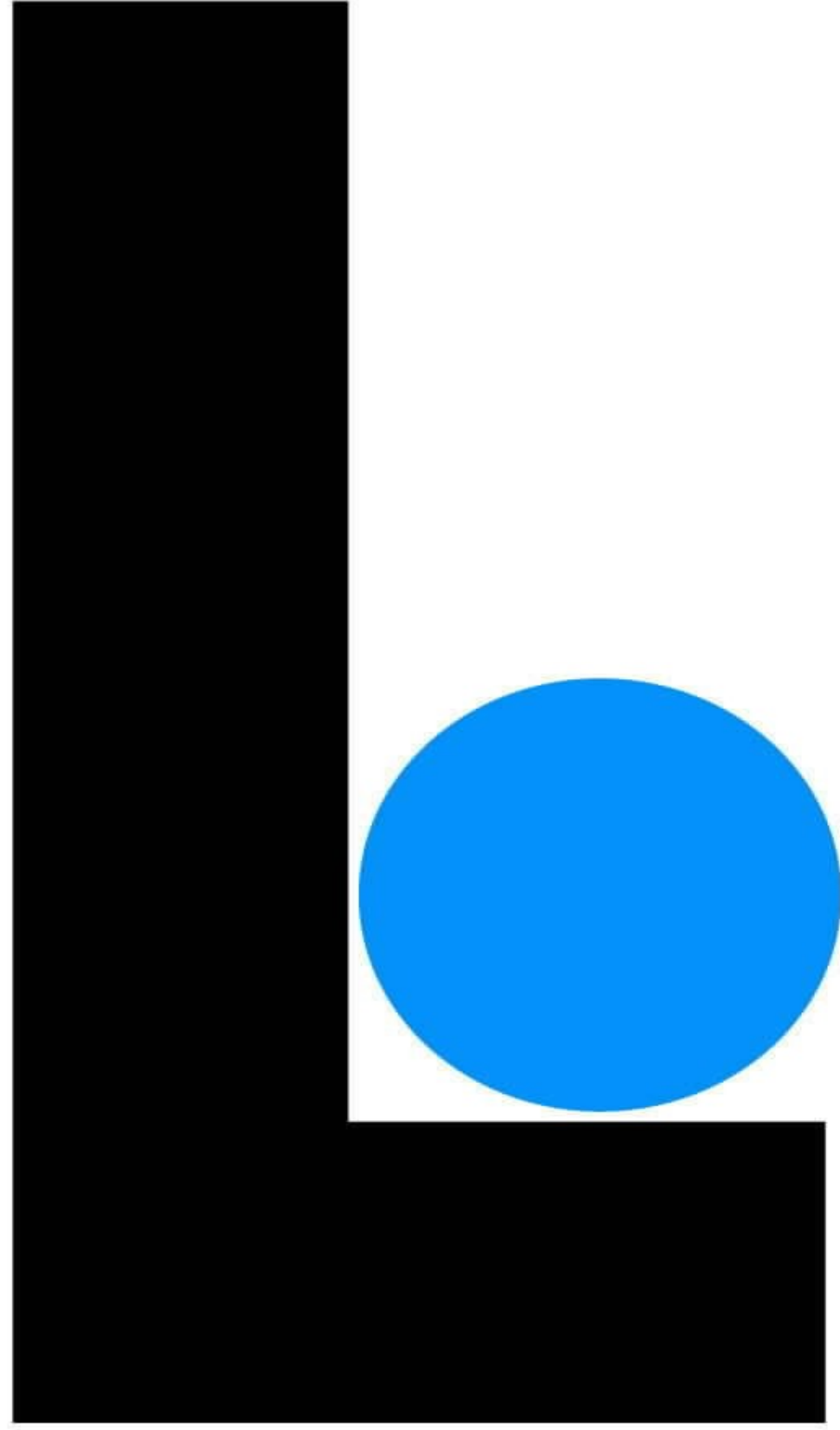


# Operation and Maintenance Manual for Sliding Door Drives

Model: SKA-AGX



**LIBERDA**  
*Antriebstechnik*

Edition 07/11/2018 (from AG3)

Copyright 2018 Liberda Antriebstechnik GmbH

Owner, Publisher: Liberda Antriebstechnik GmbH, self-published

Not be reproduced, even in extracts, without the consent of the owner

The brochure is distributed free of charge by the owner to customers and prospective customers.

# Contents

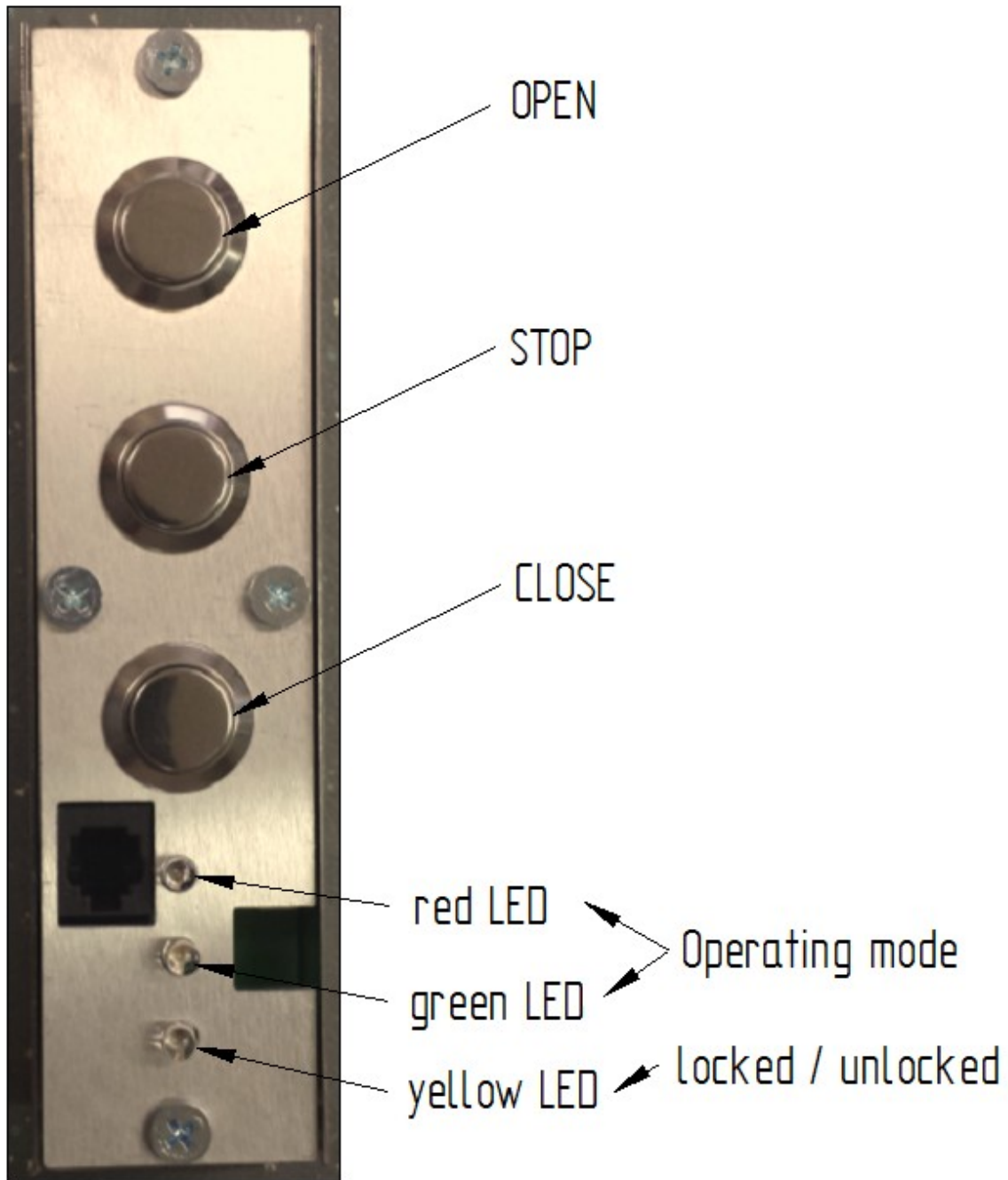
Warnings.....	4
Control Panel with LED display.....	5
Overview.....	5
Installation.....	6
Power supply.....	6
Cabling of control panels.....	6
Accessories.....	6
Function description.....	7
Behaviour in normal mode.....	7
Function after power outage.....	8
Behaviour when there is an error.....	8
Start-up.....	9
Functions during normal operation:.....	10
Locking/unlocking.....	11
Programming the ventilation position and ventilation time (closing after elapsed time).....	11
Programming of the partially open position.....	11
Turn off/disable operation.....	11
Button lock.....	12
Summary of button functions.....	12
Summary of the LED states.....	13
Emergency operation.....	13
Maintenance.....	14
Disposal.....	14
Errors.....	15
Error codes.....	15
Technical data.....	16
Cable data.....	17
Warranty.....	18
Contact.....	19

# Warnings

- Installation and maintenance may be carried out only by qualified personnel.
- According to the valid standards the control must be able to be disconnected from the mains in the immediate vicinity. The IEC connector of the power supply is used for this purpose, it may not be removed.  
If the IEC connector is nevertheless removed, an all-pole disconnection must be provided in the immediate vicinity of the control unit.
- Work may be done on the control unit only when unplugged or when IEC connector is removed or when all-pole disconnected.
- Never connect 230 V voltage to 24 V control inputs!
- Pay attention to the polarity!
- Protect from moisture, dirt and direct sunlight.
- The local safety regulations for this system must be adhered to.
- Control voltage must not be used as a power source for external devices!
- Inputs from different controls must not be connected in parallel (applies especially to control devices). A separate potential-free contact must be provided for each control!
- The control unit should be arranged in a dedicated circuit and protected with 6 A (10A).

# Control Panel with LED display

## Overview



## **Installation**

**The mechanical and electrical installation may be carried out only by qualified personnel according to the instructions!**

### **Power supply**

The drive is delivered for standard plug connection. A Schuko socket is to be provided below the control box by the customer. If the drive is to be connected directly, make sure that the power plug can easily be removed when installing the power supply. If this is not possible, an all-pole main switch should be provided in the immediate vicinity of the drive.

The connection must be protected with min. 2A, max 10 A. Differential protection must be provided in the vicinity of damp areas.

### **Cabling of control panels**

If the control is placed in the door frame, delivery includes a finished cable. Otherwise, refer to the detailed installation instructions for cabling.

### **Accessories**

Standard accessories are delivered ready to be plugged in. You only need to pay attention to the label. The cables are marked with labels that correspond to the identifiers next to the connectors. Accessories that are not included in the Liberda delivery must be connected according to the wiring diagram.

## Function description

The Liberda compact safety drive is a **microprocessor-controlled** door drive for single and multi-leaf sliding glass doors.

It includes electronic **obstacle detection** with **automatic stop and reverse**. **Traction and door speed are regulated**. All parameters, including partial opening, ventilation gap, and duration of ventilation can be set on the device.

The **force required** to open and close a door is **measured in both directions and separately logged** during the set-up of the compact safety drive. The drive adjusts automatically to compensate for contamination and ensure high reliability.

The locking state and programme state are indicated by LEDs for the duration of 5 seconds.

Standard accessories are delivered **ready to be plugged in**.

**Heavy-duty timing belts** are used as standard closing devices, which offer **at least 6x security against tearing** for a maximum load of 400 N ensured by the motor current limit.

## Behaviour in normal mode

A distinction is made between three operating modes:

In **dead-man operation** (operation without self-carriage), the door moves only as long as a key is pressed. After releasing the button, the door stops. This is the setting during start-up and after power outage.

In **impulse operation** (operating with self-carriage), the push of a button is enough to initiate door movement from one end position to another.

For “ventilation”, as with impulse operation, one button push is enough to open the door. But the door closes after the set opening time has elapsed.

If the door encounters an obstacle, **obstacle detection** is activated. When closing the door, obstacle detection activates a reversing operation; when opening, an **emergency stop** is also activated for “**soft**” obstacle (with stopping distances up to 50 mm).

The minimum safety required in the **EN16005** standard is achieved via the speed and the cutting of power. The speed depends on the door leaf weight and is **set by the manufacturer and cannot be changed by the user**.

The EN 16005 standard stipulates that if a large portion of the users is older or weaker people, or people with disabilities, or small children, any contact between the user and the door is unacceptable. In case of such operation, additional safeguards are required.

Control panels should be positioned 1800 mm above floor level to prevent from unattended operation by children.

Whenever an additional safety feature for the main closing edge is activated (e.g. photocells, presence detectors), the door will not close. During the closing movement, an emergency stop with subsequent reversal is initiated. A safety device for the main closing edge has no influence on the opening movement.

Whenever an additional safety feature for the subsidiary closing edge is activated (e.g. presence detectors), the door will not open. During the opening movement, an emergency stop is initiated. The safety device for the subsidiary closing edge has no influence on the closing movement.

Before opening from the closed position, the door verifies whether the **locking contact** of the magnetic lock type Liberda MR GTS is interrupted. As long as it is interrupted, the door will not move. As long as it is interrupted, the control tries to close the door with the help of the motor to release the lock, afterwards it tries to open the door in any case. It has no influence on a moving door.

Errors are indicated visually according to error type and can be verified by means of an error code.

## **Function after power outage**

If a door outfitted with a magnetic lock type Liberda MR GTS was already closed during a power outage and remains closed until the power returns, the drive will resume operation again automatically when the power returns.

In all other cases:

After the power is restored following a power outage, the red LED blinks and the green LED is dark. This state will remain displayed. (the display **does not** turn off after 5 seconds)

After the power outage, the control panels go into dead-man operation, i.e., the door moves as long as a button (open or close) is pressed.

### **The resuming of operation takes place in the following way:**

- First the door should be closed completely by pressing the corresponding button.
- If there is a magnetic lock Liberda MR GTS, the LED will turn off as soon as the door is completely closed and the drive automatically switches over to normal operation, i.e., the green LED flashes constantly.
- If there is no Liberda MR GTS magnetic lock, the CLOSE button must be pressed briefly 5 times when the door is completely closed; this resets the closed state again. If everything goes correctly, the red LED goes out and the green LED flashes constantly.

## **Behaviour when there is an error**

If there is an error, the error code is displayed via the LEDs. The red LED is permanently lit, and the green LED flashes and emits an error code. The error remains displayed as long as the error persists; the light **does not** go out after 5 seconds.

After rectifying the error, the code is deleted by pressing the STOP button constantly for 5 seconds.

## Start-up

**Before start-up, you must check whether a fixed end-buffer limits the opening path of the door (for multiple door leaves, each leaf must be limited at the front and rear with an end-buffer). If there is no guiding profile, the closing direction must also be limited with a fixed end-buffer.**

First the power supply should be established with 230 VAC, and you must check whether the LEDs are alternately flashing red and green. (Flashing signals happen according to the specified number of flashes with intervening pauses).

For the initial start-up, the endpoints must be set and an initial training run has to be carried out to establish the required force.

Start-up via the control panel with three buttons and signal LEDs:

1. After turning on the unit, **the red and green LEDs should flash alternately**. If this does not happen, the “endpoint” must be deleted: Press and hold the STOP button and press the upper button, lower button, upper button, lower button. After pressing the STOP button, this input has to follow within 5 seconds or the input is not valid.  
After the button sequence and the subsequent release of the STOP button, the endpoints are deleted and the red and green LEDs flash alternately. (You can always delete the endpoints this way and thereby reset the control if necessary).
2. For multi-leaf glass sliding doors, select a door leaf with the STOP button. The flashing yellow LED indicates which leaf was selected. (1 flashes means leaf 1 - master (= the wing that travels the longest path), 2 flashes means leaf 2, 3 flashes means leaf 3, etc.). The selected leaf is powered using the upper or lower button in the dead-man mode.
3. Using the upper or lower buttons, all door leaves can carefully be moved into the desired open position.  
**Attention:**
  - **Endpoints and power requirements are not yet known to the control panel.**
  - **It is only after both endpoints have been set that the upper button receives the OPEN function and the lower button receives the CLOSE.**
4. When all leaves are in the open position, the OPEN endpoint is saved using the button combination STOP+direction button (the button with which the leaf is opened). **From then on, the green LED lights up.**
5. Use the relevant buttons to carefully move all door leaves into the desired closed position.  
**Attention:**
  - **Endpoints and power requirements are still not yet known to the control.**
  - **It is only after both endpoints have been set that the upper button receives the OPEN function and the lower button receives the CLOSED.**If the system is equipped with a magnetic lock type Liberda MR GTS, **pay attention to the yellow LED display**: the door is closed only when this LED is lit!
6. When all leaves are brought to the closed position, save the CLOSED endpoint using the button combination STOP+direction button (the button with which the leaf is closed). **The green and red LEDs flash together evenly**. Both endpoints are thereby defined and the training run for establishing the force requirements can be performed. For multi-leaf glass doors, the yellow LED no longer blinks.

7. Press the OPEN button until the door has opened and closed once.  
The green LED light will flash evenly and the set-up is complete.

## Functions during normal operation:

- The signal LEDs go out during normal operation after 5 seconds if the control panel is inactive (so the lights are not bothersome). After pressing any button, the display turns on for 5 seconds and shows the current operating state.
- In normal operation, the doors move in the respective direction when the OPEN or CLOSE button is pressed. The top button is for OPEN, the middle for STOP, and the lower for CLOSE (see control panel).
  - If the door is in the closed position, the green LED flashes 1x.
  - If the door is in the open position, the LED flashes 3x.
  - If the door is neither in the closed nor open position, the green LED flashes 5x.
- In normal operation, the doors open completely when the OPEN button is pressed for a long period (more than 1 second).
- When the OPEN button is pressed for a short time (less than 1 second), the door opens completely as in the factory setting the ventilation function is disabled (preprogrammed at 0 cm).

After programming the ventilation function (see page 11), the door moves to the programmed position when the OPEN button is pressed for a short time.  
The door closes automatically after the set ventilation time has elapsed (if it is programmed).
- In normal operation, the doors move to the partially open position (preprogrammed at 100cm) after the OPEN button is pressed for a long time and then a short time.

If the ventilation function is deactivated, the doors move into the partially open position when the OPEN button is pressed two times for a short period.  
Two short presses of the CLOSE button will move the door from the open position to the partially open position.
- During normal operation, the door can be stopped in the following way:
  - 1) Short press of the STOP button (middle button on control panel).
  - 2) Short, simultaneously pressing of OPEN and CLOSE buttons (lower and upper buttons on control panel)

## Locking/unlocking

### Locking with the magnetic lock Liberda MR GTS:

When the door is completely closed (the green LED flashes), the door locks (yellow LED flashes). By pressing the OPEN button, the door is unlocked and opened (yellow LED goes out).

### Locking with other systems:

Default: VLD automatically locks when closing. The door opens after a lead time of 5 seconds during which the system unlocks.

Variant: VLD locks not automatically but with a press of the CLOSE button. This variant is possible but must be programmed by the manufacturer.

## Programming the ventilation position and ventilation time (closing after elapsed time)

Open the doors to the desired position (the opening width can be a maximum of 30cm for this function), hold the STOP button and simultaneously press the OPEN button and hold for at least 5 seconds. When the red and green LEDs are lit up at the same time and remain lit this means: The ventilation position has been programmed. Now each press of the STOP button increases the ventilation time (closing time after elapsed time) by 1 minute. (For example: 5 presses = 5 minutes; the programmable maximum is 30 minutes). When any direction button is pressed, the settings are saved. When a direction button (not the STOP button) is pressed immediately after programming the ventilation position, the ventilation time will be set to infinity (= closing time after the timer is disabled; the door **does not** close automatically).

The ventilation function is disabled by pressing the STOP and OPEN buttons together for 5 seconds when the door is closed; the red and green LEDs light up together; a direction button must be pressed immediately afterwards. A short OPEN command is enough to open the door when the ventilation function is disabled.

## Programming of the partially open position

Move the door to the desired position (the opening width must be at least 30 cm), hold the STOP button and simultaneously press and hold the OPEN button for at least 5 seconds. When the red and green LEDs light up together this means the partially open position has been saved. The partially open position can be changed at any time using this approach.

## Turn off/disable operation

The unit must be unplugged to disable operation. After the internal capacitors are discharged, the green LED on the control panel shuts off after approx. 10 seconds and operation is disabled.

## Button lock

The button lock prevents the door from receiving an OPEN, STOP or CLOSE command. To lock the buttons, press them as follows:

Within a period of 5 seconds, the STOP button must be pressed 10x consecutively; if this is successful, the red and green LEDs will flash simultaneously → the control panel is locked. The LEDs will go out again after 5 seconds; when the buttons are pressed again, they will flash again simultaneously.

To cancel the button lock, the STOP button must be pressed again 10x consecutively within a period of 5 seconds → the control panel is unlocked again.

## Summary of button functions

Definitions for “long” and “short”:

- Pressing for a “long” time corresponds to a pressing time longer than 1 second ( $t > 1 \text{ sec.}$ )
- Pressing for a “short” time corresponds to a pressing time shorter than 1 second but at least 250 milliseconds ( $0.25 \text{ sec.} < t < 1 \text{ sec.}$ )

Button	Pressing	Event	Comment
STOP	Short	Stops	
OPEN	Long	Opens completely	
OPEN	Short	Unlocks and opens to the ventilation position (if programmed)	If the door is already in the ventilation position, it will be opened completely
OPEN	Long + short	Opens the door to the partially open position	If the door is already in the ventilation position, pressing short + short is enough
CLOSE	Short	Closes completely	
CLOSE	Short + short	Closes the door to the partially open position	If the door is already in the partially open position, it will be closed completely
OPEN + CLOSE	Short	Stops	
OPEN + CLOSE	Until red and green flash simultaneously	Dead-man function. Calibration is activated	Then press the OPEN button and hold it until the test runs are completed.
STOP	10x within 5 sec	Until red and green flash together quickly	Display goes out after 5 sec. Keypad is locked
STOP	5 sec	Reset error	

To set endpoint after power outage: Close door and press the OPEN button 5x while the door is closed.

## Summary of the LED states

LED	State/flashingsequence	Comment
Red + Green	Flashing alternately	Control ready to use, endpoints not yet set, start-up needed, operation in dead-man mode
Green	Lights up	OPEN endpoint set, continue start-up, operation in dead-man mode
Red + Green	Flashing together	Measurement run using OPEN button, operation in dead-man mode, 1x flash – door CLOSED 3x flash – door open 5x flash – door in movement
Green	Flashes	Normal mode, 1x flash – door CLOSED 3x flash – door open 5x flash – door in movement
Yellow	Lights up	Door CLOSED and locked
Red, Green	Red is lit, green flashes	Error, green shows error code (see table on page 15)
Red	Only red lights up	Occurs when power is restored; see “function after power outage” (page 8)
All	Dark	Press stop button to wake up the display
All	Dark	Does not wake up → Is control panel disconnected? → Reset, disconnect power
All	Red + green + yellow flash	Programming mode via rotary switch, set rotary switch to “0”

## Emergency operation

After activating emergency locking for the magnetic lock, the doors can be slid. Make sure to open the door slowly so the belt will not be damaged.

## Maintenance

As individual components, the drives are maintenance free, but the entire door system itself must be cleaned regularly.

The toothbelt must be controlled regularly, at least once a year, it must be free from any kind of damages.

The function of the door shall be controlled at least once a year.

Please find error codes and their meanings resp. the instruction to reset them in our operating manual.

After a long period of inactivity or if the system has only been opened to the ventilation position for a long time, obstacle detection may be activated due to modified operating conditions. If this occurs, a new measurement run must be started.

**Only original spare parts or technically equivalent products may be used for any replacement of belts or components.**

Maintenance and repair may be carried out only by suitably qualified personnel. Manufacturer personnel or those trained by the manufacturer are in any case suitable for maintenance of the drive.

## Disposal

Electronic components are not allowed in residual waste and must be properly disposed of as hazardous waste.

## Errors

Modified operating conditions, such as adverse weather (frozen seals...), dirt in the rails or similar things, may result in the door drive not being able to overcome these obstacles. When closing the door, this may lead it to reverse; when opening the door, this may lead to it stopping (error codes appear).

If this condition persists even after the obstacles are removed, the door must be retrained. The control of the drive will thereby be adapted to the new (heavily modified) operating conditions.

Procedure for training the door:

Press the OPEN and CLOSE buttons simultaneously and hold until the red and green LEDs flash at the same time. (In the CLOSED position 1x; in the OPEN position 3x, otherwise 5x; press for approx. 5 seconds).

The door can then be operated in the dead-man mode: press the OPEN button and hold until the entire reference run is ended. Afterwards, the door is closed again and in normal operation; the green LED blinks.

## Error codes

### Appearance and rectification:

If there is an error, the error code is displayed via the LEDs. The red LED lights up constantly, and the green LED flashes an error code.

The error remains displayed as long as the error persists; the display turns off after 5 seconds.

Number of flashes of the green LED	Description:	Behaviour of the door	Troubleshooting
2	Obstacle in CLOSE direction	Door reverses 30cm and stops	Check the path of the door in the closing direction for obstacles and remove obstacles. If the error persists, retrain the door (see: procedure for training the door)
3	Obstacle in the OPEN direction	Door stops	Check the path of the door in the opening direction for obstacles and remove obstacles. If the error persists, retrain the door (see: procedure for training the door)
4	Overload	Door stops in the OPEN direction or reverses in the CLOSE direction	Check the path of the door for obstacles and remove obstacles. If the error persists, contact the service company.
5	No impulse from encoder	The door moves a little and then stops	Check impulse transmitter cable between motor and control panel; contact the service company.
14	Wrong polarity for motor	Door stops	The strands for the motor cable are swapped
29	Motor cable interrupted	Door does not move	Check the plug connection for the motor cable, measure the cable, contact the service company
46	Magnetic lock electronics error	Magnetic lock is not actuated	Turn off power and turn on again, contact service company.
50	Synchronous connection error	Door stops	Turn off power and turn on again, contact service company.

After rectifying the error, the code is deleted by pressing and holding the STOP button for 5 seconds.

If the error is not rectified with the above procedure or another problem arises, contact the manufacturer with the following information:

- Type
- Serial number
- Operating condition
- Status of the various diagnostic lamps
- For error indication: error number
- Exact description of the error

## Technical data

### Drive control

<b>Maximum traction force:</b>	motor size 1	110 N
	motor size 2	400 N
	motor size 3	680 N
<b>Operating temperature:</b>	0° ... 60°C	
<b>CIP classification:</b>	IP 20	

### Switching power supply:

<b>Supply voltage:</b>	100 – 240 V AC ±10%
<b>Protection:</b>	5 A
<b>Output:</b>	24V DC ±5% / 7,5A

## Cable data

Only the following cable types are recommended so problems can be avoided with the cable connections:

Hybrid cable (comb. Impuls transmitter/motor cable):  $2 \times 2.0 \text{ mm}^2 + 2 \times (2 \times 0.5 \text{ mm}^2)$   
(special cable, available at Liberda Antriebstechnik GmbH)

Motor cable:  $2 \times 1.0 \text{ mm}^2$  shielded (over 15 m  $2 \times 1.5 \text{ mm}^2$  shielded,  
over 30 m  $2 \times 2.0 \text{ mm}^2$  shielded)

Impulse transmitter cable:  $4 \times 0.35 \text{ mm}^2$  shielded (over 30 m  $4 \times 0.5 \text{ mm}^2$ )

Magnetic lock cable:  $10 \times 0.5 \text{ mm}^2$  unshielded

Power supply cable (control – power supply):  $5 \times 0.75 \text{ mm}^2$  unshielded max. 2m

Connection cable (control panel – control): Patchcable Cat6 max. 15m, shielded (FTP)

Synchronisation cable: Patchcable Cat6 max. 2m

Note: For flexibility reasons, stranded wires must be used!

## **Warranty**

The product is warranted against defects in design, materials and workmanship for a period of thirtysix (36) months from its original date of purchase. The local office or distributor may grant a warranty period different to the above and refer to local terms of liability as defined in the supply Contract.

LIBERDA Antriebstechnik GmbH is not responsible for:

- any costs resulting from a failure if the installation, commissioning, repair, alternation, or ambient conditions of the equipment do not fulfil the requirements specified in the documentation delivered with the unit and other relevant documentation.
- Equipment subjected to misuse, negligence or accident.
- Equipment comprised of materials provided or designs stipulated by the purchaser.

Under no circumstances shall the manufacturer, its suppliers or subcontractors be liable for special, indirect, incidental or consequential damages, losses or penalties.

The warranty shall not extend to natural wear and tear or damage occurring after the transfer of risk due to faulty or negligent treatment, excessive use, unsuitable operating material, faulty construction work or due to special external influences that were not provided for by the contract. If the buyer or third parties carry out alterations or repair work improperly, these and the ensuing consequences shall not be covered by warranty.

The existence of a defect shall not entitle the buyer to remedy the defect itself or have it remedied by third parties, but rather the seller shall be given the opportunity to remedy the defect within reasonable time.

For the remedying of defects, products delivered by us shall be sent to us free of carriage charges. We will not bear any costs related to the defect, such as assembly, disassembly, travelling time, penalties or any other compensation.

Any work and deliveries performed under warranty shall not extend the original warranty period of parts not affected thereof.

The technical data, information and specifications are valid at the time of printing. The manufacturer reserves the right to modifications without prior notice.

### **Prohibition of Assignment**

Claims against us shall not be assigned without our prior written consent.

### **Offsetting**

Offsetting with any kind of counterclaims against our claims shall be excluded, unless such counterclaims have been recognised by us or established by a court.

## **Place of Jurisdiction, Applicable Law**

Austrian substantive law shall apply. The applicability of UN Law on International Sale of Goods (CISG) shall be excluded. The contract language is German.

The place of jurisdiction for all disputes arising directly or indirectly from the contract shall be the competent Austrian court at the seller's registered office. However, the seller shall be entitled to invoke any other court. Should, for any reason, any of the provisions stated above become ineffective or void or be declared non-binding, the validity of the remaining provisions shall remain unaffected. In such case, both contracting parties undertake to replace the ineffective provision with a valid provision whose content comes closest to the economic purpose of the ineffective provision.

If there is any inconsistency or conflict between the German and English versions of these terms and conditions, the German version shall prevail.

Status as of February 2018

(All previous general or company-specific conditions of sale and delivery hereby shall lose their validity.)

## **Contact**

Liberda Antriebstechnik GmbH

Phone: 0043 1 895 32 44

Fax: 0043 1 895 32 44 20

E-Mail: [support@liberda.eu](mailto:support@liberda.eu)

Support: 0043 676 44 059 21 (Can also be reached on the weekend for urgent cases)

For express, weekend and holiday service, ask about the manufacturer's offers!