to perform the necessary modifications or adaptations. Additionally, permission by the local authorities may become necessary.

Unauthorised modifications and changes made to the door drive can significantly impair the safety of the unit, whereby High Content's manufacturer's declaration shall cease to be valid.

5 Technical description

5.1 System description

The maintenance-free door drive LDO DC 2.0 is a "more intelligently" door drive. It is designed to open and close the elevator doors with adjustable speed and acceleration of the opening and closing motion.

5.2 Scope of supply

parts of the door drive	drawing file
door drive in	LDO DC 2.0-001.001
gear motor /w Pinion	LDO DC 2.0-001.002
transformator	LDO DC 2.0-001.003
user manual	

Table 5-1 Scope of supply

A standard DC motor with self-locking gears is used. The power transmission is achieved by a toothed belt (not included in standard package). The drive unit can drive both side-opening and centrally opening doors. The gear motor can be ordered with toothed belt disks especially geared for left or right-hand side opening doors. The door drive does not require final limit switches. The door width as well as the door position "open" and "closed" are determined automatically. The door position is conveyed to the superordinated elevator drive unit via relay points.

5.3 Functions

Door-width determination

Door-width determination during installation can be done automatically as described in Section 4 "Assembly and Installation".

Command "open door"

The "open door" command opens the door in accordance to the set parameters, as long as the command is maintained. The "open door" command must be maintained throughout the entire opening motion.

Command "close door"

The "close door" command closes the door in accordance to the set parameters, as long as the command is maintained. The "close door" command must be maintained throughout the entire closing motion.

✚ *The first closing door motion following initial operation of the unit must be performed at creeping speed.*

Via the door drive LDO DC 2.0 the door can be opened and closed using the pushbuttons „open door“ and „close door“ (see Fig. 2-1, page 2-3).

Stopping and reversing the closing motion

There are three events that will discontinue and reverse the closing motion:

- A light barrier with direct hook-up to the door drive, reports blocked light beams
- The door meets an obstructing object during the closing motion
- The door is already blocked in its "open" position

In case that one of the above events is detected, a possibly running closing motion will be stopped and the door will reopen up to its "open" position and remain in this position. This is repeated up to ten times after which the door drive takes on a pausing position of 30 seconds, during which it will not accept any control commands from the control unit. After these 30 seconds, the sequence of events will be repeated.

Command „Nudging“

During the operating state „Nudging“ the state of the light barrier, which is directly hooked up to the door drive, is ignored. The commands „Nudging“ and „Close“ must be active at the same time.

Emergency evacuation

Emergency evacuation with closed doors is possible if the following conditions are met:

- The doors do not move
- There are no active commands outstanding from the elevator control unit
- No service button of the door drive has been pressed

✚ *The force required to open the door is less than 300 N.*

Light barrier

A light barrier can be hooked up at the plug-in connection X4. A voltage between 15 and 24 V at PIN 2 will be interpreted as blocked light beams of the hooked up light barrier. This voltage will be measured against 24 V GND, as it is present for example at PIN 3 of plug-in connection X4. In this event the open door will not accept any closing commands and the closing door will discontinue its closing motion and reopen all the way up to the "open" position.

5.4 Operational control and display elements

The operational and display elements can only be accessed if the casing has been opened. The following sections will explain the functioning of the operational control and display elements and how to employ them best.

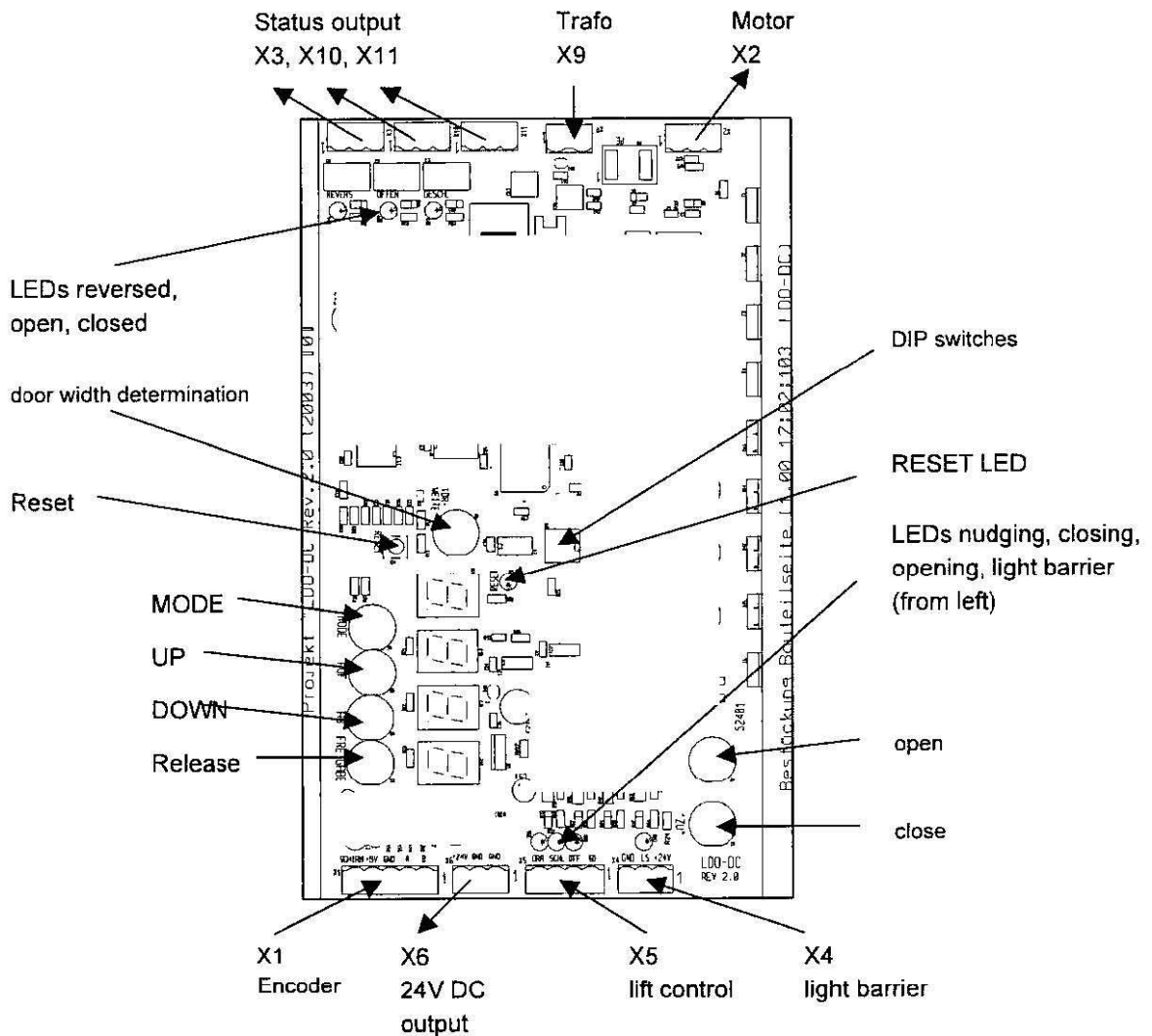


Fig. 5-1: Operational control and display elements

5.5 Status display

For control purposes the condition of the control signals, which head for the status relays, is indicated with LED's. A bright LED indicates the closed normally open contact.

Explanation

- The LED D8 "RESET" means RESETS. This announcement appears short when switching on or during operation to the key "RESET". The control is shifted by the RESET into a defined condition.
- The LED D7 serves for control of the 5V supply voltage
- The LED D22 "open" signals the open position of the door
- The LED D23 "closed" signals the closing position of the door
- The LED D24 "reversing" signals a reversing procedure of the door. It shines from the recognition of a reversing event up to reaching the open position
- The LEDS at the clamps X4 and X5 corresponds with the associated input signals.

Hereunder applies the following allocation:

LED	Contact of the plug connector
D36 Nudging	X5.4
D32 Closing	X5.3
D28 opening	X5.2
D40 light barrier	X4.2

Table 5-2 Allocation of the input signals to the LEDS

5.6 DIP switches

The **DIP switch 1** (see Fig. 5-1) selects reset drive mode. If it is set to „ON“, the door is moving while reset drive only if the control command is set. If the control command is interrupted, the door stops immediately. If the **DIP switch 1** is "OFF" and the control command is interrupted, the door doesn't stop, but continues its movement up to the position "open" and/or "closed". The first move after a RESET is the RESET move. It is implemented with creeping speed and is only finished when the status LEDs indicate "open" and/or "closed".

With the **DIP switch 2** the light barrier entrance is evaluated. If the **DIP switch 2** is "OFF" and if no voltage lies close the light barrier, then this is considered as interruption of a light barrier. If the light barrier is not interrupted, a voltage of 15 to 24V DC lies close the light barrier input. If the **DIP switch 2** is "ON" and if a voltage of 15 to 24 V DC lies close the light barrier, then this is considered as interruption of a light barrier. If the light barrier is not interrupted, a no voltage lies close the light barrier input.

With the **DIP switch 3** it is selected whether the moment delimitation, which is always effective in closing direction becomes additionally effective in opening direction. If the **DIP switch 3** is "OFF", the moment delimitation is effective only in closing direction. If the **DIP switch 3** is "ON", the moment delimitation is additionally effective in opening direction.

The **DIP switch 4** must be always "OFF". If DIP switch 4 is "ON", the door drive is not functional in the sense of this manual.

DIP switch	default	meaning	OFF	ON
1	OFF	auto reset move	on	off
2	OFF	light barrier	Low active	High active
3	OFF	moment delimiter OPEN	off	on
4	OFF	Don't change it!	default	prohibited

Table 5-3 DIP switches

6 Technical data

General

admissible door panel weight	180 kg max
admissible door width	4000 mm max
admissible operating temperature	5°C - 40°C

Casing

design	Aluminum extruded section with steel sheet parts, foot mounting
protection system	IP 20
Category of protection	1
Dimensions	See data sheet HC-LDO DC 2.0-001.001 "Casing"

Supply transformer

Input	230 V AC + - 15%, 50...60 Hz
Max. primary current	1,7 A
protection system	IP 54
output	22 V AC
Max. secondary current	8,6 A
Fuse	5*20 T800 mA primary
dimensions	See data sheet HC-LDO DC 2.0-001.003 „supply transformer“

Control unit

Input	22 V AC
24V DC-output voltage	max. output current 100 mA
control input X4, X5	+ 12 V bis + 30 V DC; 5 mA .. 17 mA per input
control outputs X3, X10, X11	30 V DC, 1A
Air humidity	no condensation

DC gear motor

protection system	IP 20
Input voltage	max. 24V DC
Typ. current	3,3 A
dimensions	see data sheet HC-LDO DC 2.0-001.002 „Gear Motor“
Translation	15:1
Encoder	included in gear motor
	Input: +5 V DC ±5%

7 Assembly and installation

Please consider when assembling and installation of the door drive that it concerns with the components electronic and fine-mechanical building groups, which are to be treated with the appropriate care. The connection of the control lines has to take place with largest care according to the legal regulations. Please note that wrong connections can result malfunctionings and destruction both the door expensive equipment (inclusive transformer and engine) and external building groups (light barrier, elevator control). The High Content GmbH is not responsible for damage, which was caused due to connection errors.

- 1 - Assembly of the door drive according to the local conditions and requirements and/or the setting up plan of the manufacturer of the entire plant of the elevator. The electrical installation has to take place in principle after the connection diagram documents.
- 2 - Open Housing of LDO DC 2.0.
- 3 - Two-pole plug connector of the engine cable in such a way at the three pole contact strip X2 attach that the plug connector shows toward edge of printed circuit board.



Before work on the door drive all supplying lines have to be switched off and secured against switching on.

- 4 - The encoder is on delivery already installed at the gear motor and must be attached still to the plug connector X1.
- 5 - Attach light barrier to X4. If the DIP switch 2 is ON and no light barrier is attached, the pins 1 and 2 of the plug connector X4 are to be connected.



The connection of the light barrier has to take place considering the data sheet HC-LDO DC 2.0-002.001 "Connection control inputs".

- 6 - Supply transformer connection to the control.

The supply transformer is to be attached primary to the mains voltage (230V AC) and secondary to the control at the plug connector X9.

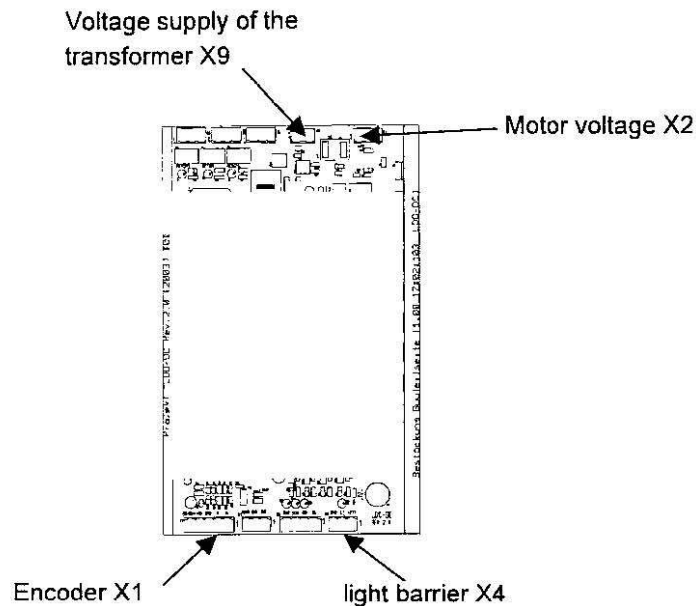


Fig. 7-1 Connection of lines



The mains feeding line must be secured by the customer using a line safety switch 3 A / C or a power circuit breaker (protective motor switch) 1.6 to 2.4 A.

– 7 – Herstellen der Spannungsversorgung.

– 8 – Door-width determination

+ *The door position before starting the door width determination has no significance.*

- Press and hold the key "door width determination". Press the key "RESET" and release again. As soon as the door moves, also the key "door width determination" can be released again.
- The following functions run off now automatically. For door width determination first a slow closing movement is implemented, in order to determine the position of the closed door. Subsequently, a slow opening movement follows for the determination of the position of the open door. The determined aperture is non volatile stored.



During the door width determination if an opening movement is first implemented instead of a closing movement, then the polarity of the driving motor is exchanged. In this case the engine cable is to be taken off from the plug connector X2 and be stuck on.

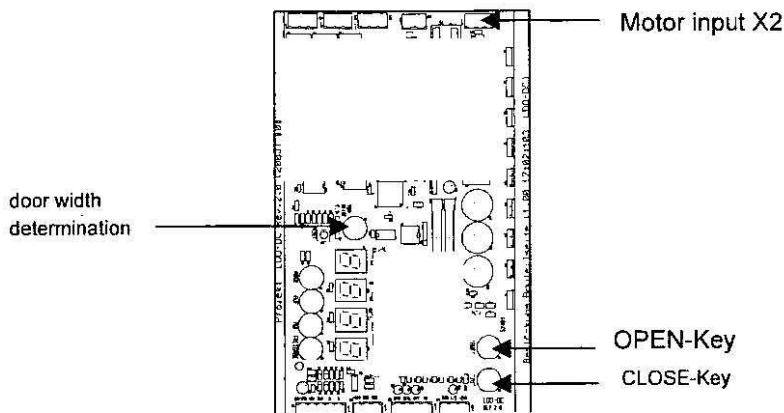


Bild 7-1: Control elements for door width determination

- 9 - With the service key "CLOSE" the door can be closed now and be opened with the service key "OPEN". For all door movements with the service keys "CLOSE" and "OPEN" the respective service key up to reaching the condition "OPEN" must and/or "CLOSED" to be held. Otherwise the door movement is stopped. The respective condition is only reached if the status LED D22
- 10 - "OPEN" and/or D23 shows "CLOSED". The track curve specified during the door width determination can be changed according to chapter 9 (Adjustment).
- 11 - The connection of the control signal lines of the elevator control takes place last to the control signal inputs X5 and the status outputs X3, X10 and X11(Fig 8-3).



The control signal cables must be hooked up in strict compliance with the data sheet LDO DC 2.0-002.001 "Control inputs and outputs, encoder connection".

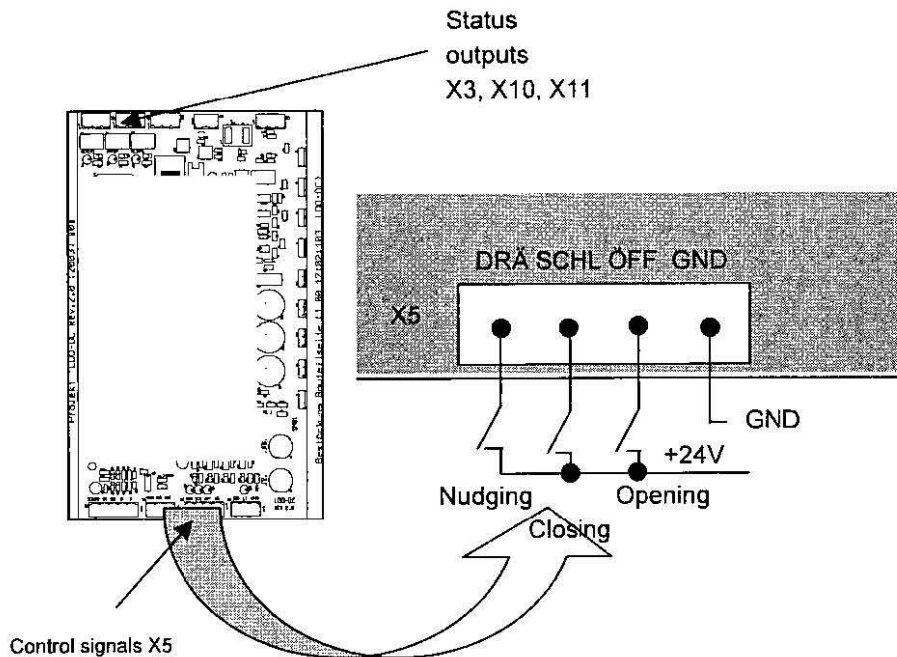


Bild 7-3 Control inputs

8 Adjustment

With the parameters specified in table 9-1 influence can be taken on the door drive.

The default values are valid for 900 mm of door width with on one side opening door and 1800 mm with central opening door. In the case of this door the reference values indicated down result. The adjustment is to be implemented with largest care, since incorrect parameters can lead to malfunctioning and to the destruction of the door.

Parameter	Meaning	Range of adjustment		Default value
		min.	max.	
1	Opening speed	2	80	60 cm/s
2	Closing speed	2	80	45 cm/s
3	Creeping speed	2	80	3 cm/s
4	nudging speed	2	69	36 cm/s
5	Ramp acceleration	0	500	120 cm/s ²
6	Ramp brakes	0	500	40 cm/s ²
7	Sword distance OPEN	0	250	12 mm
8	Sword distance CLOSE	0	250	10 mm
9	Max. static closing force	0	205	140 N
0	creeping distance in OPEN-direction	0	250	10 mm

Tabelle 8-1 adjustable Parameters

Explanations concerning some parameters

- None adjustable elements of the track curve are computed automatically.
- In Fig. Fig. 8-1 you see the parameters with their meaning for the door drive.
- Parameters 1 to 4 determine the door speed.
- Parameters 5 and 6 determine the maximum accelerations of the door while opening and closing movements.
- With the parameters 7, 8 and 0 the unblocking zone of the door is adjusted. The unblocking zone is the distance from the closing position of the door, in which with creeping speed must be driven, in order not to overstrain the bolting device mechanics.
- The parameter 9 determines the maximum current during the closing movement and affects with it the torque the available. With this parameter the closing force and the reversing strength are determined.

- + After a **RESET** a **RESET** travel with creeping speed is implemented. Subsequently, an opening or a closing procedure with the adjusted speed takes place.
- + With each door width determination all parameters will be overwritten with the default values indicated in table 8-1.

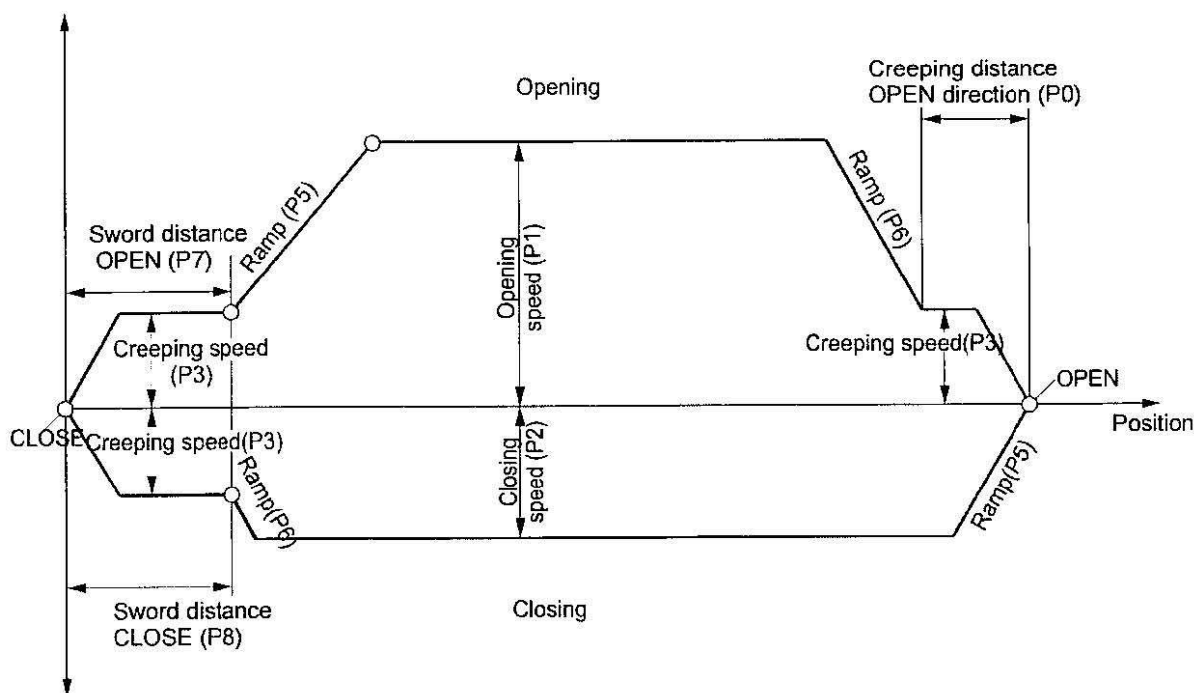





Fig. 8-1 Track curve of the door movement (schematic representation, idealized)

Sequence of actions during parameterisation

- + During parameterisation make sure that no control signals of the control unit are active. If necessary disconnect the plug-connection X5.
- Press Key "RESET". The 7 segment display indicates for 1 second the version number of the software and then . Press Key „Mode" to switch to Adjustment mode. The first place is for the announcement of the parameter number and, intended by one point separately, the remaining three places for the announcement of the parameter value.
- With entrance into the parameter mode first only the parameter number is represented.
- Only after pressing of the key "Release" also the parameter value is represented (e.g.).

- The parameter value can be changed now with the keys "up" and "down".
- If the desired value is reached, this is taken over with the key "release" and again only the parameter number is represented.
- The parameter number can be likewise changed in this representation method with the keys "up" and "down".
- E.g. after four times pressing the key "UP" instead of the parameter number 1 the parameter number 5 (ramp acceleration) is indicated.
- After pressures of the key "RELEASE" the parameter value appears too. In this example thus  and by one point separately  is indicated. 120 cm/s² is the default value for the ramp acceleration. If the door blades are too strongly accelerated reduce the value. If the door blades are too weakly accelerated increase the value.
- By pressing of the key "UP" the parameter value can be increased, e.g. to .
- After pressures of the key "RELEASE" only the parameter number 5 is indicated again.
- If all parameters are adjusted to the desired values, the parameter mode can be left by manipulation of the key "mode". Directly after leaving the parameter mode the drive is ready to receive opening and/or closing commands. It must be noted however that the first travel after leaving the parameter mode is a RESET travel.
- A renewed entrance into the parameter mode is only possible after manipulation of the key "RESET".

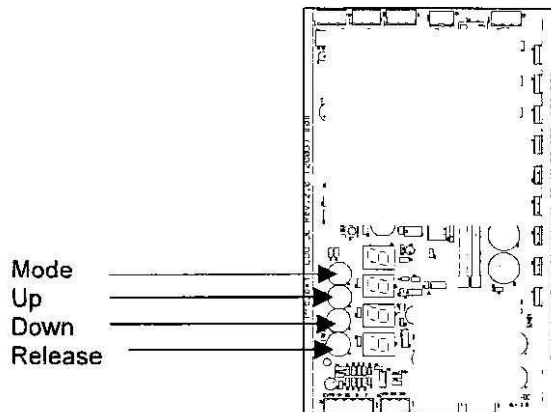


Fig 8-2 Control elements for the adjustment of parameters

Adjustment of other parameters

During the attitude of the parameters it must be noted that they affect each other mutually. After the change of a parameter it can be necessary to change also different parameters in order to obtain good handling characteristics.



The maximum static closing force may not exceed 150 N. The adherence to the maximum closing force is to be examined.

9 Event memory

The door control has an internal event memory. Within a circular buffer memory the last 16 event entries are callable. Contents of the event memory are available also after a voltage failure for selection. The event memory can be indicated by inquiry of the parameter $E_i(11)$. Apart from errors likewise still highlights are stored for better error analysis.

Event ...	Meaning	value range, value displayed
Index	# of the event, starting from 0	000 .. 075
Value	value of the event	000 .. 008
Position	position of the door blades at the time of the event	100 .. 800
IO-Value	bit mask of the input and output plugs at the time of the event	000 .. 255

Table 9-1 structure of an event entry

Event	Meaning
000	Reset occurred
002	blocking while normal opening
003	blocking while reversing opening
004	synchronization after opening because of large position difference
005	synchronization after closing because of large position difference
006	reversing while closing
007	reversing because of light barrier
008	door width determination

Table 9-2 Events

Bit of IO value	meaning
0	command „open door “ was active
1	command „close door “ was active
2	command „nudging“ was active
3	light barrier was active
4	status signal „open“ was active
5	status signal „close“ was active
6	status signal „reverse“ was active
7	break was active

Table 9-3 Input/Output values of an event entry

Reading the event memory

After entrance into the parameter mode and selection of the event memory **E** is indicated. After manipulation of the Release key **E.E000** is indicated. That is additional for the parameter of the event memory the event index of the most current event. After manipulating of the key "UP" instead of the event index **E000** the event value, e.g. **0000** is indicated. **0000** means Reset has been occurred (see Table 9-2). After renewed operation of the "UP" key instead of the event value the door position is indicated at the time of the event, e.g. **234**. A further manipulation of the "UP" key leads to the fact that instead of the door position the filter of the input and output signals is represented at the time of the event, e.g. **032**. The next manipulation of the "UP" key leads to the next event index, etc.. A change of the entries in the event memory is not possible.

The meaning of the I/O value is opened by transformation into a binary number. E.G. the binary number 1000.0100 corresponds to the I/O value of 132. I.e. the bits 2 and 7, beginning from right, were set.

value dec: 132											
binary:	1	0	0	0	0	0	1	0	0	0	
meaning	break was active						command „nudging“ was active				

Table 9-4: Example of meaning of the numerical value of an event

10 Relay points

The relay points (Fig. 10-1) are there to communicate the state of the door to the super-ordinate elevator control unit.

The status signals "open", "closed", and "reversing", which are required by the elevator control unit, are generated by the door drive and provided using potential-free relay points.

Relay point "closed"

Once the door is closed, the corresponding opening contact (PIN 2 and 3) at the plug-in connection X11 is closed and the closing contact (PIN 1 and 3) is open. If the door is not in this state, the opening contact is open and the closing contact is closed.

Relay point "open"

Once the door is open, the corresponding opening contact (PIN 2 and 3) at the plug-in connection X10 is closed and the closing contact (PIN 1 and 3) is open. If the door is not in this state, the opening contact is open and the closing contact is closed.

Relay point "reversing"

Once the door is reversing, the corresponding opening contact (PIN 2 and 3) at the plug-in connection X3 is closed and the closing contact (PIN 1 and 3) is open. If the door is not in this state, the opening contact is open and the closing contact is closed.

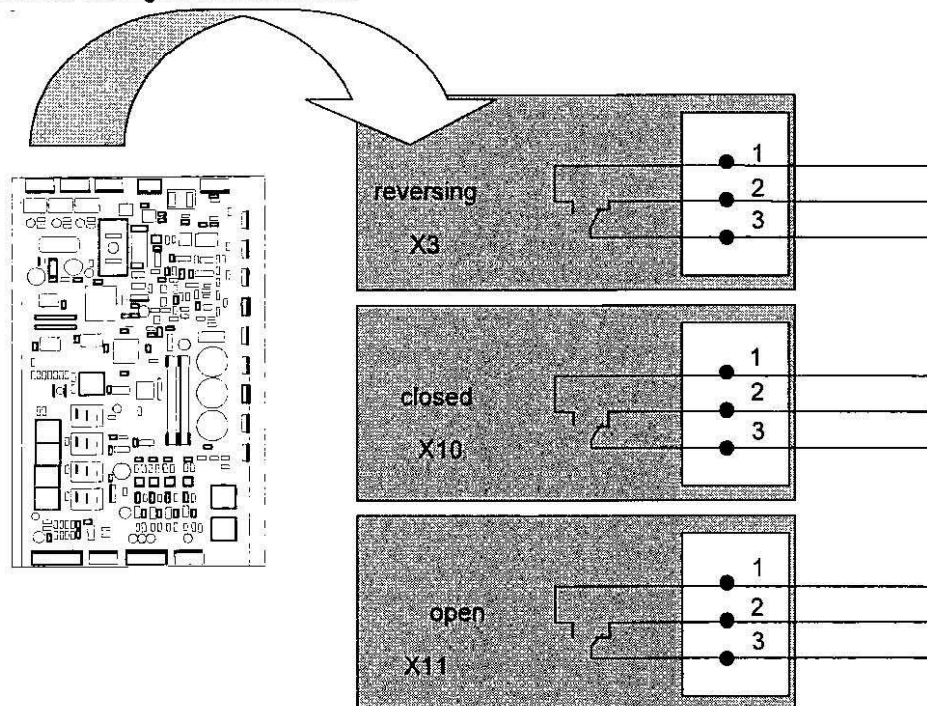
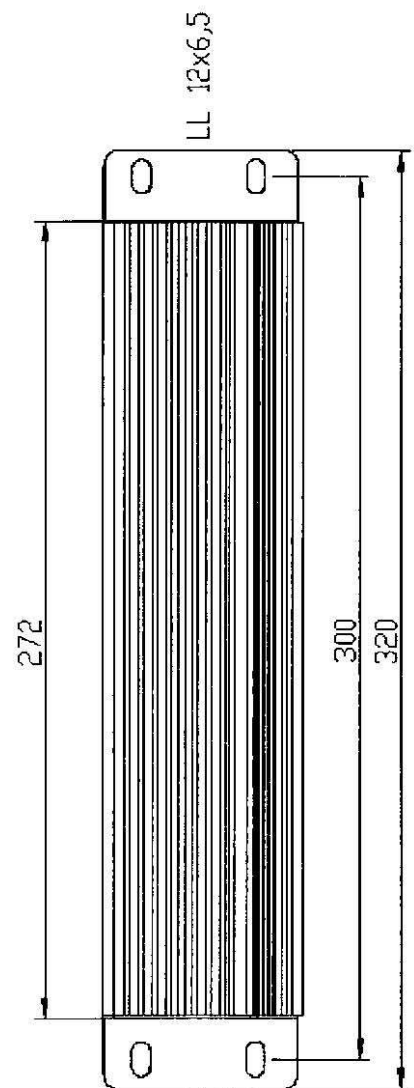
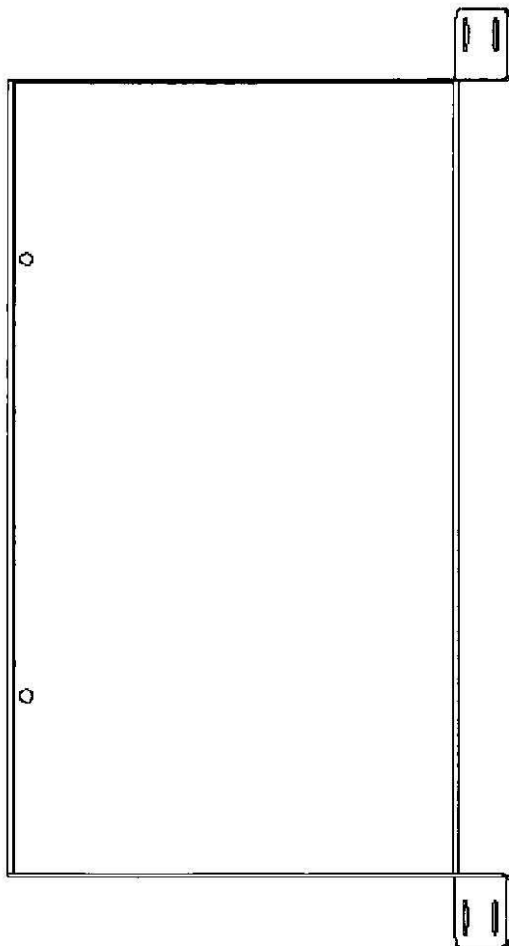
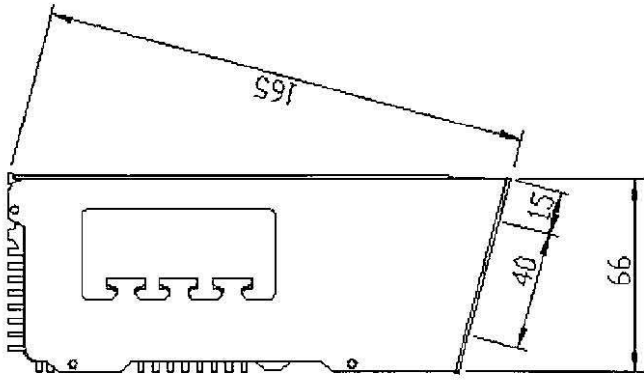


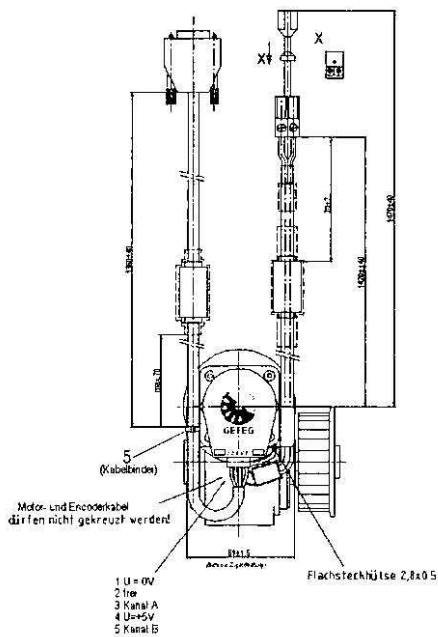
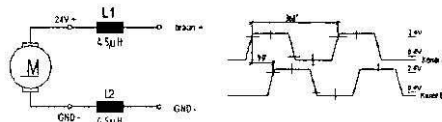
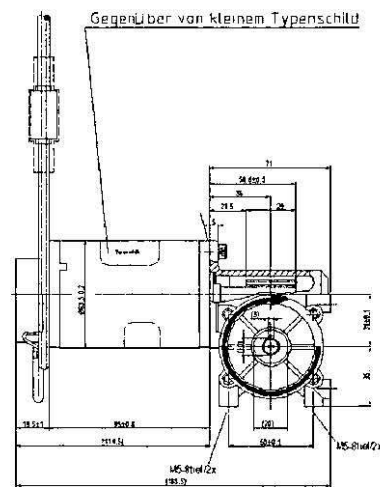
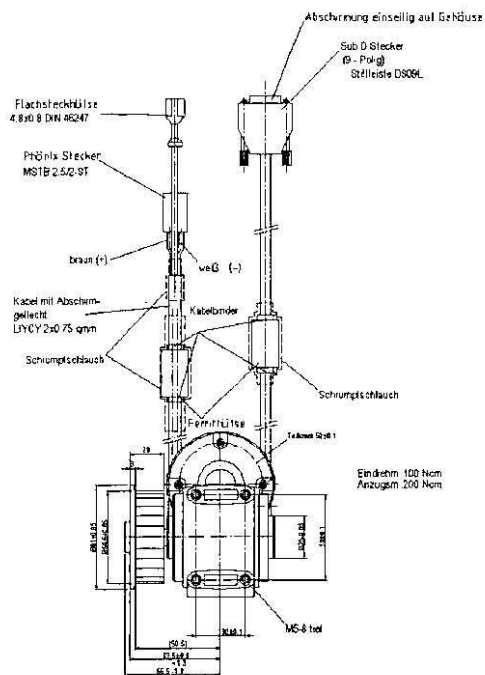
Fig. 10-1 Relay points

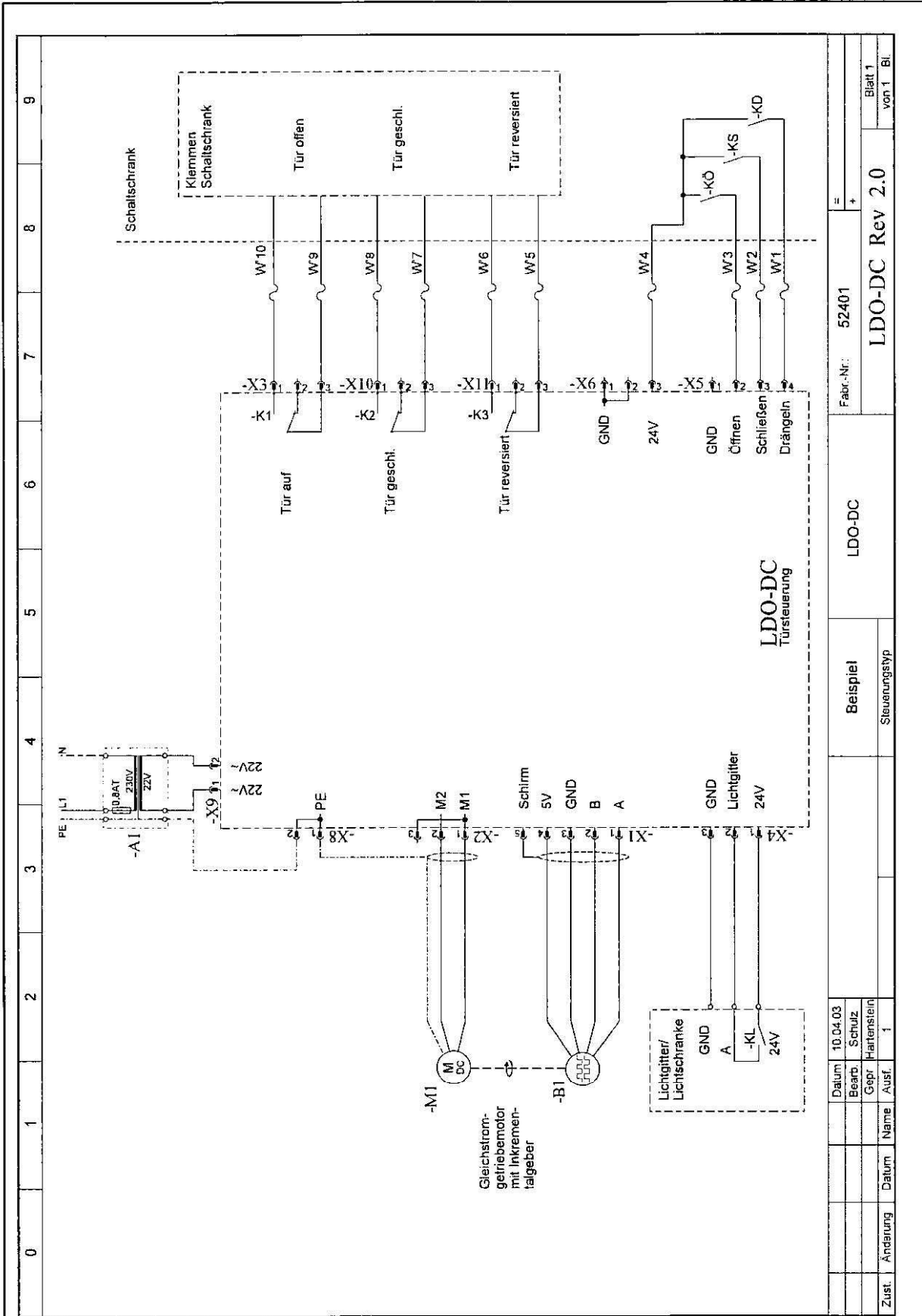
11 Annex

Annex	Title
LDO DC 2.0-001.001	Casing
LDO DC 2.0-001.002	Gear motor with encoder
LDO DC 2.0-001.003	Supply transformer
LDO DC 2.0-002.001	Control Inputs and outputs, encoder hook-up
LDO DC 2.0-003.001	Troubleshooting index
LDO DC 2.0-004.001	Installation protocol
LDO DC 2.0-005.001	Conformity certificate



Main title	Dimension sheet	Sheet	1 / 1
Subtitle	Casing	Data sheet N°	LDO-DC 2.0-001.001





Blatt 1		von 1 Bl.	
LDO-DC Rev 2.0		Fabr.-Nr.: 52401	
LDO-DC		Beispiel	
Steuerungstyp		LDO-DC	
Steuerungstyp		LDO-DC	
Datum	10.04.03		
Bearb.	Schulz		
Gepr.	Hartenstein		
Zust.	1		

Repairs at this door drive may be accomplished only by authorized specialists. From inappropriate repairs substantial dangers for the user can result.

What if ...	reason	How to handle
...the door does not move ?	no power supply, display are not working	<ul style="list-style-type: none"> • Check power supply • Check fuse
	no commands from elevator control	If the door with the service keys can be moved, the door drive is correct. Examine the commands from the elevator control.
...while door width determination, the moving direction is wrong?	the motor is wrong connected	Take the motor cable off from the door control and put it again in plug connector X2 the other way.
...the reset travel is not finished correctly?	The elevator control interrupts the command	Switch DIP switch 1 on. The RESET travel is finished also without command from the elevator control.
...die Tür eine Schließbewegung abbricht und wieder aufläuft ?	Hoher mechanischer Widerstand löst Reversierung aus.	Verbessern Sie die mechanische Einstellung der Tür. Entfernen Sie Verschmutzungen auf den Führungsschienen.
...the door does not close?	With an attached light barrier a ray interruption is present or the polarity of the light barrier input disagrees with the attitude of the DIP switch 2.	Remove the ray interruption. Adjust DIP switch 2 according to the output of the light barrier.
...the speed is to high/low ?	Speed does not fulfil the actual requirements.	Adjust speed in parameter mode.
...the acceleration is to high/low ?	Acceleration does not fulfil the actual requirements.	Adjust the ramp in parameter mode.
...the creeping distances are to short/long ?	Creeping distance does not fulfil the actual requirements.	Adjust sword and creeping distances in parameter mode.
...the static closing force is to high/low ?	Static closing force does not fulfil the actual requirements.	Adjust static closing force in parameter mode.

Installation protocol

Please fill it out and use it while requesting support!

Parameter values

Meaning	Parameter	Value
Opening speed	0	
Closing speed	2	
creeping speed	3	
nudging speed	4	
Ramp Acceleration	5	
Ramp Breaking	6	
sword distance OPEN	7	
sword distance CLOSED	8	
max. static closing force	9	
creeping speed in OPEN direction	0	

Mechanical properties of the door

Manufacturer:.....

Steel: simple finishing

Glass: circumferential frame held at the top and at the bottom

opening width:.....

door height:.....

door weight:.....

one sided central opening

door panels:.....

closing mechanics: Closing weight Recoil spring

Motor/Gear:.....

Program version (shown after Reset):.....

Elevator control (Manufacturer/Type):.....

Elevator (Location/Nr.):.....

Conformity certificate

This certificate applies to following designated product:

Device type: Drive for doors of electrically claimant elevators
Name: LDO DC 2.0

Hereby we declare that this product agrees with the following standards and guidelines:

EN 12015 : 1998
EN 12016 : 1998
EN 81-1 : 2000-05
EN 81-2 : 2000-05
Aufzugs-Richtlinie 95/16/EG

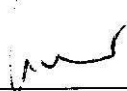
This explanation becomes responsible for the manufacturer

Elevator Trading GmbH
Gewerbegebiet im Mittelfeld Nr. 14
04509 Krostitz (OT Hohenossig)

delivered through

Herr Weber
Geschäftsführer

Hohenossig, den 11.10.2007



Weber