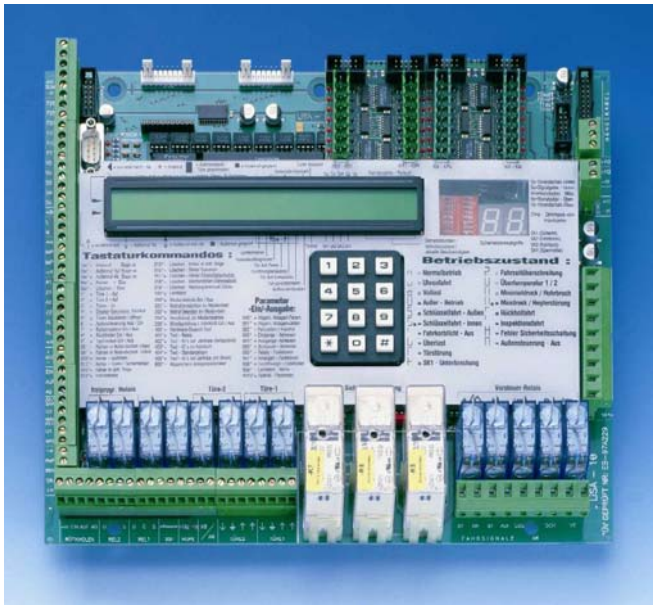
LiSA User Manual

Operating Instructions (part B)



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Betriebsanleitung (Teil B)

1. Installation and connection

1.1. General information

Important notes on the working safety!

- Before the LiSA controller is put into operation in the control cabinet, you must by all means read the operating instructions and keep them at hand for future reference.
- The installation and commissioning of the LiSA controller must only be carried out by instructed persons or accordingly trained experts.
- As a basic principle you must leave any maintenance and repair works to the service team of Schneider Steuerungstechnik GmbH or a qualified expert.
- Safeguard against any unauthorised or unintended switch-on of the power supply by suitable measures (remove fuses, place a warning sign, cordon off the area, assign a custodian with the supervision of the safety measures, if required).
- The safety requirements of the relevant professional associations must be met by all means.

Before installation!

- Check the delivered items for transport damages. Any transport damages must immediately be communicated to the forwarding agent or Schneider Steuerungstechnik GmbH.
- Unpack the LiSA controller / control cabinet.
- Check the delivered items for completeness.
- Compare the delivered components with the enclosed packing slip. Check your order by means of the delivery slip. In the event of differences please contact Schneider Steuerungstechnik GmbH immediately.

Notes!

As travelling cables are supposed to drop out for 24 hours before use - this applies in particular to the LiSA travelling cable - pull in the travelling cable first, before you start with the installation in the machine room.

When pulling in the travelling cable, avoid by all means any twisting or bending!

1.2. Installation and connection in the machine room

1.2.1. EMC-specific installation

- Lay control cables and power cable separately.
- Provide connected inductors (brake, interlock, door motor) with suitable interference suppressors.
- Use shielded cables for control signals from frequency inverters. Apply the shield single-sidedly and extensively.
- Use shielded cables for connections to the motor, brake resistor, braking chopper and speedometer. Apply the shield double-sidedly and extensively.

1.2.2. How to install the control cabinet

The control cabinet is fixed onto the wall by means of the mounting holes or brackets in the corner of the control cabinet. The component box for the control cabinet contains an accessory pack with mounting clips, dowels and the appropriate screws.

1.2.3. How to connect the main supply cable

After fixing the control cabinet you must now establish the connection to the master switch. If the supply of the master switch is provided, you must only establish the connection between master switch and controller. If there is an internal master switch, you can connect the supply directly in the control cabinet.

The supply is connected to the terminals L1, L2, L3, N1 and PE (five-wire cable).

1.2.4. How to connect the light circuit

If a separate circuit is planned for the lift car light and shaft light, it must be connected to the terminals L4, N2 and PE in the control cabinet. If no separate circuit is planned, you must jumper the terminals N1 and N2 as well as L1 and L4 in the control cabinet.

Note:
Do not yet activate the controller at this point of time. The machine installation should be completed first.

1.2.5. How to connect the drive

Machine installation in case of a rope-traction lift (two speeds or frequency-controlled):

- motor supply cables (2 four-wire cables for two-speed lifts / 1 four-wire cable for single-speed lifts, 1 shielded four-wire cable for lifts with frequency inverter)
- one brake supply cable (service brake or holding brake)
- PTC thermistor cable
- if required supply cable for the external ventilation system
- if required supply cable for the brake lifting monitoring and/or brakeshoe wear monitoring
- in case of frequency-controlled lifts you often also need a supply cable for the speedometer or incremental encoder.

Installation of a hydraulic power unit:

Depending on the components used, it normally consists of:

- motor supply cable
- valve supply cable
- PTC thermistor supply cable
- supply cable for the contacts of the minimum pressure and overload switch

1.3. Installation and connection in the shaft

1.3.1. Installation travel

LiSA controllers delivered from March 2009 on contain an integrated jumper which connects the inspection input (= IEin terminal 13 at plug XK2) to –H. This jumper is equipped with a label with the inscription

"remove jumper only after installation"

.

The result is:

- changing to normal operation is only possible by removing the jumper,

- in case of lifts with absolute encoder, the monitoring of pulse and encoder errors is switched off, i.e. the inspection or installation operation is possible without restrictions, even if the absolute encoder is not installed or initialised,
- a travel with recall control is not possible.

Attention!

During the entire installation procedure, the inspection travel must remain turned on!

If you must jumper any safety circuit equipment (e.g. because not installed), please insert jumpers (e.g. from terminal 4 to 9 and 11 to 14).

Use earth wires (yellow/green) to jumper the safety circuits and leave the wires long and noticeable in order not to inadvertently forget a jumper in the control cabinet after the installation.

Attention!

Never jumper any emergency stop switches!!

If you carry out the installation travel for an alteration in which there is already a lift car, please carry out the installation travel directly via the original LiSA inspection box. In case of a new building please use an assembly panel in order not to damage the original travelling cable when installing the lift car.

Procedure for alterations:

- Make sure that the controller is switched off.
- Fix the travelling cable in the shaft and to the car.
- Start the installation by mounting the inspection travel box onto the car.
- Plug or connect the travelling cable plugs to the designated terminals of the APO board and the inspection travel box.
- Connect the switches of the safety circuit or jumper the prepared terminals.
- Now activate the inspection travel switch (INSPECTION ON), then activate the holding switch.
- Now plug or connect the travelling cable completely in the control cabinet.
- Connect the shield of the electronics cable to PE, but only in the control cabinet.
- Switch on the fuse F3 and the master switch!
- Observe the status display on the LiSA controller. After a short start-up and initialisation phase, the inspection travel symbol must appear on the display.

Information on the symbol explication is to be found on the LiSA cover!

- In the case of a correct wiring (jumpers in the safety circuit), the LED for SK1 is on.

Notes:

Check whether the safety circuit is interrupted by an emergency stop:

If you activate the emergency stop switch of the inspection controller (not the installation travel panel!), the controller with software from March 2009 on checks whether the safety circuit is actually interrupted. If this is not the case, the controller changes to the out-of-operation mode. "SkFehl" appears on the LiSA display.

Check whether the safety circuit is interrupted by releasing an inspection direction button:

Furthermore it is necessary to check whether releasing an inspection direction button interrupts the safety circuit at SK3. If this is not the case, the controller responses in the way described above.

- Release the emergency switch and check the rotation direction of the lift drive by pressing the DOWN button. If the car moves downwards, the connection of the supply cable is correct. If not, carry out another check after changing the rotation direction of the drive.

Note:

- Change the rotation direction by exchanging two phases of the motor supply cable.
- In the case of lifts with frequency inverters, this can also be done by modifying the respective parameter.
- If the lift starts to move when pressing a direction button, the lights SK1, SK2, SK3 and SK4 on the LiSA controller must be on.

If the lift does not start to move, check the following components:

- Is the light SK4 on when pressing a direction button?
- Check whether SK1 is on (voltage applied at terminal 9).
- If terminal 9 is not energised, check the installed switches and safety circuit jumpers.
- If you cannot find an error here, check whether voltage is applied at terminal 1.
- If this is not the case, check whether the fuses F1 and F3 are inserted.
- If voltage is applied until terminal 9, check terminal 9 in the inspection box on the lift car for voltage. In the case of a correct installation, voltage must be applied here, unless the travelling cable is damaged.
- Release the emergency stop button, press a direction button and keep it pressed. Measure the output voltage at terminal 11 of the inspection box. If no voltage is applied, you may have omitted a jumper in the inspection box which is necessary.
- Check by means of the wiring diagram whether all jumpers required for the supply of terminal 11 are in place in order to supply terminal 11 when pressing a direction button. If this is not the case, please insert the missing jumper as described.

Important note on the working safety:

Never jumper terminal 9 and terminal 11 of the inspection travel box directly, as otherwise the emergency stop switch has no effect and the safety circuit is not interrupted when a direction button is released.

Procedure for new buildings:

On principle, the
re is the same as de-
scribed above. The
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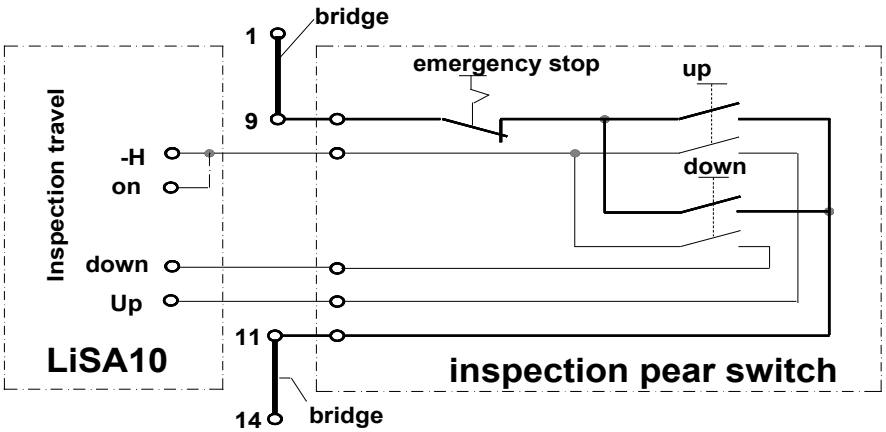
ried out WITHOUT trav-
ling cable and inspection
travel box.



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The assembly panel:

- The safety circuits must be jumpered as described above, with the following exception:
- For bridging terminal 9 to terminal 11 you must a self-made assembly panel.
- Use a rubber cable (5*1.5) of sufficient length in order to connect the assembly panel.
- Connect one wire of your assembly panel to terminal 9, then to the emergency stop of the assembly panel (N/C contact), from there in parallel to both direction buttons (2 levels / N/O contacts) and back to terminal 11 in the control cabinet. The travel direction is determined by the two free N/O contacts of the direction buttons of the assembly panel.
- Connect one wire to -H in the control cabinet and connect it to the base of both direction buttons.
- Then connect the N/O contact of the OPEN button to the OPEN terminal which is located laterally top left of the LiSA10 board.
- The N/O contact of the DOWN button is connected to the DOWN terminal below the UP terminal.
- In order to switch on the inspection travel, insert one last jumper from -H to ON, the uppermost one of the three inspection terminals.

For troubleshooting proceed as described for alterations.

Then install the doors and the lift car.

When the doors and the car are installed, you can now start to install the inspection box and the travelling cable.

Proceed as described above for alterations.

Then you can carry out the installation travel from the top of the lift car via the inspection travel box.

Now remove the assembly panel.

Attention!

During the entire installation procedure, the inspection travel must remain turned on!

1.3.2. How to install the shaft selection

The LiSA controller provided two shaft selection systems to choose from. The ever used method with metal rails and selector block and from LiSA10-8 (LiSA bus) on also an absolute encoder system.

1.3.2.1. Installation of shaft rails, selector block and encoder:

First install the provided shaft rails onto the corresponding rail holder in each landing.

Note: All the rails within one shaft must have the same length. The length of the rails can, however, be different from lift system to lift system! Exception: in the case of lifts with short travel landings (up to approx. 40 cm), one shaft rail can extend over both landings.

Usually only one inductor switch is required (centrical inductor switch). Lifts which relevel and/or approach with early opening doors require a selector block with 3 inductor switches. We generally recommend to use 3 inductor switches (e.g. for step recognition).

Before you install a selector block with 3 inductor switches, please check whether the top and bottom inductor switches are installed at the same distance from the centrical inductor switch.

Now mount the selector block onto the lift car. Install it in such a way that the rails can move through the inductor switches.

The immersion depth of the rails should be equal in all landings and as deep as possible (clearance of eight millimetres).

Please observe that the rails must move centrally and straightly through the inductor switches. For this purpose you can adjust the rails by means of oblong holes.

The adjustment of the rails should be done accurate to the millimetre in every landing. The more accurate you work, the faster you will reach the flush position in the landings during the TeachIn.

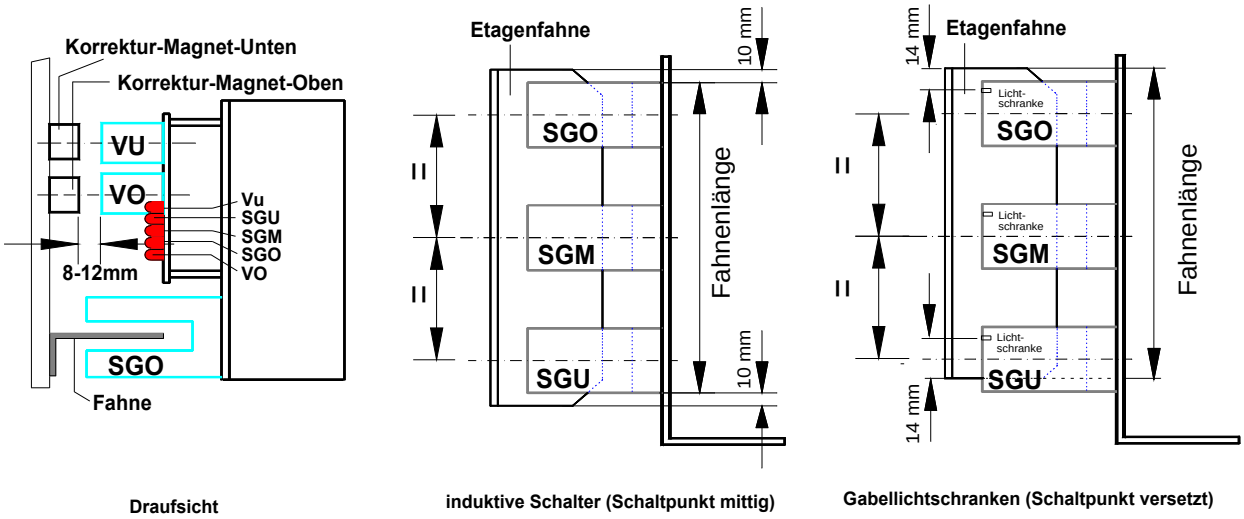


Figure 2: rail positioning

Installation of the correction magnets and slow-down switches:

After installing the rails in all landings, mount the correction magnets at the highest and lowest landings. They must also be mounted onto the rail holders and shifted laterally in such a way that the bottom slow-down switch passes the lower magnet and the top slow-down switch passes the upper magnet. The distance of the magnets from the magnetic switches (bottom and top) on the selector block should be between 8 and 12 millimetres.

Now pass the lower magnet and stop.

Attention: Do not travel too far beyond the magnet! The lift could hit the ground as the limit switches might not yet work!

Now the LED "VU" on the selector block must be on. If this is not the case, change the polarity of the magnet by turning it by 180° (north/south). Travel in upwards direction first, then travel downwards again and pass the lower magnet.

If the LED "VU" is on, pass the magnet in upwards direction and watch the LED in the meantime. The LED must go out when passing the magnet.

Now repeat these steps with the upper magnet. When passing the magnet in upwards direction, the LED "VO" on the selector block is supposed to be on.

If this is not the case, change the polarity of the magnet (proceed as for the lower magnet).

When you pass the magnet in downwards direction, the LED must go out.

The positions of the slow-down switches depend on the system and must be selected in such a way that the lift can still safely approach the highest or lowest landing (sufficient deceleration paths).

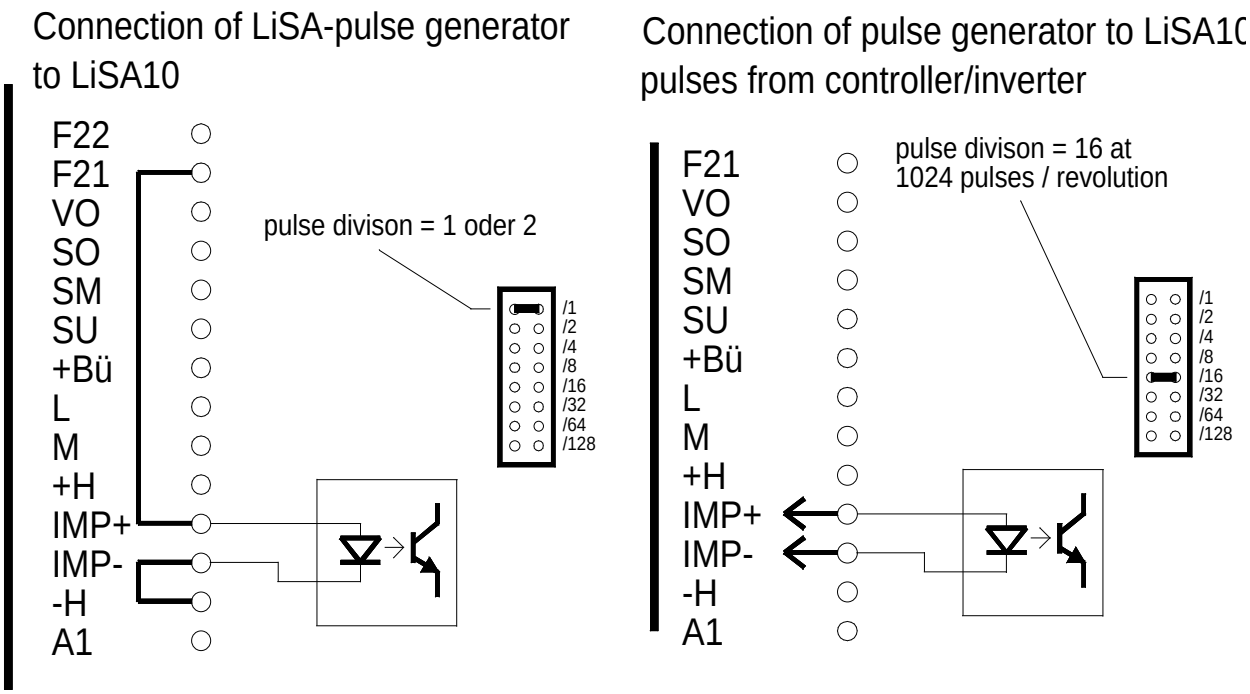
Note: The correction switches always switch off the high speed. This means that the lift will in any event change to low speed when passing the correction magnets. Therefore it is important that the lower magnet is not positioned too high and the upper one not too deep. This serves to avoid a long creeping distance in the final landings!

Installation and connection of the encoder:

Installation:

Please see the provided manuals to install the encoders.

Connection to LiSA:



The encoder input consists of an opto-coupler and, depending on the pulse level, charges the encoder with a maximum of 10 mA.

The LiSA10 is equipped with jumpers which serve to divide the pulse frequency.

In order to achieve a pulse constant of 500 - 2000 pulses/m after the TeachIn, the jumper JP11 must be inserted accordingly.

Standard values:

- LiSA encoder: JP11 in position /1, pulse constant = approx. 1170 pulses/m.
- LiSA absolute encoder: JP11 in position /1, pulse constant = 1000 pulses/m.
- Drives with gears: in the case of encoders with 1024 pulses/rev. the frequency is usually divided by 16.
  in the case of encoders with 4096 pulses/rev. the frequency is usually divided by 64.
- gearless drives with 100 rpm: in the case of encoders with 2048 pulses/rev. the frequency is usually divided by 2.

Connection of the LiSA encoder:

The encoder (100 pulses/revolution) is connected to the connection board in the inspection box (APO board). In the case of **APO8B**, the terminal F21 is used or in the case of **APO10** to **APO14**, the terminal **Im** is used. The signals are therefore transmitted to the LiSA board in the control cabinet via one wire in the shielded (!) part of the travelling cable. On the main board, this wire can be tapped at terminal F21 or Im at the travelling cable adapter and connected to the pulse input (Imp +) by means of a jumper. The input Imp- must be connected to -H.
The LiSA encoder (Wachendorf incremental encoder) is used for lifts of up to 1.6 m/sec. In the case of systems with direct approach (e.g. Dynatron systems) it should not be used as the rope pulleys used tend to wear off after a while which may lead to steps (error: toohigh / toodeep).

Connection of any other encoders:

The encoder is connected directly to the inputs Imp+ and Imp-. The signal level can be between 3 and 24 V. Use only shielded wires. Apply the shield double-sidedly.

Attention!

TTL encoders or encoder simulation electronics work with levels of 5V. In order to ensure a safe operation, insert the jumper JP12 (<5V).
In the case of encoders which are supplied with 24V, it is imperative to remove this jumper. Failure to observe can result in the defect of the pulse input.

1.3.2.2. How to install the absolute encoder system

First install the reading head onto the lift car or in the car panel using the provided bracket (see the following figures). The direction arrow of the reading head points upwards. Ensure an accurately vertical installation. Check this by means of a spirit level.

Now mount the magnetic tape holder onto the shaft ceiling (figure 4 (A)). Please observe that the steel side of the magnetic tape must slightly touch the plastic guide during operation. Now attach the magnetic tape to the tape holder. The direction arrow of the magnetic tape points upwards.

Hold the box which contains the magnetic tape with the opening facing upwards and travel downwards in the inspection mode. In this way the magnetic tape is pulled out of the box.

Cut off the magnetic tape at the corresponding length in the lowest position (fixing in the shaft pit), untwist it and feed it through the reading head (magnetic side = reading head side).

Now fix the hook for the tension spring in the shaft pit (figure 4 (B)). Please observe again that the steel side of the magnetic tape must slightly touch the plastic guide during operation (see figure 5).

Use a plummet to check the magnetic tape installation in order to make sure that the required deflection is provided independent of the lift car position.

Attach the magnetic tape to the tape holder and hook in the tension spring. Please observe that the tensile force is approx. 3 - 5 kg (corresponding to an elongation of 5 cm).

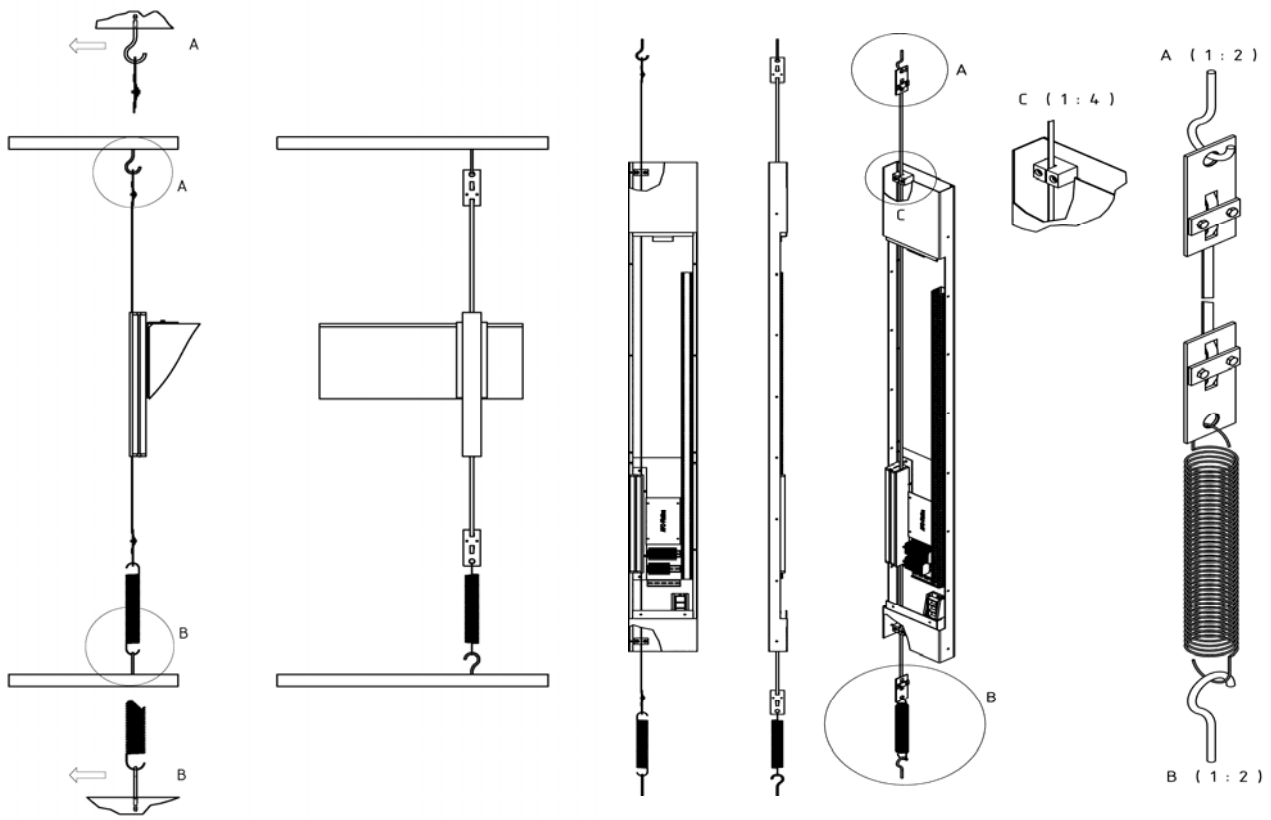


Figure 4: installation of reading head and magnetic tape

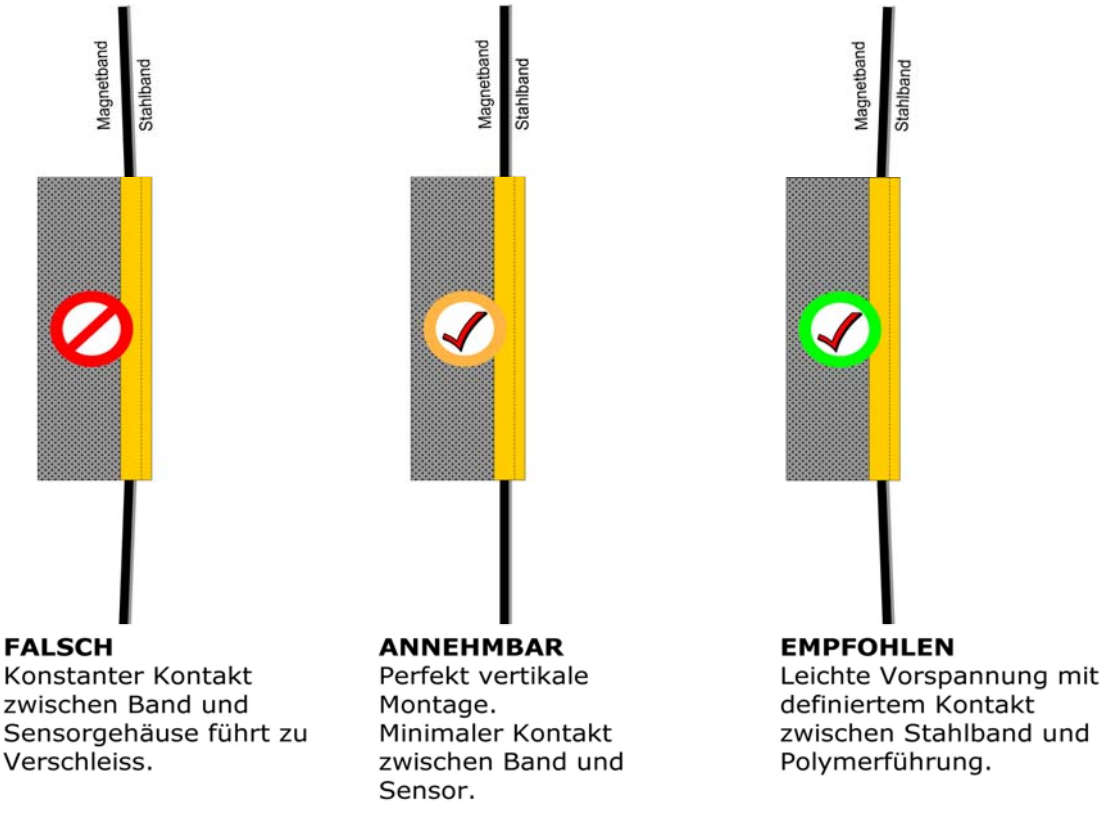
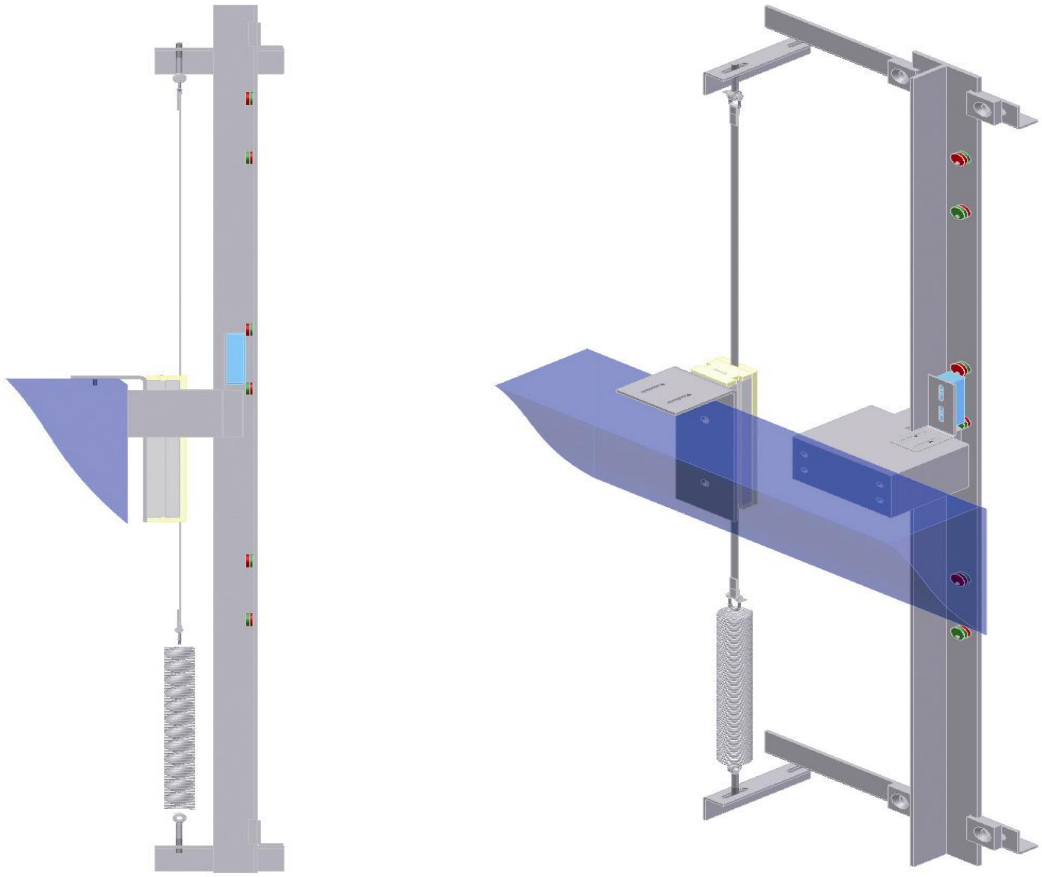


Figure 5: deflection of the magnetic tape

Installation of the zone-2 switch S39:

Attach the magnetic switch within the rail using the provided fixture. The distance between magnet and switch is supposed to be 8 - 10 mm. Select the polarity of the magnets in such a way that the switch is closed in the zone. The magnets are attached symmetrically to the centre of the zone, depending on the rail length set via 000*. The recommended distance of the magnets from the centre of the zone is provided in the following table:

adjusted rail length (mm)	50	100	200	300	400	500
magnet distance (mm)	100	200	300	400	500	600



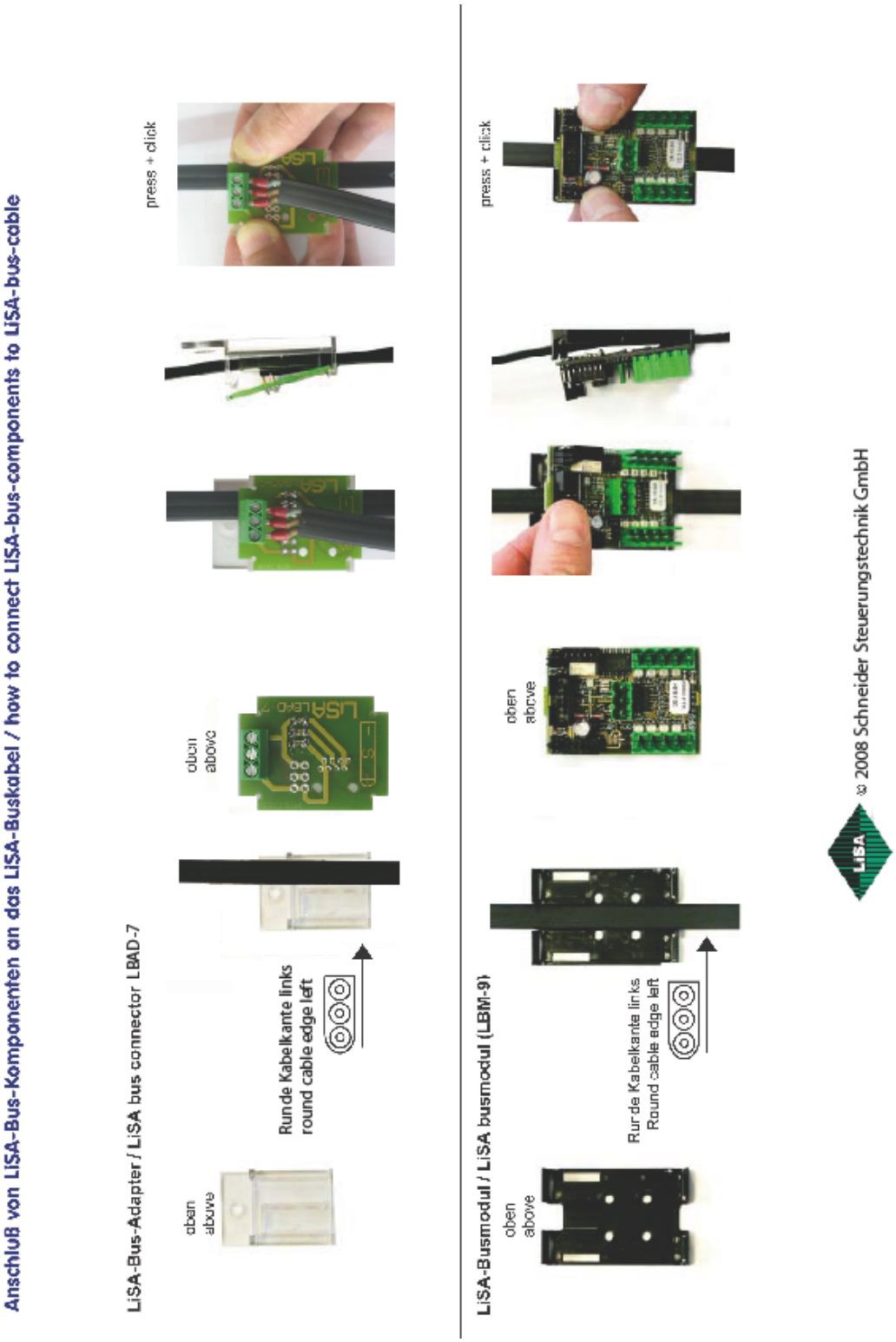
Note:

According to EN81, zone magnets must be attached using glue. The respective glue is included in the delivery.

Electric connection of the zone switch:

The zone switch is connected to the APO-14 via the terminal block XK4.5 (-H) and XK4.6 (Sm).

1.3.3. How to install and connect the BUS modules



2. Setting instructions

2.1. Setting instructions for shaft selection with selector block

2.1.1. General information

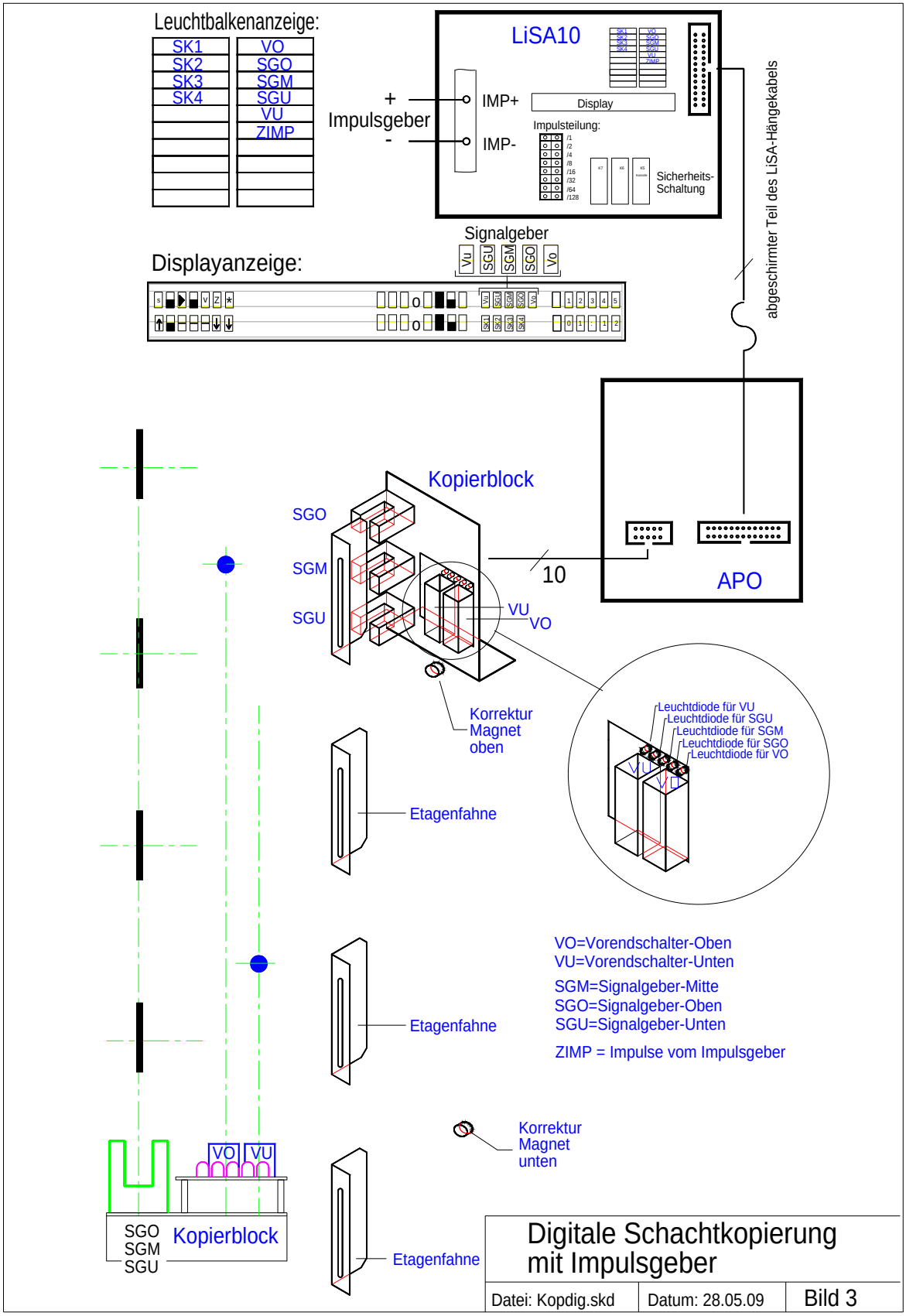
The shaft selection is identical for rope traction lifts and hydraulic lifts (see figure 3). In the case of hydraulic lifts and unregulated rope traction lifts the pulses are usually generated by an encoder on the car, in the case of frequency-controlled rope traction lifts, the encoder at the motor or the encoder simulation of the frequency inverters is evaluated.

Components required for the shaft selection:

- one shaft rail and one holder per landing,
- 2 magnets with holders for correction (top and bottom),
- one selector block on the car with centrical inductor switch, if required (travelling with open doors) and recommended also the bottom inductor switch and top inductor switch,
- one top slow-down switch
- and one bottom slow-down switch,
- one encoder.

Please observe the following aspects before the TeachIn - you will save a lot of adjusting labour. The adjustment procedure will then only take 5 to max. 30 minutes.

1. **Attach the landing rails accurately to the millimetre!!!**
2. **All the shaft rails must immerse equally deep into the inductor switch - at least 50% of the slot depth!**
3. **The distance between the correction magnets and the final landings is supposed to correspond to the required deceleration path - if the distance is too short, the lift will reach the limit switch during the TeachIn!**
4. **The distance between the correction magnets and the slow-down switches is supposed to be 8 - 12 mm!**
5. **The slow-down switches must be closed in the zone of the final landings - identifiable by the flaring light bar on the bar LED of ZU7 / ZU8 / ZU9 / LiSA10 or the LEDs on the selector block!**
6. **Ensure that the controller receives the pulses from the encoder - identifiable by the flickering of the "Zimp" light bar on the ZU7 / ZU8 / ZU9 / LiSA10 when travelling in the emergency recall mode (e.g. via 8*).**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VO=Vorendschalter-Oben
VU=Vorendschalter-Unten
SGM=Signalgeber-Mitte
SGO=Signalgeber-Oben
SGU=Signalgeber-Unten
ZIMP = Impulse vom Impulsgeber
Korrektur
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Etagenfahne
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mit Impulsgeber
Datei: Kopdig.skd
Datum: 28.05.09
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2.1.2. Setting instructions for systems with selector block

The setting using the digital shaft selection (pulse method) is described in the following.

How to set and check the most important parameters:

In parameter set 000*, the following parameter values must be adjusted or checked:

- Elevator Type (Ropetraction/Hydro/VVVF-control) = 0 / 1 / 2
- Deceleration method (time/fix/pulse/AbsEnc) = 2 (= pulse method)
- Braking method (time interval/fix/pulse) = 2 (= pulse method)
- No. of landings = number of landings (2..30)
- Corrective position bottom = information where the lower correction magnet is located (normally = 2)
- Corrective position top = information where the upper correction magnet is located (normally = no. of landings - 1)

How to conduct the TeachIn:

Stop the lift in the lowest landing!

Note:

A TeachIn is only possible if the system has more than 2 landings. In the case of systems with 2 landings you can work with approximate values.

➔ *Start the TeachIn by entering 100*.*

The following values are determined during the TeachIn:

- landing distances
- pulse constant (pulses/m)
- upwards and downwards deceleration distance at Vrated
- upwards and downwards braking distance

The lift travels upwards at high speed. The rail in the middle of the shaft is used as a measuring rail to determine the pulse constant.

Note:

If the controller executes a reset in the middle of the shaft, i.e. after passing the measuring rail, no pulses are read. Check the encoder connection!

The deceleration is started at the top slow-down switch.

The distance between the slow-down switch and the stopping position is saved in the memory as upwards deceleration distance at Vrated. When the centrical inductor switch enters the zone, the lift is stopped. Then the lift moves downwards and determines the distances between the landings by means of the pulses read. At the bottom slow-down switch, the deceleration is started again and the downwards deceleration distance at Vrated is determined.

When the centrical inductor switch enters the zone, the lift stops again and the following message appears on the display:

➔ *Parameters to be overwritten? (0/1)*

If you want to save the old parameters permanently in the parameter memory (EEPROM), enter 1.

Regardless of whether you saved the TeachIn values or not, you can check them by calling the parameter set "Teaching operation values (009*)".

Note:

Due to the compulsory deceleration in the final landings a faulty pulse recognition is not apparent during the TeachIn. We therefore recommend to check the TeachIn values after the TeachIn. The pulse constant is supposed to be between 1000 and 2000 pulses/m. The landings distances must not deviate from the actual values by more than +/- 5%. If the values are not plausible, please carry out another TeachIn and then compare the values.

Any further adjustments are made by changing the following parameters in the parameter set "Travel times / pulses (002*)":

- Decel. up
- Decel. down
- Decel. path up with Vrated
- Decel. path down with Vrated
- Fast landing-to-landing travel x <-> y (only required for the timing method)
- Step correction up in landing X
- Step correction down in landing X

In the case of frequency-controller systems, the following parameters may be relevant, too:

- Limit dist. from dest. with speed Vz2
- Limit dist. from dest. with speed Vz1
- Decel. path up at speed Vz2
- Decel. path down at speed Vz2
- Decel. path up at speed Vz1
- Decel. path down at speed Vz1
- Cut-off delay
- Relay Travelling with speed Vz2
- Relay Travelling with speed Vz1

How to adjust the upwards and downwards deceleration points:

The deceleration distances determined during the TeachIn only represent the distance between the correction magnets and the final landings.

As the position of these magnets was presumably fixed in such a way that the car will safely stop during the TeachIn and therefore approaches the landing over a relatively long creeping distance, the deceleration distances must be corrected in this case.

By approaching a mid-level landing several times from above and from below you can now set the right length of the creeping distance.

If the creeping distance is too long, reduce **Decel. up** or **Decel. down**.

Please observe nevertheless that you determine the value with an empty lift car and that the upwards or downwards deceleration distance could be too short for a fully loaded lift. Therefore we recommend to adjust the downwards deceleration distance to the same value as the upwards deceleration value.

Then you can shift the correction magnets (top and bottom) to the actually required position.

Approaching landings without reaching the rated speed:

Unregulated lifts:

If the rated speed is not reached between two landings, the length of the best travel distance at high speed can be determined by changing the values "fast landing-to-landing travel x <-> y" and travelling between these landing several times. This usually serves to avoid long creeping distances.

Frequency-controlled lifts:

You can proceed as described for unregulated lifts. If the rated speed is not reached, the controller/inverter must be able to work with ogival cams. If it is not able to do so or if you want to travel at intermediate speed despite of this, additional adjustments are required:

The intermediate speeds are selected via the parameters "**Limit dist. from dest. with speed Vz2 / Vz1**".

When starting, LiSA calculates the distance to the destination. If the distance is smaller than the value for the distance limit at speed Vz2, but larger than the distance limit at speed Vz1, LiSA activates the speed V2 at the controller/inverter via the freely programmable relay for Vz2.

If the distance to the destination is smaller than the distance limit at speed Vz1, LiSA activates the speed V1 (via the freely programmable relay for Vz1).

In any other case, speed V3 (Vrated) is used, unless the parameter "Landing-to-landing travel with Ve" (see parameter set 000*) provides for a travel at Ve (= approaching speed).

In this way up to 4 speeds can be selected, provided that the controller is able to effect these speeds.

- In the case of frequency-controlled systems Vz2 is often called V2 - in the case of Dynatron 60% Vrated.
- The speed Vz1 is often called V1 (corresponding to the high inspection speed) - in the case of Dynatron it is called "short travel speed".

The respective deceleration distances must analogously be determined for each speed as for Vrated, these are:

- Decel. path up at speed Vz2
- Decel. path down at speed Vz2
- Decel. path up at speed Vz1
- Decel. path down at speed Vz1

Please do not forget to programme and, if necessary, to wire the relevant relay for each speed (Vz1 / Vz2).

How to adjust the upwards and downwards flush positions:

Attention in case of frequency-controlled lifts:

*Stopping, i.e. the application of the brake, must always be activated by the controller/inverter which means that the direction and travel contactors should remain closed for a while after the application of the mechanical brake. It is therefore **important** to adjust the time defined by the parameter "cut-off delay" accordingly. The standard is **2000 ms**. Then the right sequence of contactor release (first brake contactor K8, then direction contactors K2 / K4 and last travel contactor K3) is audible. In the case of lifts without safety circuits for approaching or relevelling with open doors, the negative effect is that the doors open relatively late.*

The parameters "**Stop distance up / down**" serve to adjust the flush position. Usually the values determined during the TeachIn must only be corrected by max. 10 mm.

Note:

If the lift stops too early, the braking distance must be elongated for the respective direction. If it travels too far, it must be reduced.

When the centrical inductor switch enters the zone, a counter is loaded with the value corresponding to the braking distance.

In the case of frequency-controlled systems, the activation signal for approaching / creeping speed is switched off when the counter reaches 0. In the case of unregulated systems, all travel signals are switched off.

When all shaft rails are installed correctly, the setting process is completed.

Otherwise the rails must either be shifted or the values must be corrected by means of the parameters "**Step correction up / down in landing**".

How to correct inaccurately adjusted rails by means of the step correction parameters:

This can be done by effecting landing-to-landing travels. The deviations can be removed using the parameters "**Step correction up / down in landing X**".

These parameters serve to modify the originally equal value for all landings in a direction-dependent and landing-dependent way and thus to compensate any inaccurately adjusted shaft rails.

The parameter values for the step correction are preset to 30 mm (range from 0 to 60 mm).

Values deviating from the mentioned "neutral points" lead to a correction.

Example:

The lift passed the flush position in the 5th landing by 8 mm when travelling upwards (lift is 8 mm too high). Therefore the rail must be shifted downwards by 8 mm or the upwards braking distance must be reduced by 8 mm by means of the step correction (step correction up in landing 5 = 30 - 8 = 22 mm).

If the car stopped 8 mm to early (the car is 8mm below the flush position), this could be compensated by changing the same parameter to 38 mm.

General information:

Values beyond the "neutral point" (> 30 mm) result in an elongation of the braking distance and values below (< 30 mm) result in a reduction of the braking distance.

Note:

If you increase the value for the step correction, the car travels further!

Recommendation:

We recommend not to extend the step correction by more than +/- 10 mm. Please observe that in case of a step correction of + 30 mm the rail is offset by 30 mm compared to the actual flush position, i.e. the top or bottom inductor switch might already have left the zone resulting in a relevelling which in turn may lead to an unflush position. If values beyond 40 mm or below 20 mm are required, we recommend to correct the respective rails mechanically and to carry out a new TeachIn.

There are two procedures for the step correction described above:

1. Setting the step correction parameters via the LiSA keyboard:

Each landing must be approached from above and from below and the respectively measured steps must be noted down. Then the step correction values are changed via the LiSA keyboard.

2. Adjustment via the car buttons:

In this way the steps can directly be corrected via the car buttons.

- *The adjustment procedure is started on the LiSA by entering "208". When this procedure is activated, the emergency light in the car is turned on in order to indicate this. The adjustment procedure is automatically stopped after 15 minutes and can also be completed by entering "208" again.*
- *All following actions are taken directly in the car. For this purpose the adjuster approaches every landing from above and from below.*

The car stops too early!

(the car is too high after travelling downwards or too low after travelling upwards):

Pressing the **door open button** once has the effect that the car will stop 1 mm later in the future **(= positive correction)**. Every time you press the door open button, the value for the step correction is increased by one millimetre. If the controller recognises that the door open button is pressed (= confirmation), it turns off the emergency light for one second.

Example:

The car stopped 4 mm too early in the 5th landing after travelling downwards. Pressing the door open button four times has the effect that the parameter "step correction down in landing 5" is increased by 4.

The car stops too late!

(the car is too low after travelling downwards or too high after travelling upwards):

Pressing the **car call button of the landing where the lift is located** once has the effect that the car will stop 1 mm later in the future (= **negative correction**). Every time you press the call button, the value for the step correction is decreased by one millimetre. If the controller recognises that the call button is pressed (= confirmation), it turns off the emergency light for one second.

Example:

The car stopped 4 mm too late in the 5th landing after travelling downwards. Pressing the car call button for landing 5 four times has the effect that the parameter "step correction down in landing 5" is reduced by 4 (= negative correction).

After completing the adjustment procedure, the parameters must be saved in the controller by entering 600 (this is not effected automatically).*

2.2. Setting instructions for lifts with absolute encoder

2.1.1. General information

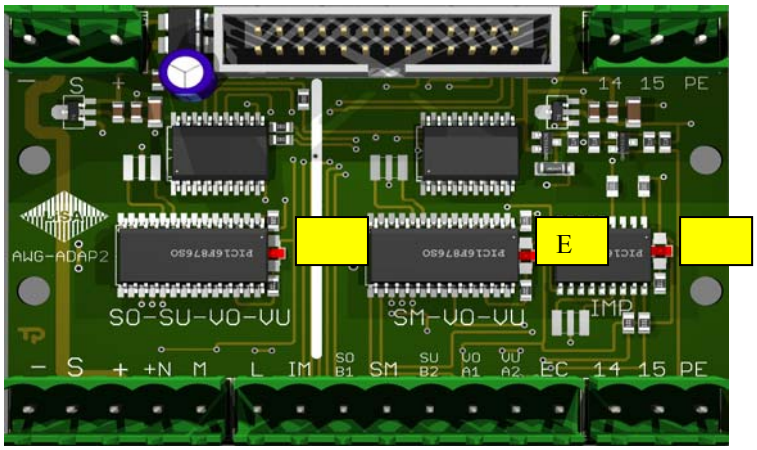
The absolute encoder system consists of a magnetic tape in the shaft and a reading head fixed to the car. In the case of lifts with approach with open doors or relevel, it consists of reading head and magnetic switch or a double reading head.
The magnetic tape contains a type of barcode displaying the position of the car with an accuracy of +- 1 mm. This technology allows for speeds of up to 10 m/s, with a minimum noise generation.
The magnetic tape is fixed to a holder in the shaft head and stretched in the shaft pit using a tension spring.
The magnetic switch is installed within the range of the rail, the magnets are stuck onto the rail (see installation of the absolute encoder).
The magnetic tape data are permanently read by a reading unit (reading heads) and transmitted to an electronics (see the following description of the AWG-Adap-x) in the control cabinet. It generates (emulates) the discrete signals required for the shaft selection.
Depending on which shaft signals (VU, SGM, VO or VU, SGU, SGM, SGO, VO) are to be emulated by the absolute encoder, a single or double reading head is used.
The single reading head (SLK = reading head 1) consists of one reading unit and is connected to the absolute encoder adapter in the controller via a serial interface (RS422).
The double reading head (DLK = reading head 1 + 2) contains two independent reading units. Each unit is connected to the absolute encoder adapter via an RS422 connection, like the SLK.
The transfer rate is 19200 bits/sec.
On the one hand, the connection to the controller is established via the LiSA bus which transmits the position and speed data, on the other hand the signals emulated by the absolute encoder adapter are transmitted via the travelling cable.
The so-called absolute encoder adapter board (AWG-Adap-X) is located in the inspection box or car panel.
This electronics consists of 3 independent processor systems emulating the following signals based on the absolute values read and the values determined during the TeachIn procedure:
Processor system 1 (PS1) generates the centrical inductor switch (SGM) signal, the top slow-down switch (VO) signal and the bottom slow-down switch (VU) signal.
Processor system 2 (PS2) generates one pulse per travelled millimetre and
Processor system 3 (PS3) generates top inductor switch (SGO) signal and bottom inductor switch (SGU) signal as well as
parallel to PS1 also the top and bottom slow-down switch signals.
SGO and SGU are no longer used as an activation signal for the relevelling, but to generate a second zone signal.

- ※ The relevelling is now activated by the parameter "Levelling if step/entry in fault mem. > X mm". It means that the relevelling no longer depends on the adjustment of the SGO/SGU inductor switches.
- ※ In order to enter the zone with early opening doors or to relevel with open doors, two independent zone signals are required which are evaluated by the safety circuit on the LiSA main board.

Zone signal -1 (Z1): SGM emulated by the absolute encoder system.
Zone signal -2 (Z2): SGO/SGU generated by switch S39 or the absolute encoder system. This zone must be longer than zone 1 by several mm, i.e. zone signal 1 must always be received a few ms after zone signal 2.

PS1 and PS2 permanently read the data blocks from the reading head 1 and PS3 reads the ones from reading head 2. Each data block consists of an absolute value for the position and the current speed.
The absolute encoder adapter is connected via the LiSA bus and the travelling cable to the LiSA10 board which simultaneously serves to transmit the generated signals to the controller.

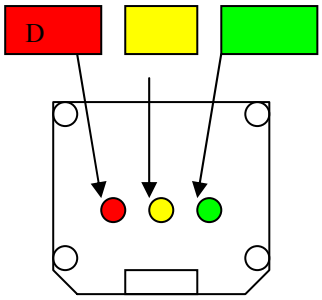
AWG-Adap2:



Status display in case of single reading head:
L1, L2, L3 flash quickly -> absolute encoder not recognised
L3 permanently flashes quickly = OK, if reading head 2 not used
is sending L1, L2 flash slowly -> lift not moving
L1, L2 off -> lift travels upwards
L1, L2 on -> lift travels downwards

Status display in case of double reading head:
L1, L2 flash quickly -> reading head 1 not recognised
L3 flashes quickly -> reading head 2 not recognised
L1, L2, L3 flash slowly -> lift not moving
L1, L2, L3 off -> lift travels upwards
L1, L2, L3 on -> lift travels downwards

AbsEnc. reading head:



Status display on the reading head:
Power: green LED on = OK
SC: yellow LED on = reading head
Error: red LED on = error
e.g. no magnetic tape readable

2.2.2. Setting instructions for systems with absolute encoder

The setting using the LiSA absolute encoder is described in the following.

How to set and check the most important parameters:

In parameter set 000*, the following parameter values must be adjusted or checked:

- Elevator Type (Ropetraction/Hydro/VVVF-control) = 0 / 1 / 2
- Deceleration method (time/fix/pulse/AbsEnc) = 3 (= AbsEnc)
- Braking method (time interval/fix/pulse) = 2 (= pulse method)
- No. of landings = number of landings (2..30)
- Corrective position bottom = information where the lower correction magnet is located (normally = 2)
- Corrective position top = information where the upper correction magnet is located (normally = no. of landings - 1)
- Rail length = 300 mm. Standard value = 300 mm. The selected rail length significantly influences the moment of the "early opening of doors". Example: Rail lengths = 300 mm starts the door opening 150 mm before the flush position is reached.

The following parameter values of parameter set 002* must be adjusted or checked:

- Levelling if step/entry in fault mem. > 15 mm (relevelling in the case of a step of 15 mm)

The following parameter values of parameter set 009* must be adjusted or checked:

- Check and, if necessary, enter the landing distances. You can enter the approximate landing distances or landing heights. These values will be optimised by means of further settings, they should, however, represent the approximate shaft situation.
- Pulse constant pulses/m = 1000 (always in case of absolute encoder)!

Check or adjust at the controller:

- Check pulse divider JP11 = /1

Attention!

In the case of systems with an absolute encoder it is not possible to effect a TeachIn!

2.2.2.1. TeachIn procedure

- Before you start the TeachIn procedure, put the car in the flush position in the lowest landing.
- We recommend to switch off "Relevelling" and "Approach with open door" in 000* for the moment.
- Call the TeachIn procedure by entering 208* When this procedure is activated, the emergency light in the car is turned on in order to indicate this and the text "Teachin" is shown on the right in the lower line of the LiSA display.
  The setting procedure is automatically terminated after 60 minutes, it can, however, be completed earlier by entering "208" again.
- If the car is in the flush position in the lowest landing, enter 206* to read the absolute value of the magnetic tape and to save it as reference point (absolute encoder neutral point) in the controller, the car position is set to 1 and the reference point and landing heights are transmitted to the absolute encoder adapter.
- Now enter the upwards and downwards deceleration distances according to the travelling cam and speed in parameter set 002*. The values determine the deceleration point as well as the position of the emulated slow-down switch signals. They can usually be regarded as equal for the upwards and downwards distances and can be optimised later.

- Now save and exit the parameter set.
- The upwards and downwards braking distance is determined now. For this purpose approach any random landing in upwards direction. Enter 44* to change over the display indication and to output the step to the emulated landing. Now correct the upwards braking distance via 002*. If a step of + 5 mm is put out, the upwards braking distance must be reduced by 5 mm. In order to determine the downwards braking distance, approach any random landing in downwards direction and proceed in the same way.
- Save and exit parameter set 002*.
- Now go into the car, approach every landing and note down the actual steps.
- Correct the landing heights via parameter set 009* according to the noted steps. Example: The step in landing 3 was + 8 mm, therefore the landing height of landing 3 must be reduced by 8 mm.
- Save and exit parameter set 009*.
- The data are now transmitted to the absolute encoder and the TeachIn procedure is completed.

Notes:

After entering **44*** the following information appears in the lower line of the LiSA display:

H = xxxxxx S = xxxxxx

H = relative height of the lift relevant to the lowest landing = reference point in mm.
S = step - is only displayed in the zone defined by the centrical inductor switch, in mm.
Enter **44*** again to return to the normal display indication.

After entering **45*** the following information appears in the lower line of the LiSA display:
H = absolute height read from the magnetic tape in mm.
S = step - is only displayed in the zone defined by the centrical inductor switch, in mm.
Enter **45*** again to return to the normal display indication.

By entering **602*** the taught values are transmitted to the absolute encoder.

When transmitting the parameters to the absolute encoder module, not only the taught absolute values are transmitted.
The entire data block consists of the following data:
- absolute height value of landing 1 (lowest landing)

- absolute height value of landing n (highest landing)
- number of landings
- length of the zone or length of the signal from Sm (= rail length)
- limit value of speed 1 for signal SVG1
- limit value of speed 2 for signal SVG2
- upwards deceleration distance (= distance of top slow-down switch)
- downwards deceleration distance (= distance of bottom slow-down switch)

2.2.2.2. How to check the position of the magnets

In order to be able to approach with open doors or to relevel, the safety circuit on the LiSA, K5 released, K6 and K7 closed, must have taken this position. This will only work if the signal of the zone switch (Su/So) arrives before the absolute encoder signal (Sm).

Approach every landing in upwards and downwards direction after the successful TeachIn and make sure that Su/So arrives before Sm.

2.2.2.3. How to level with the absolute encoder

A new parameter in 002* has been introduced for levelling:

Levelling if step/entry in fault mem. > X mm (10..50):

The relevelling is effected if the step exceeds the value determined by the parameter. The lift must, however, be within the zone.
The parameter for the braking time for the relevelling is defined differently and the parameter text itself is now different, too:

Braking deceleration distance / absolute encoder braking distance when levelling
In the case of the pulse method, the braking distance is the distance travelled by the lift after the top / bottom inductor switch entered the zone and before the levelling speed signal is switched off.
If an absolute encoder is used, you must not determine the braking distance, but the stopping distance, i.e. the distance which is required for stopping after the levelling speed is switched off.

2.2.2.4. How to adjust the distance to the top emergency switch

The distance to the top emergency switch can be adjusted via parameter set 002*.

Distance to emerg. switch on top mm =

This is required for hydraulic lifts in order that the controller is able to recognise whether the emergency switch in the highest landing has been activated in the case of a safety circuit interruption or if only the master switch has been flipped or the power has been cut.

2.2.2.5. Group lifts with absolute encoder and different numbers of landings

Group lifts must generally be programmed with the same number of landings. If, for instance, lift 1 serves the landings B, G, 1-8 and lift 2 the landings G, 1-8, both lifts must be programmed with 10 landings. In order to inform lift 2 about this situation, the "bottom landing" in parameter set 000* is set to 2.
As a consequence the correction position for lift 2 is set to 3.
During the TeachIn, the controller recognises the lowest landing at position 2 and references this position as the absolute encoder neutral point.
The landing distance of the unavailable landing must nevertheless be defined. We recommend to enter the same landing distance as saved for lift 1.

3. Maintenance

In the context of the regular maintenance of the lift it is also required to the LiSA controller. This implies a visual inspection and a function check.

3.1. Visual inspection and function check

Visual inspection:

1. Check all relays for loss of contact material
2. Inspect the power contactors
3. Inspect the plug connections
4. Inspect the screw connections

Function check:

The function check mainly contains the checks prescribed by the lift attendant function as well as the check of the error memories:

1. Is the lift in a flush position?
2. Does the emergency call function work?
3. Does the door open button work?
4. Is the car light on?

Checking the error memories:

1. Error memory for errors in chronological order
2. Error memory for checksum errors
3. Error memory for safety circuit interruptions, door failures and steps

Checking the 3V lithium buffer battery:

The 3V lithium battery buffers the main memories in the case of a voltage failure. In this way all data not saved in the EEPROM are retained (e.g. travel counter, error memory, etc.).

After approximately 6 years of operation, the battery should checked for sufficient voltage. For this purpose remove the battery and measure the voltage. It should be in the range of 3V DC.

Note:
A battery without voltage does not influence the operation of the lift. However, volatile data are not retained in the case of a voltage failure.

Checking the emergency power supply / emergency light circuit:

The voice communication, the LiSA emergency call system and the emergency light are supplied by a 12V battery. In order to test this emergency power supply, turn off the fuse F3. The emergency light is supposed to be on and the voice communication work.

3.2. Keyboard commands

The commands described in the following can be activated via the LiSA keyboard.
The knowledge of these commands is imperative in order to adjust and service the lift.

➔ *Each command is completed using the *-key.*
A number of functions is deactivated by entering the same command which serves to activate them.

Command	Meaning	Note
1 x x *	Car call for landing xx	Example: 15* = car call for landing 5 115* = car call for landing 15 The car calls of a selective second door side follow those of the first door side. e.g.: Lift with 5 landings: 17* = car call for landing 2 side 2
2 x x *	upwards landing call for landing xx	Example: 25* = upwards landing call for landing 5 215* = upwards landing call for landing 15
3 x x *	downwards landing call for landing xx	Example: 35* = downwards landing call for landing 5 315* = downwards landing call for landing 15
8 x x * 08xxxx*	Set IO xx Set bus IOs >= 100	Example: 85* = set IO5 815* = set IO 15 080305* set IO2 on module 5 = IO 305 081003* set IO1 on module 3 TS2 = IO 1003
9 x x * 09xxxx*	Delete IO xx Delete bus IOs >= 100	Example: 95* = delete IO5 915* = delete IO 15 090205* delete IO1 on module 5 = IO 205 091102* delete IO2 on module 2 TS2 = IO 1102
1 *	Open door 1	Door 1 is opened regardless of the door open permission.
2 *	Open door 2	Door 2 is opened regardless of the door open permission.
3 *	Close door 1 and door 2	The doors are closed.
4 *	Special display indication on / off	(See description of LiSA display.)
5 *	Block / release doors	
6 *	Landing control off / on	
7 *	Call simulation on / off	At an interval of 15 seconds car calls and landing calls are generated via random generator (max. 12 h active).
8 *	Emergency recall control on / off	Serves to simulate the emergency recall control by means of the software. No jumpers in the safety circuit. By pressing key 1 the lift moves upwards, by pressing key 2 downwards.
9 *	Test mode on / off	In the case of groups the group telegrams are displayed.
05 *	Travelling to the top limit switch	Function for TÜV check: slow movement towards the top limit switch.
06 *	Travelling to the bottom limit switch	Function for TÜV check: slow movement towards the bottom limit switch.
07 *	Set car position	Example: 073* = car position = landing 3
44*	Indication of car height and step	Relevant to the lowest landing = 0
45*	Indication of car height and step	Output of the absolute encoder position
010 *	Indication of error sums	
011 *	Indication of door failures, safety circuit interruptions and steps relevant to the landings	
012 *	Indication of errors in chronological order	
013 *	Indication of the travel statistics (approach rate of each landing)	
015 *	Delete errors in chronological order	Only possible with the supervisor code.
016 *	Delete error sums	
017 *	Delete door failures, safety circuit interruptions and steps	
018 *	Delete travel counter and travel statistics	

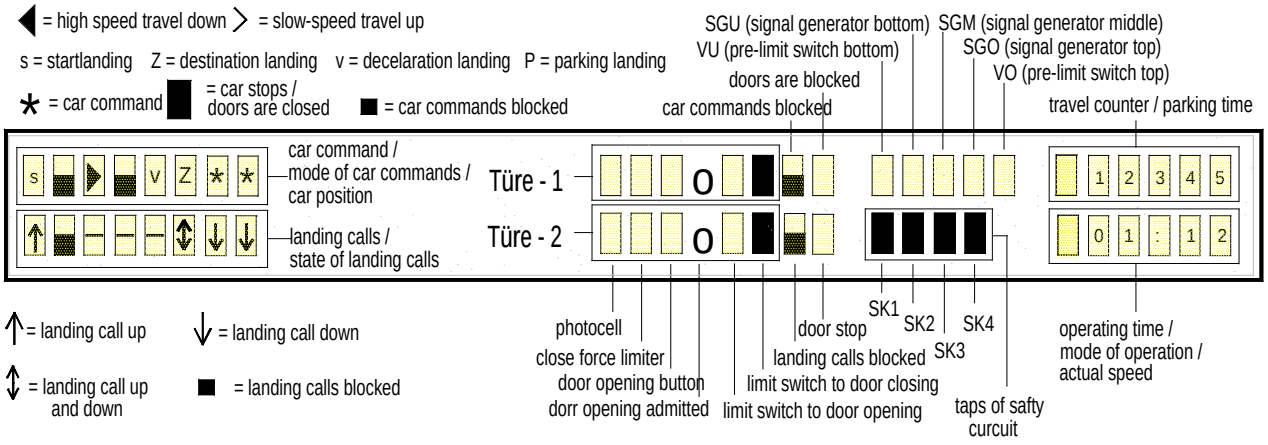
019 *	Delete maintenance interval counter	
100 *	Start the TeachIn	
200 *	Modem operation on / off	
201 *	Make emergency call in modem operation	
202 *	End emergency call in modem operation	
204 *	Permanent indications on LiSA display on / off	
205 *	Set lift no. in data transmission group	
206 *	Set absolute encoder neutral point at lowest landing	
207 *	Set absolute encoder neutral point at highest landing	Not recommended.
208 *	Flush position in car on / off or TeachIn	
400 *	Overall hardware test	
401 *	Relay test	
402 *	Test of IOs on LiSA main board (continuously)	
403 *	Test of IOs in car	
404 *	Overall hardware test	
405 *	Test of IOs on LiSA main board (continuously)	
600 *	Save lift parameters	
601 *	Transmit display pictures to bus display	
602 *	Transmit data to absolute encoder module	
603 *	Elongate zone Z1 for one travel	Elongation of one zone for the TÜV check in absolute encoder mode.
608 *	Delete and rewrite EEPROM	
609 *	Delete EEPROM	

In addition to the serial data link between LiSA and PC (directly or via modem), the LiSA display and the 12-key keyboard are the most important controller-user interface.

Functional range of the LiSA display:

- Indication of the keys pressed as a confirmation by LiSA that the key is recognised
- Indication of the lift status
- Indication of the IO assignment
- Indication of the error memory contents and the parameters

3.3. Indication of the lift status on the LiSA display



Description of the display indication from top left (= first digit) to bottom right (= 80th digit):

1. digit: s = starting landing, i.e. the lift started from landing 1
2. digit: ▭ = car calls for landing 2 are blocked, i.e. are not accepted
3. digit: ✖ = the lift travels upwards at high speed and is in landing 3 or between landing 3 and 4
4. digit: ▭ = car calls for landing 5 are blocked, i.e. are not accepted
5. digit: v = deceleration landing, the deceleration point is calculated in landing 5
6. digit: z = destination
7. digit: * = car call for landing 7
8. digit: * = car call for landing 8

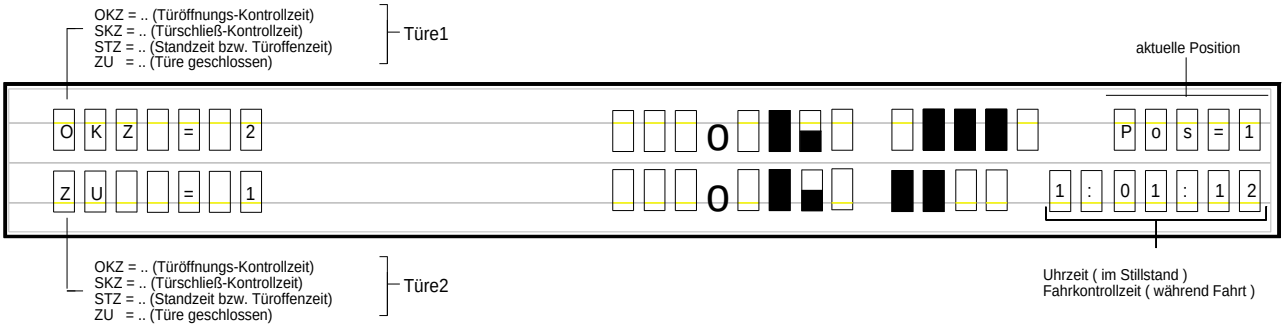
20. digit: ✎ = photo-electric barrier of door 1 not interrupted (▢ = interrupted)
21. digit: ✎ = closing force limiter of door 1 not activated (▢ = activated)
22. digit: ✎ = door open button of door 1 not activated (▢ = activated)
23. digit: 0 = door open permission for door 1 (empty = no permission)
24. digit: ✎ = door open limit switch of door 1 not interrupted (▢ = interrupted)
25. digit: ▢ = door close limit switch of door 1 interrupted (✎ = not interrupted)
26. digit: ▢ = car calls blocked (✎ = not blocked)
27. digit: ✎ = doors not blocked (▢ = blocked)
29. digit: ✎ = bottom slow-down switch not active (▢ = active)
30. digit: ✎ = bottom inductor switch not active (▢ = active)
31. digit: ✎ = centrical inductor switch not active (▢ = active)
32. digit: ✎ = top inductor switch not active (▢ = active)
33. digit: ✎ = top slow-down switch not active (▢ = active)
35. digit - 40th digit: travel counter or parking time if parking landing function activated
41. digit: Ξ = upwards landing call in landing 1 (- = no landing call)
42. digit: ▭ = landing calls for landing 2 are blocked, i.e. are not accepted
43. digit: - = no upwards landing call in landing 3
44. digit: - = no upwards landing call in landing 4
45. digit: - = no upwards landing call in landing 5
46. digit: Z = upwards and downwards landing call in landing 6
47. digit: Ψ = downwards landing call in landing 7
48. digit: Ψ = downwards landing call in landing 8

60. digit: ✎ = photo-electric barrier of door 2 not interrupted (▢ = interrupted)
61. digit: ✎ = closing force limiter of door 2 not activated (▢ = activated)
62. digit: ✎ = door open button of door 2 not activated (▢ = activated)
63. digit: 0 = door open permission for door 2 (empty = no permission)
64. digit: ✎ = door open limit switch of door 2 not interrupted (▢ = interrupted)
65. digit: ▢ = door close limit switch of door 2 interrupted (✎ = not interrupted)
66. digit: ▢ = landing calls blocked (✎ = not blocked)
67. digit: ✎ = door stop button not activated (▢ = activated)
69. digit: ▢ = safety circuit incl. safety gear contact (SK1) closed (✎ = open)
70. digit: ▢ = safety circuit incl. shaft door (SK2) closed (✎ = open)
71. digit: ▢ = safety circuit incl. car door (SK3) closed (✎ = open)
72. digit: ▢ = safety circuit incl. locking means switch (SK4) closed (✎ = open)
75. digit - 80th digit:

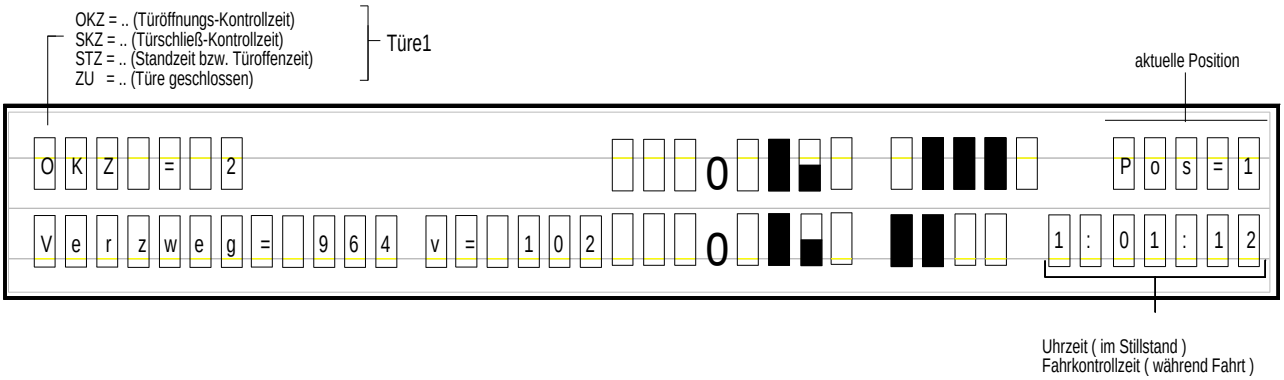
    Indication of speed during a travel after passing a rail
    Indication of the operating hours in normal operation and in standstill
    Indication of the operating mode for all operating modes <> normal operation

Enter 4* in order to change the display indication for further statuses:

1. Indication of door times:
   - indication of the door opening monitoring time during the door opening
   - indication of the idle time while the door is open
   - indication of the door closing monitoring time during the door closing
2. Indication of the travel monitoring time
   - during the travel
   - indication of the time in standstill



3. After approaching the landing
   - if the pulse method is used to calculate the deceleration point, the deceleration distance (= xxxx mm) measured by the controller from the deceleration point to the centrical inductor switch entering the zone of the destination and the approaching speed (v = xxx mm/s) are displayed



3.4. Function abbreviations for freely programmable IOs

With a few exceptions, all IOs of the LiSA controller are freely programmable, i.e. all required functions can be right next to each other.

The most important functions can immediately be pinpointed by means of function abbreviations (e.g. "a" for landing calls).

The other functions are marked with "b" for lack of characters. In order to know which functions are actually connected to such an IO you must check the parameters (parameter sets 003, 004, 005).

The IO ranges are subdivided into blocks of 8. "x" in front of a block means that the IO range is not realised by means of a bus module (Zbe) or that the respective bus module is not active or available.

Double-assigned IOs are marked with "d".

All activated IOs are marked with a capital letter.

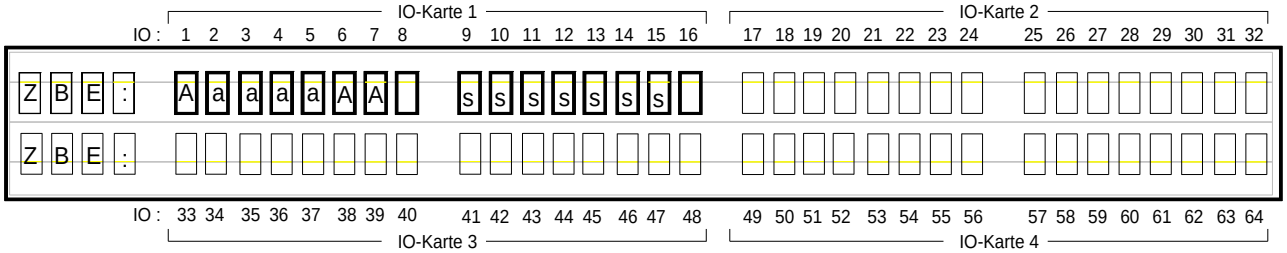
Activated IOs without assignment are marked with ε (= epsilon).
Press * to return to the original indication (indication of the lift status).

A quick overview of the assignment of the IOs is possible via the LiSA display.

3.4.1. Controllers with I2C bus (APO-8B)

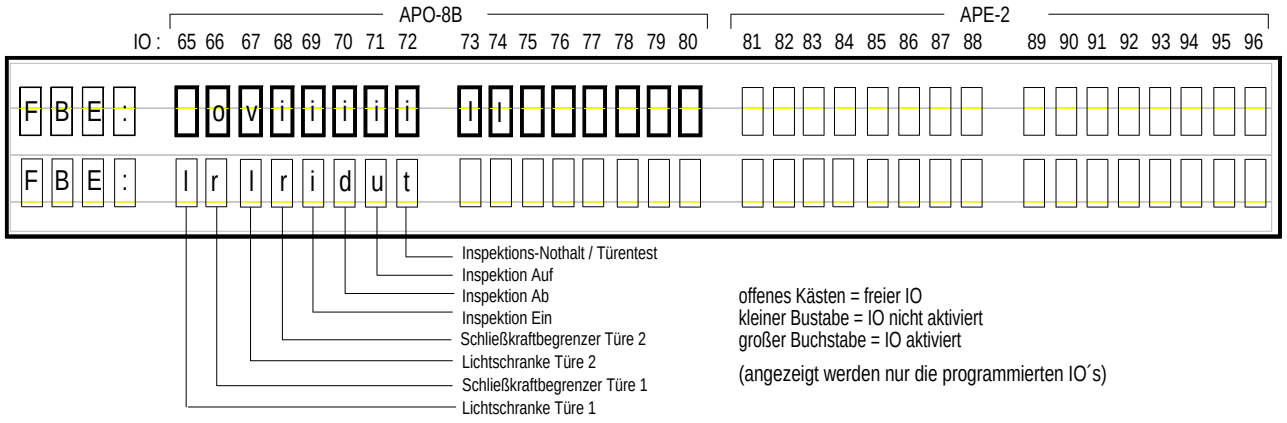
➔ *Press * to change from the standard indication (lift status) to the indication of the IO assignment on the LiSA10 board (ZBe).*

➔



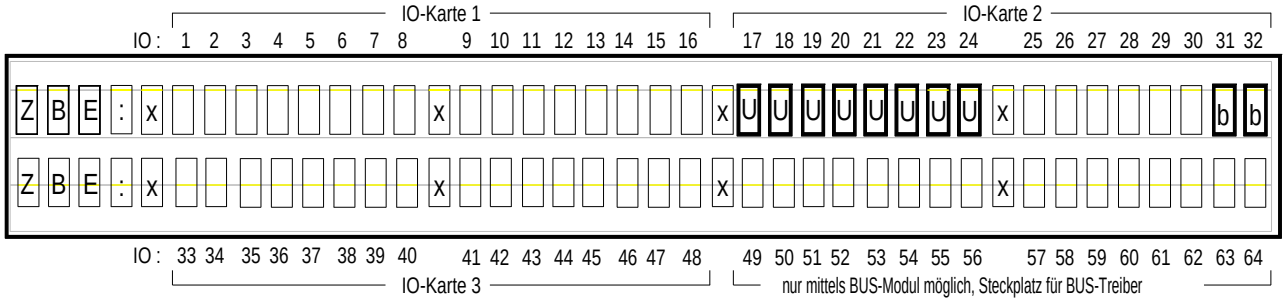
➔ *Press * again in order to display the IO assignment in the car (FBE).*
IO65 - IO80 and the not freely programmable connections for inspection travel, photoelectric barriers and closing force limiters are located on the APO8B board (connection board in the car). IO81 - IO96 are located on possibly required extender board (APE).

➔

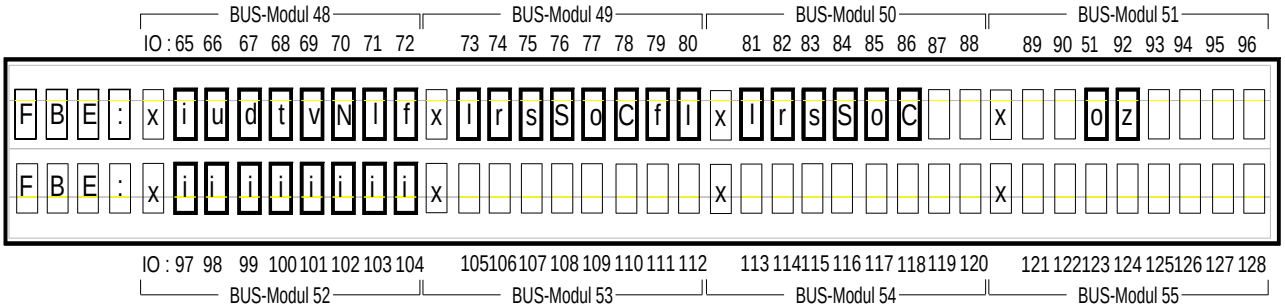


3.4.2 Controllers with LiSA BUS

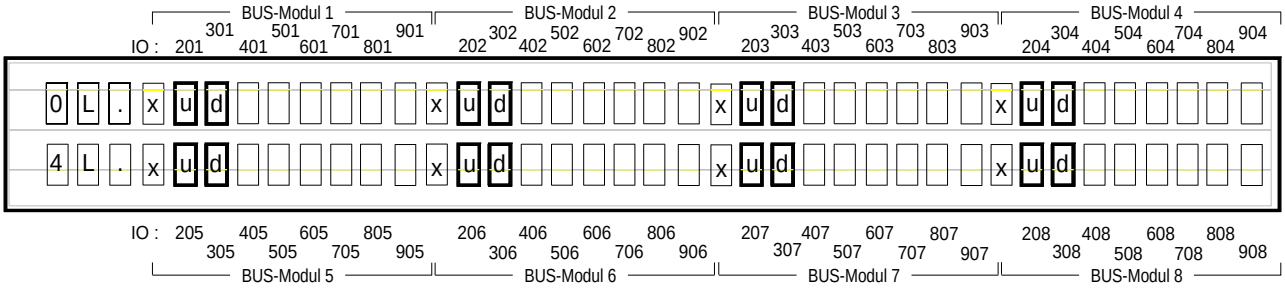
➔ *Press * to change from the standard indication (lift status) to the indication of the IO assignment on the LiSA10 board (ZBe).*



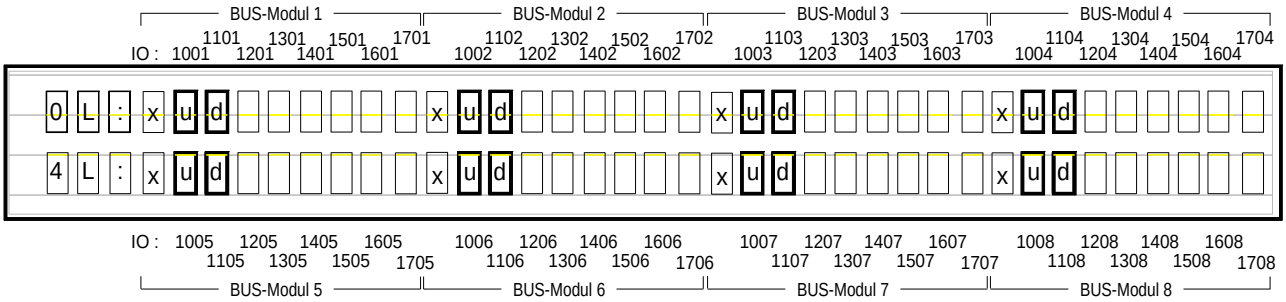
➔ *Press * again in order to display the IO assignment in the car (FBE).*
IO65 - IO96 are located on the AOP14 board (connection board in the car). IO97 - IO112 are located on the light display board LF12. The IOs are provided by means of plugged bus modules.



➔ *Pressing * again in order to display the IO assignment of the bus modules in the shaft.*



➔ *Press * again in order to display further bus modules, e.g. those of a selective second door side.*



➔ *Press * again to return to the standard indication.*

Function	Abbre-viation	ZBE:	FBE:	No. of assigned IOs
car calls	**i**	*	*	no. of landings / no. of landings * 2 for selective door control (car)
landing calls	**a**	*		single-button: no. of landings no. of landings * 2 for selective door control (landing) two-button: (no. of landings -1) * 2 (no. of landings -1) * 4 for selective door control (landing)
1. Inp. car selection	**i**	*		see car calls
1. Output attendant operation	**a**	*		see landing calls
1. Output Gray-code in car / landing	**c**	*	*	5
1. Output binary code in car / landing	**c**	*	*	5
1. Output car position in landing / car	**p**	*	*	no. of landings
1. Output 7-segment indicator	**p**	*	*	16 (14 segments + up + down)
1. Output traffic lights in landing	**a**	*	*	no. of landings * 2 / no. of landings * 4 for 2 door sides
1. Output posit. signals in car elevator	**s**	*	*	5
1. Output Teleservice	**t**	*	*	16
Segment display in car	**q**		*	3 (IO 78 - 80 or IO 94 – 96)
1. Output ongoing direction	**w**	*		(no. of landings - 1) * 2
1. Output arrival gong in landing	**g**	*		no. of landings
1. Output controller/inverter sig-nals	**u**	*		8
Arrival gong in car	**g**	*	*	1
Acoustic signal	**g**	*	*	1
1. Inp. building service	**h**	*		8
1. Inp. of waiting area	**l**	*		no. of landings / no. of landings * 2 for selective door control (landing)
1. Inp. deactivation car com-mands	**m**	*	*	no. of landings / no. of landings * 2 for selective door control (car)
1. Inp. release car commands	**f**	*	*	no. of landings / no. of landings * 2 for selective door control (car)
1. Inp. deactivation landing	**m**	*	*	no. of landings / no. of landings * 2 for selective door control (landing)
1. Inp. release landing	**f**	*	*	no. of landings / no. of landings * 2 for selective door control (landing)

Function	Abbre-viation	ZBE:	FBE:	No. of assigned IOs
Special service landing / car	**s**	*		no. of landings / 1, if key landing <> 0
Priority travel landing / car	**v**	*		no. of landings / 1, if key landing <> 0
Fire emergency / emergency travel key landing	**n**	*		no. of landings / 1, if key landing <> 0
Firemen mode key landing	**f**	*		1
Firemen mode key car	**f**	*	*	1
Shut-down key landing	**x**	*	*	1
Shut-down key car	**x**	*	*	1
Inp. clock-controlled travel	**u**	*	*	1
Inp. dividing door	**t**		*	1
Inp. evacuation	**e**	*		1
Inp. full load / overload	**y**	*	*	1
Inp. brakeshoe monitoring	**r**	*		1
Inp. contactor monitoring	**r**	*		1
Indications: special service, overload, out of operation, full load, evacuation, special service landing, car in zone, in motion, upwards, downwards, occupied, operation, collective failure	**k**	*	*	1
Output car light bridging	**l**	*		1
Inp. door open button	**o**	*	*	1
Inp. door close button	**z**	*	*	1
Inp. door stop button	**j**	*	*	1
Inp. fan button	**j**	*	*	1
all other IOs	**b**	*	*	
double-assigned IOs	**D**	*	*	
double-assigned activated IOs	**$**	*	*	
activated IO´s without function	**ε**	*	*	

Activated IOs are marked with capital letters!

3.5. Description of error sums

➔ *Called via keyboard entering 010*:*

*Press * to change from one indication to the next.*

There are counters for the following error types:

- resets
- upwards position errors
- downwards position errors
- door failures
- travel time exceedings
- **Overtemperature** (in the case of hydraulic lifts it is the sum of overtemperature 1 and overtemperature 2, i.e. oil temperature and pump motor)
- Controller failures (in the case of frequency-controlled lifts)
- Minimum pressure (in the case of hydraulic lifts)
- Maximum pressure (in the case of hydraulic lifts)

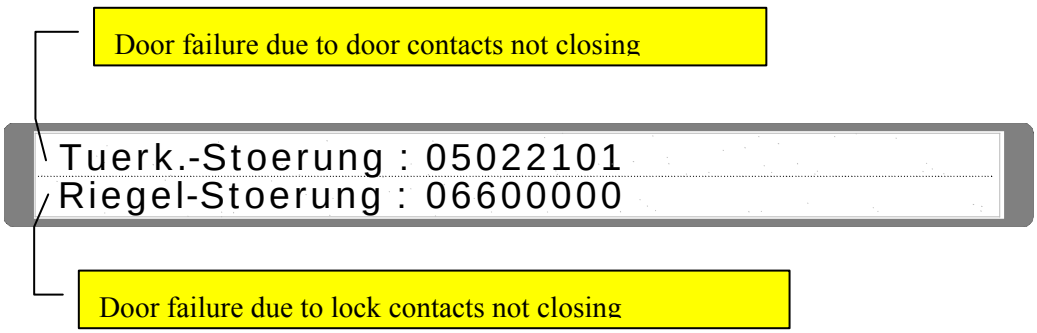
After the indication of the error sums an information important for group lifts is output as an additional function. This information, the waiting time for landing calls relevant to the single landings, doesn't have to do with any failures, but for the sake of convenience it is displayed after the error sums.

3.6 Description of door / safety circuit errors

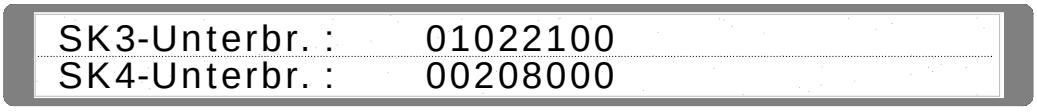
➔ *011 * = Indication of door failures, safety circuit interruptions and steps relevant to the landings*

*Press * to change from one indication to the next.*

As only one digit per landing is available on the display for the indications described in the following, only the last digit of the error counter is displayed, i.e. "5" can also mean "15", "25", etc.

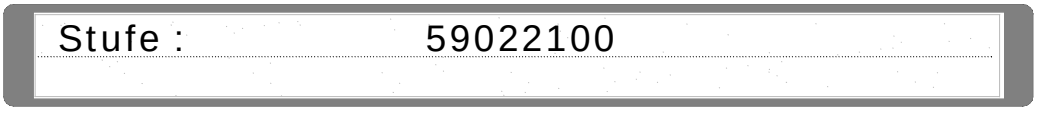


Safety circuit interruptions at high speed:



Unflush position when stopping:

The counter per landing is increased whenever the lift either stops too early or too late, i.e. one of the outer inductor switches is no longer in the zone after stopping, which means in turn that the step is at least >= 1.5 cm.



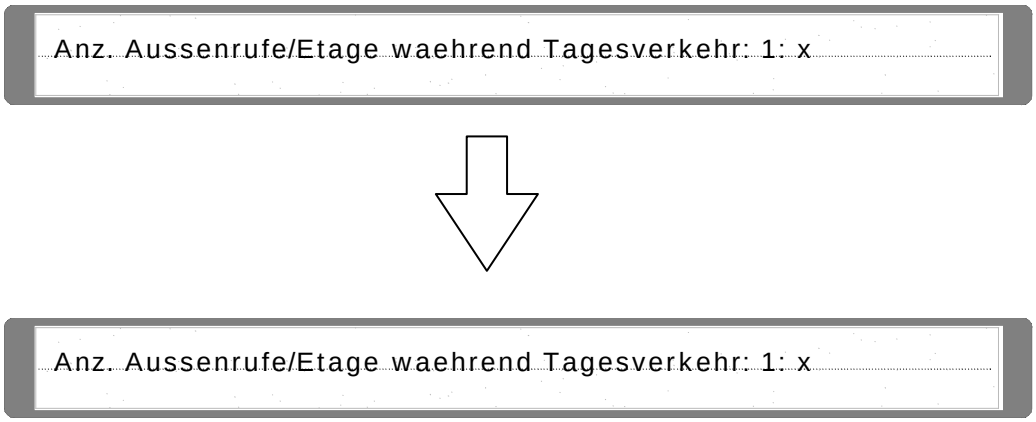
In modem operation, the service centre is called when exceeding a limit value per landing.

3.7. Indication of the travel statistics

➔ *013 * = Indication of the travel statistics (approach rate of each landing)*

*Press * to change from one indication to the next.*

Approach rate per landing:



Peak Up/Peak Down:

3.8. Description of errors in chronological order

➔ *012 * = Indication of errors in chronological order*

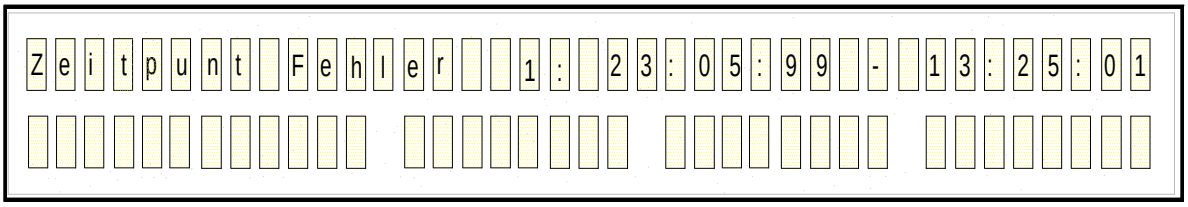
*Press * to change from one indication to the next. Press any numerical key to go back.*

A maximum of 30 errors is recorded. If this number is exceeded, LiSA will overwrite the oldest error.

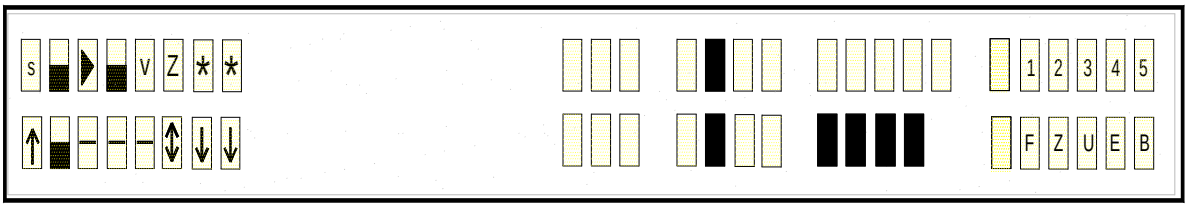
The last error is always indicated first. Each error indication consists of two display indications belonging together.

Indication on the display (time of error):

First display indication:



Second display indication (lift status directly before error):



The following error messages are stored in the error memory:

Reset	=	programme restart
SmZone	=	car beyond destination (SGM beyond zone)
SuZone	=	car beyond destination (SGU beyond zone)
SoZone	=	car beyond destination (SGO beyond zone)
SoZReg	=	car beyond destination after relevelling (SGO beyond zone)
SuZReg	=	car beyond destination after relevelling (SGU beyond zone)
TTElap	=	travel monitoring time exceeded
ATElap	=	approaching monitoring time of 30 seconds exceeded
STElap	=	starting monitoring time of 30 seconds exceeded
RTElap	=	travel monitoring time exceeded when relevelling
EsBot?	=	car presumably at the bottom emergency limit switch
EsTop?	=	car presumably at the top emergency limit switch
EsTop	=	car reached the top emergency limit switch and has then been lowered
SK1Int	=	safety circuit interruption before SK1
Ovtem1	=	overtemperature 1 (only in the case of hydraulic lifts)
Ovtem2	=	overtemperature 2
MaxPre	=	maximum pressure (only in the case of hydraulic lifts)
MinPre	=	minimum pressure (only in the case of hydraulic lifts)
VVVFau	=	controller failure (only in the case of frequency-controlled lifts)
Safty	=	error in safety circuit
Zo1Err	=	zone error of zone 1
Zo2Err	=	zone error of zone 2
Vo+Vu	=	top and bottom slow-down switches activated at the same time
CoCFau	=	contactor monitoring error
V>Vmax	=	maximum permissible travel speed exceeded
Brake1	=	brake lifting monitoring for brake circuit 1 tripped
Brake2	=	brake lifting monitoring for brake circuit 2 tripped
Brake3	=	brake lifting monitoring for brake circuit 3 tripped
toohigh	=	car stopped too early after travelling downwards

toodeep = car stopped too early after travelling upwards
CError = counting error (counted car position deviates from the actual position (vo/vu))
DoorFa = door failure (required door motion not registered)
Trennt = partition door open
SK2Int = safety circuit 2 interrupted at high speed
SK3Int = safety circuit 3 interrupted at high speed
SK4Int = safety circuit 4 interrupted at high speed
LS1/SB1 = permanent interruption of photoelectric barrier / closing force limiter door side 1
LS2/SB2 = permanent interruption of photoelectric barrier / closing force limiter door side 2
MaTMax= maximum machine room temperature exceeded
MaTMin = fallen below minimum machine room temperature
VVVFErr = controller error during DCP operation
ZMove = destination shifted by 1 landing due to excessive approach speed
DirFault = direction error, car moved in the wrong direction when starting
Undefi1 = undefined error
Undefi2 = undefined error
Undefi3 = undefined error
BusFaul = bus error (EModule-Addr=xx, FModule-Addr=xx = incorrectly recognised module)
LCallB = landing control off
LSDown = landing shut-down function activated (lift out of operation)
CSDown = car shut-down function activated (lift out of operation)
CWPuff = counterweight buffer failure
InLsFa = inspection limit switch failure
ScFaul = safety circuit error
$0000xxxx = absolute encoder error codes (displayed in the left display are only for a short time, on 18 June 2009 replaced by plain text display)
AEnErr = absolute encoder error (from software 18 June 2009 on the mentioned $0000xxxx codes are displayed as plain text)
PosFaul = internal position counter deviates from current position
imFaul = recognised pulse error without emergency stop (flush position reached)
ImFaul = recognised pulse error with emergency stop

The following error messages are displayed but not stored in the error memory:
CabLig = light voltage missing
PwFaul = support/buffers not retracted/extended

In the following a detailed description of the current error indications or messages for errors in chronological order:

Reset:

Meaning:
Information *(not an error as such)* that the LiSA restarted the programme.

Response:
- All outputs are deactivated, i.e. all travel signals are switched off which might lead to an emergency stop,
- then all IOs are tested (LEDs on the IO boards successively on) and the car calls are restored (landing calls are deleted),
- if the car is beyond the zone, a correction travel is effected.

Causes:
- External failure (e.g. inductive coupling of interfering voltage, mains fluctuations, etc.) lead to a faulty execution of the software. As a consequence a monitoring element on the main board (watchdog IC) effects a reset.
- external interferences due to insufficient interference elimination,
- faulty hardware or software

Remedy: (if possible in consultation with the controller manufacturer)
Reduction of external interference:

- connect the travelling cable shield to PE in the control cabinet, equip brakes and interlock magnets with varistors, RC elements or free-wheeling diodes (has usually already been done by the controller manufacturer)
- equip the 380V door motors and interlock motors with the capacitor bank (included in the delivery from Schneider)
- check the wiring (do not run the supply and motor cables parallel to the control cables over long distances)
- possibly replace the central electronic unit or power supply
- possibly replace the software

SmZone:

Meaning:

When travelling upwards or downwards the car stopped beyond the zone, i.e. the centrical inductor switch is beyond the zone of the destination and the car stopped with a *step of at least 10 cm*. This error is usually entered into the error memory directly after the error SuZone or SoZone.

Response:

The controller effects an *emergency stop* (= immediate stop). Then a correction travel is carried out if a car call is active or a car button is pressed.

Causes:

- The parameter value of "Decel. down / up" is far too large.
- The parameter value of "Decel. path down / up" is too low.
- The approaching speed is too high.
- The stop conditions (Dynatron-S, -F) are signalled too late by the controller / the controller or inverter did not accept the brake application.
- Rail installed inaccurately.
- Temperature-dependent hydraulic system.

Remedy:

- reduce the parameter value for the braking distance
- increase the parameter value for the deceleration distance
- reduce the approaching speed

SuZone:

Meaning:

When travelling downwards the car stopped beyond the zone,
i.e. the bottom inductor switch is beyond the zone of the destination
and the car stopped *with a step below the flush position*.

Response:

The controller effects an *emergency stop* (= immediate stop). Lifts with a relevelling function start to relevel. Lifts without a relevelling function answer further calls.

Causes:

- The parameter value of "Decel. down" is too large.
- The parameter value of "Decel. path down" is too low.
- The approaching speed is too high.
- Temperature-dependent hydraulic system.
- Bottom inductor switch too far away from the centrical inductor switch.

Remedy:

- reduce the parameter value for the downwards braking distance
- increase the parameter value for the downwards deceleration distance
- reduce the approaching speed

SoZone:

Meaning:

When travelling upwards the car stopped beyond the zone, i.e. the top inductor switch is beyond the zone of the destination and the car stopped *with a step above the flush position*.

Response:

The controller effects an *emergency stop* (= immediate stop). Lifts with a relevelling function start to relevel. Lifts without a relevelling function answer further calls.

Causes:

- The parameter value of "Decel. up" is too large.

- The parameter value of "Decel. path up" is too low.
- The approaching speed is too high.
- Rail installed inaccurately.
- Temperature-dependent hydraulic system.
- Top inductor switch too far away from the centrical inductor switch (top and bottom inductor switches are supposed to be approx. 1 cm before the end of the rail).

Remedy:

- reduce the parameter value for the upwards braking distance
- increase the parameter value for the upwards deceleration distance
- reduce the approaching speed

SoZReg:

Meaning:

When relevelling upwards the car stopped beyond the zone, i.e. the top inductor switch left the zone during the relevelling and the car stopped with a step above the flush position.

Response:

The controller effects an emergency sto (= immediate stop). Then the lift relevels downwards.

Causes:

- The parameter value for the relevelling braking deceleration is too large.
- The signal for the selection of the relevelling speed is missing at the controller/inverter.
- The relevelling speed is too high.

Remedy:

- reduce the parameter value for the relevelling braking distance
- check whether the relay for Vn is programmed and if the wiring is correct
- reduce the relevelling speed

SuZReg:

Meaning:

When relevelling downwards the car stopped beyond the zone, i.e. the bottom inductor switch left the zone during the relevelling and the car stopped with a step below the flush position.

Response: see SoZReg

Causes: see SoZReg

Remedy: see SoZReg

TTElap: (travel monitoring time exceeded)

Meaning:

Travel monitoring time exceeded.
During a travel between 2 neighbouring landings, the time defined by the parameter "Travel monitoring time" was exceeded.
Attention: if a safety circuit is interrupted, the travel monitoring time is restarted every time, this does not lead to an TTElap error.

Response:

The controller effects an emergency stop and goes out of operation. If the parameter "Standard" is set to TRA, the controller attempts to travel again after 10 seconds. If the travel monitoring time is exceeded again, the lift is definitely put out of operation.

Causes:

- The centrical inductor switch sporadically fails or is defective.
- The car stops because the valves of the hydraulic lift don't work correctly.
- The car stops because the controller of the frequency-controlled lift does not activate the motor.
- The mechanical brake has been applied.

Remedy:

- concerning the encoder, see CError
- check whether the controller displays a failure check whether the activation signals from the controller are applied correctly at the inverter inputs (activation level!)
- check why the brake is not lifted

ATElap: (monitoring time exceeded when approaching a landing)

Meaning:

Travel monitoring time exceeded when entering the zone.
This error occurs when travel monitoring time of 30 seconds started during a regular travel as soon as the centrical inductor switch enters the zone is exceeded without the counter having counted down to 0 for the braking distance.

Response:

The controller effects an emergency stop and goes out of operation. If the parameter "Standard" is set to TRA, the controller attempts to travel again after 10 seconds. If the travel monitoring time is exceeded again, the lift is definitely put out of operation.

Causes:

- The controller stops too early, i.e. the mechanical brake (switched by the controller) is applied too early.
- The car stops because the valves of the hydraulic lift don't work correctly.
- The car stops because the controller of the frequency-controlled lift does not activate the motor.
- The mechanical brake has been applied.
- An inverter with direct approach (e.g. Dynatron) completed the travel.

Remedy:

- check whether the controller displays a failure
- check whether the activation signals from the controller are applied correctly at the inverter inputs
- check why the brake has been applied

In the case of lifts with direct approach:

- check whether the deceleration distance is too large
- check whether the end of the travel is evaluated and recognised by the "Inp. brake"

STElap: (starting monitoring time exceeded)

Meaning:

Starting monitoring time exceeded.
When starting, the centrical inductor switch did not leave the zone within 30 seconds.
Attention: if a safety circuit is interrupted, the starting monitoring time is restarted every time, this does not lead to a STElap error.

Response:

See travel time exceeded (TTElap). As the car is in the zone, the door is opened.

Causes: see TTElap

Remedy: see TTElap

RTElap:

Meaning:

Travel monitoring time exceeded when relevelling.
This error occurs when the top or bottom inductor switch does not enter the zone within 30 seconds when relevelling and using the timing method or when the counter for the relevelling braking distance does not count down to 0 within the mentioned time when braking with pulses.

Response:

see ATElap As the car is in the zone, the door is opened or remains open.

Causes:

- see ATElap
- The signal for the selection of the relevelling speed is missing at the controller/inverter.

Remedy:

see ATElap and causes

EsBot?:

Meaning:

Safety circuit interruption before tap SK1 (terminal 9 / 10) with the bottom slow-down switch signal being present and the bottom inductor switch signal missing. As there is the possibility that any other contact in the safety circuit before SK1 caused the interruption, this message bears a question mark.

Response:

Emergency stop if lift is in motion - the lift is put to the out-of-operation state.

Causes:

- The parameter value for the distance between landing 1 and landing 2 is too large **and** at the same time the distance between the bottom slow-down magnet and landing 1 is too short.

- Temperature-dependent hydraulic system / controller does not decelerate correctly.
- Car overloaded.
- Emergency limit switch incorrectly positioned.
- Centrical inductor switch or bottom slow-down switch defective.

Remedy:

- position the slow-down magnet further away from landing 1
- check whether the bottom slow-down switch or centrical inductor switch work at all

EsTop?:

Meaning:

Safety circuit interruption before tap SK1 (terminal 9 / 10) with the top slow-down switch signal being present and the top inductor switch signal missing. As there is the possibility that any other contact in the safety circuit before SK1 caused the interruption, this message bears a question mark.

Response:

Emergency stop if lift is in motion - the lift is put to the out-of-operation state.

Hydraulic lifts are then usually lowered slowly so that the emergency limit switch is closed again. If the lift is set to TRA via the parameter "Standard", it is put back into operation. Otherwise (if set to EN81), EsTop (without question mark) is stored in the error memory, the lift is lowered to the lowest landing and remains there in the out-of-operation state.

Causes:

- Brake lifted manually - lift has slowly moved away in the upwards direction.
- The parameter value for the distance between the last and the second last landing is too large **and** at the same time the distance between the top slow-down magnet and the highest landing is too short.
- Temperature-dependent hydraulic system / controller does not decelerate correctly.
- Emergency limit switch incorrectly positioned (is activated too early).
- Centrical inductor switch or top slow-down switch defective.

Remedy:

- position the slow-down magnet further away from the final landing
- check whether the top slow-down switch or centrical inductor switch work at all

EsTop:

Meaning:

Safety circuit interruption before tap SK1 (terminal 9 / 10) with the top slow-down switch signal being present.

Response:

Adoption of the out-of-operation state.

Causes:

- Master switch flipped.
- Controller fuse tripped or switched off.
- Voltage failure

Remedy:

check and, if necessary, restore the voltage at terminal SK1

SK1Int:

Meaning:

Safety circuit interruption before tap SK1 (terminal 9 / 19).

Response:

Emergency stop if lift is in motion - the lift is put to the out-of-operation state.

Causes:

- Master switch flipped or controller fuse tripped.
- Speed controller tripped or lift in the safety gear.
- Other safety circuit contact before terminal 4 opened.

Remedy: see causes

Ovtem1: (overtemperature 1)

Meaning:

The PTC resistor in the travel motor or in the pump motor of the hydraulic reservoir indicated to the controller at input U1 on the main board that the maximum permissible temperature (approx. 60 °C) has been exceeded for one of them.

Response:

If in the case of a *hydraulic lift* the car is in motion, the system will attempt to stop in the next possible landing, provided that this is possible within 10 seconds.
In the case of *hydraulic lifts* the controller will otherwise effect an emergency stop. After cooling down, the lift is put into operation again.
In the case of *rope traction lifts* the motor fan is switched on, provided that the relay has been programmed accordingly.

Causes:

- Large number of travels, high ambient temperature, defective motor, brake is not lifted correctly.
- The motor fan does not work or is not activated.

Remedy:

see causes

Ovtem2: (overtemperature 2)

Meaning:

The PTC resistor in the travel motor or in the oil of the hydraulic power unit indicated to the controller at input U2 on the main board that the maximum permissible temperature (approx. 110 °C) has been exceeded for one of them.

Response:

If the car is in motion, the system will attempt to stop in the next possible landing, provided that this is possible within 10 seconds. Otherwise the controller will effect an emergency stop. After cooling down, the lift is put into operation again.

Causes:

- Number of travels too large, ambient temperature too high, motor defective, brake is not lifted or not completely.
- The motor fan does not work or is not activated.

Remedy:

see causes

MaxPre: (maximum pressure)

Meaning:

The hydraulic power unit indicated to the controller at input Max/Reg on the main board that the maximum permissible operating pressure has been exceeded - in the case of the Beringer system it could also be a failure message of the control electronics (contact - SIUA).

Response:

The controller effects an emergency stop and goes out of operation. After 10 second the system attempts to travel again, provided that the failure signal is no longer present.

Causes:

- Car overloaded.

Remedy:

- see troubleshooting provided by the hydraulics manufacturer

MinPre: (minimum pressure)

Meaning:

The hydraulic power unit indicated to the controller at input Min on the main board that the value of the operating pressure has fallen below the minimum permissible value or that the pipe burst valve has tripped.

Response:

The controller effects an emergency stop and goes out of operation. After 10 second the system attempts to travel again, provided that the failure signal is no longer present.

Causes:

- Pressure drop in the hydraulic power unit.

Remedy:

- see troubleshooting provided by the hydraulics manufacturer

VVVFau: (controller failure)

Meaning:
The inverter (voltage regulator / frequency inverter) indicated an error to the controller at the input Max/Reg on the main board.

Response:
The controller will effect an emergency stop and puts the lift out of operation.
After 10 second the systems attempts to travel again, provided that the failure signal is no longer present. If there is another failure indicated during this travel, the system is finally put out of operation. In the case of an inspection or emergency recall travel, this state may be cancelled by flipping the inspection or emergency recall switch twice.

Causes:
- see troubleshooting provided by the inverter manufacturer
- No activation signal from the controller.
- Pulse signal for inverter not connected, faulty or noisy.

Remedy:
- see troubleshooting provided by the inverter manufacturer
- measure the activation signals at the inverter
- measure the pulse signals by means of an oscillograph - lay a pulse cable, if necessary

Safty: (error in safety circuit - see LiSA manual part C)

Meaning:
When the car has approached the landing, the controller recognises an error in the safety circuit if the relay K5 monitored by a software did not change its state during the travel.

Response:
The lift is put out of operation. Rope traction lifts remain in the landing where their last travel ended. Hydraulic lifts are lowered to the lowest landing, with the lift been put into operation again if the proper operation of the safety circuit is detected during this travel.

Causes:
- Hardware error on the LiSA board.
- Safety relays do not work in the defined order or are defective.

Remedy:
- replace the safety circuit
- check the inductor switches

Zo1Err: (zone error Z1)

Meaning:
After leaving the landing, Z1 is still active although Z2 has already switched.

Response:
The lift is put out of operation. Rope traction lifts remain in the landing where their last travel ended. Hydraulic lifts are lowered to the lowest landing.

Causes:
- Faulty zone evaluation by the absolute encoder.
- Hardware error on the LiSA board.

Remedy:
- check the absolute encoder, the controller and replace, if necessary

Zo2Err: (zone error Z2)

Meaning:
After leaving the landing, Z2 is still active.

Response:
The lift is put out of operation. Rope traction lifts remain in the landing where their last travel ended. Hydraulic lifts are lowered to the lowest landing.

Causes:
- Defective zone switch S39, magnet out of place or fallen off.
- Hardware error on the LiSA board.

Remedy:
check the zone switches and magnets, the controller and replace, if necessary

Vo+Vu: (Vo and Vu signals at the same time)

Meaning:

Top and bottom slow-down switches activate at the same time.

Response:

The controller is put out of operation and remains in this state until a state change is effected.

Causes:

- The top or bottom slow-down switch was not reset when leaving the respective area.
- Slow-down switch magnet positioned in such a way that it switches the other slow-down switch, too.

Remedy:

- replace defective slow-down switches
- check the lateral distance between magnet and slow-down switch

CoCFau: (contactor monitoring)

Meaning:

The software monitoring whether the contactor is deenergised in standstill has tripped, i.e. no signal is present at the contactor monitoring input.

※ If the parameter "Standard" is set to EN81, the signal must be connected to the landing control off input of the LiSA board.

Response:

The controller is put out of operation and remains in this state until a state change is effected.

Causes:

At least one contactor does not work correctly.

Remedy:

replace any defective contactors

V > Vmax: (maximum speed exceeded)

Meaning:

The car exceeded the maximum speed defined by the parameter "Emergency stop at Vmax mm/sec".

Response:

The controller effects an emergency stop and goes out of operation.

Causes:

- The car is accelerated upwards by the counterweight when the brake is lifted and without influence of the controller.
- The value for the output frequency of the frequency inverter is too high.

Remedy: see causes

Brake1: (brakeshoe monitoring of brake circuit 1)

Meaning:

The software monitoring

- whether the mechanical brake is applied in standstill or lifted during
- the travel.

Response:

The controller is put out of operation and remains in this state until a state change is effected.

Causes:

- The brake activation does not work.
- Brakeshoe contact incorrectly adjusted.

Brake2: (brakeshoe monitoring of brake circuit 2)

Meaning: see Brake1

Brake3: (brakeshoe monitoring of brake circuit 3)

Meaning: see Brake1

Toohigh:

Meaning:
When travelling downwards, the car stopped too early, i.e. the car stopped in a normal way in the landing, but the top inductor switch is still beyond the zone.

Response:
The controller starts the relevelling procedure, if activated.

Causes:
- The parameter value of "Decel. down" is too low.
- Step correction too large.
- Too many pulses from the encoder (mainly due to interferences in the pulse cable).
- Dynatron-S and -F: the KBR signal arrives too early because
  - the (firmly installed) magnet for the brake application is too high or
  - the lift is in a flush position, but the rail is too low or
  - the value of the parameter "Decel. down" is too large, if the brake is applied by means of a KBR relay.

Remedy:
- increase the parameter value for the downwards braking distance
- reduce the step correction
- measure the pulse input at the LiSA by means of an oscillograph, re-lay the pulse cable, if necessary
- adjust the brake application or rail

Toodeep:

Meaning:
When travelling upwards, the car stopped too early, i.e. the car stopped in a normal way in the landing, but the bottom inductor switch is still beyond the zone.

Response:
The controller starts the relevelling procedure, if activated.

Causes:
- The parameter value of "Decel. up" is too low.
- Step correction too large.
- Dynatron-S and -F: the KBR signal arrives too early because
  - the (firmly installed) magnet for the brake application is too low or
  - the lift is in a flush position, but the rail is too high or
  - the value of the parameter "Decel. up" is too large, if the brake is applied by means of a KBR relay.

Remedy:
- increase the parameter value for the downwards braking distance
- reduce the step correction
- measure the pulse input at the LiSA by means of an oscillograph, re-lay the pulse cable, if necessary
- adjust the brake application or rail

CError: (counter error)

Meaning:
When travelling upwards and reaching the top correction magnet, the controller recognises that the position of the car deviates from the parameter "correction position top".
The same applies when travelling downwards and reaching the bottom correction magnet.

Response:
The controller corrects the position of the car by the value defined by the parameter "correction position top / bottom".

Causes:
- The centrical inductor switch sporadically fails or is defective.
- The parameter "correction position" has an incorrect value.
- During the travel, the centrical inductor switch entered or left the zone due to a safety circuit interruption (door contact / interlock contact interrupted / travel end in case of inspection or emergency recall / reset).

Remedy:
- If you are sure that the safety circuit is not interrupted, possibly replace the centrical inductor switch - if not available, exchange the centrical inductor switch with a top/bottom inductor switch.

DoorFa: (see also error memory for door failures - enter 011*)

Meaning:

A door failure was recognised after 5 unsuccessful attempts to close the door.

Response:

- All car calls are deleted.
- In the case of single lifts, the landing calls are deleted, too.
- As soon as a car button or landing button is pressed, the lift is put into operation again, but will resume the "door failure" operating mode already after two unsuccessful attempts to close the door.
  In the case of group lifts, this procedure is repeated up to 5 times, before the lift is finally put out of operation with the consequence that landing calls for the landing where the faulty lift is located have to be answered by another lift in the group.
  In the case of single lifts, the operation is ceased only after 20 successive door failures.
  Only one failure is entered into the error memory, i.e. there is only one error message.

Causes:

- Interlocking or lock contact
- Door controller ignores the door close signal.
- Door motor circuit breaker tripped.
- Door close relay activated, but does not work as the door closing limit switch is opened.

Remedy:

- check whether the lock is activated correctly (interlock relay!) or adjust the door mechanism,
- check the door controller - conduct a TeachIn, if necessary,
- door motor circuit breaker value set too low or circuit breaker is too small; if activated without door contactors, the door relay contacts might have burnt off (short circuit because capacitor bank is not installed),
- capacitor bank not connected to the neutral point of the door motor but to the neutral wire or earth wire,
- **check the door close contact.**

Trennt: no error - entry only for information!

Meaning:

Indication that the partition door contact is open.
The message is only entered in the idle state, i.e. if occurring during the travel only after the end of the travel.

Response:

- Deletion of all calls.
- Change to operating mode "shut-down (car)".

Causes:

- Partition door opened intentionally.
- Partition door contact defective or contact resistance too large in order to be recognised by the controller as a valid signal.

Remedy:

- replace or adjust the contact,
- install an additional relay at the partition door contact, if required, and connect the partition door signal via the relay to the controller input.

SK2Int: no failure, only for information (see also error memory for door failures)

Meaning:

Interruption of the safety circuit when travelling at high speed, with the safety circuit having been closed up to the hinged door contacts (terminal 94). The interruption is caused by a hinged door contact.

Response:

All travel contactors are deenergised. In the case of frequency-controlled lifts, all travel signals are switched off by the controller - otherwise it would be put out of operation.

Causes:

- Door contact does not close correctly.

Remedy: see causes

SK3Int: no failure, only for information (see also error memory for door failures)

Meaning:

Interruption of the safety circuit when travelling at high speed, with the safety circuit having been closed up to the shaft door contacts (terminal 95). The interruption is caused by a shaft door contact.

Response:

All travel contactors are deenergised. In the case of frequency-controlled lifts, all travel signals are switched off by the controller - otherwise it would be put out of operation.

Causes:

- Door contact not closed correctly.
- In the case of door drives with electronic door controllers (AT25, Sematic, Fermator, etc.) interference or failure of the door close signal cable.

Remedy: see causes

SK4Int: no failure, only for information (see also error memory for door failures)

Meaning:

Interruption of the safety circuit when travelling at high speed, with the safety circuit having been closed up to the car doors (terminal 11). The interruption is caused by an interlock contact.

Response:

All travel contactors are deenergised. In the case of frequency-controlled lifts, all travel signals are switched off by the controller - otherwise it would be put out of operation.

Causes:

- Interlock contact not closed correctly.
- When travelling through the zone, the door vane touches the locking roller.

Remedy: see causes

LS1/SB1:

Meaning:

Information that the photoelectric barrier or closing force limiter of door 1 was interrupted for 60 minutes.

Response:

Door not closed - lift out of operation.

Causes:

- Photoelectric barrier defective, adjusted incorrectly or parameter "Light barrier output active (closed/open)" set incorrectly.
- Closing force limiter contact defective, adjusted incorrectly or parameter "Contact of force limiter active (closed/open)" set incorrectly.
- Photoelectric barrier interrupted intentionally.

Remedy:

- see causes
- The parameters "Light barrier output / contact of force limiter active (closed/open)" serve to set the active state of the respective contact.

LS2/SB2: Analogous to LS1/SB1, but for door 2.

MaTMax:

Meaning:

Maximum machine room temperature exceeded.

Response:

Lift is put out of operation, hydraulic lifts are lowered to the lowest landing.

Causes:

- Temperature threshold at the switch set too low.
- Machine room too hot (> 40 °C according to EN81).

Remedy:

- see causes

MaTMin:

Meaning:
The machine room temperature has fallen below the minimum value.
Response:
Lift is put out of operation, hydraulic lifts are lowered to the lowest landing.
Causes:
- Temperature threshold at the switch set too high.
- Machine room too cold (< +5 °C according to EN81).

Remedy:
- see causes

VVVFError:

Meaning:
Controller error during DCP operation.
Response:
The lift is put out of operation until the inverter is operative again.
Causes:
- Inverter failure.

Remedy:
- see causes

ZMOVE:

Meaning:
Destination shifted by one landing due to excessive approaching speed.
Response:
Only for information. In many cases, the next message indicates that the travel time is exceeded.
Causes:
- Approaching speed too high.

Remedy:
- optimise settings,
- check pulses.

DirFault:

Meaning:
Direction error, car moved in the wrong direction when starting.
Response:
Travel signals are switched off immediately and restarted.
Causes:
- Sagging when valve is opened (hydraulic lifts),
- drifting away when brake is lifted (rope traction).

Remedy:
- adjust the pump overtravel (hydraulic lifts),
- set the holding torque (frequency-controlled rope traction lifts),
- in the case of lifts without relevelling, move the induction switch closer to the centre.

Undefi1:

Meaning:
Information about an undefined failure with the following corrective action.
Response:
If SK3 is not closed after 45 seconds, the controller switches internally to emergency recall and generates a call to the next stop
(above or below). If SK3 is not closed after another 15 seconds, Undefi1 is entered.

Undefi2:

Meaning:

Information about continued failure Undefi1 with extended corrective action.

Response:

If SK3 is not closed after another 15 seconds, a reset is effected and Undefi2 is entered.

Undefi3:

Meaning:

Information about an undefined failure. Despite an operation state requiring an open door, SK3 is closed.

Response:

Every 60 seconds, Undefi3 is entered and the controller changes to emergency recall.

BUSFAUL:

Meaning:

Information about a temporarily failed bus module (e.g. addr = 53 -> module with address 53 faulty). Compare LCD display concerning module errors (X before the address range).

Response: Functions of the module concerned not available.

Causes:

- Connection problems.
- Defective hardware.

Remedy:

- check bus connection,
- if necessary, replace module.

LCallB:

Meaning:

landing control off activated

Response:

Landing calls are not accepted, doors remain open.

Causes:

- Landing control off activated by entering 6*.
- Input landing control off activated, if "Standard" is TRA.
- Programmed input landing control off (also key) activated.

Remedy:

- activate landing control by entering 6*,
- check wiring and programming,
- check switch and key.

LSDown:

Meaning:

Lift turned off via landing key or switch.

Response:

Lift is turned off, no calls accepted, no travels possible, relevelling remains active.

Causes:

Programmed input "Landing key switch shut down" is activated.

Remedy:

- check switch and/or key with the corresponding function.
  Attention: The switch position refers to the function, i.e. position "1" means that the function "landing key switch shut down" is activated and that the lift is out of operation!!

CSDown:

Meaning:

Lift turned off via car key or switch.

Response:

The lift is turned off, doors remain open, no calls are accepted, no travel possible, relevelling remains active.

Causes:

- Programmed input "car key shut down" is activated.
- Partition door open.

Remedy:

- check switch and key with the corresponding function,
- check partition door contact or close partition door.

CWPuff:

Meaning:

Monitoring of the counterweight buffers failed.

Response:

Lift is out of operation.

Causes:

- Counterweight buffers defective.
- Input counterweight buffers programmed, but no buffers installed.

Remedy:

- check counterweight buffers.
- If no buffer is installed, adjust "Relay inspection" in parameter set 006*, if required, and then set the inputs counterweight buffer switched on / off to in parameter set 003* to "0". If required, reset and save "Rel. Inspection".

InLsFa:

Meaning:

Monitoring of the inspection limit switch failed.

Response:

Lift is out of operation.

Causes:

- Inspection limit switch defective.
- Input Inspection limit switch programmed, but no limit switch installed.

Remedy:

- check inspection limit switch.
- If no inspection limit switch is installed, set the input in parameter set 003* to "0".

ScFaul:

Meaning:

Unlogic process of safety circuit queries.

Response:

Lift is out of operation.

Causes:

- When the emergency stop switch of the inspection controller is activated (input t on APO8 or ES on APO12), the safety circuits SK2, SK3 and SK4 are not interrupted.
- After releasing an inspection direction button, the safety circuits SK3 and SK4 are not interrupted.

Remedy:

- check safety circuit.

AEnErr:

Meaning:

Information about diverse errors of the absolute encoder system. The following codes are displayed in the left part of the display as additional information.

$0000E064	reading head not connected
$0000E165	reading head cannot read magnetic tape
$0000E2xx	invalid data set in LiSA, e.g. rail length > 512 or landing distance = 0
$0000E3xx	communication problem between bus driver and absolute encoder adapter, e.g. reset during transmission. LiSA must resend the data.
$0000E4xx	data in absolute encoder adapter not ok. LiSA must resend the data.
$0000E501	value read < neutral point - (rail length/2+500)
$0000E580	value read < last landing + (rail length/2+500)
$0000FFFF	LiSA cannot read from absolute encoder adapter (no adapter connected or adapter defective)

The following outputs replace the mentioned $0000xxxx codes from software version 18 June 2009 on.

Left display indication	**Errors**
AEnErr	Reading head not connected or magnetic tape not inserted.
Magnetic tape not readable.	Magnetic tape data faulty.
Zone < 4 or > 512	Invalid rail length set.
Landing height error.	Invalid landing distances (e.g. distance = 0)
No data from absolute encoder adapter	Communication problem between bus driver and absolute encoder adapter
value read < neutral point - 600	Value read by absolute encoder is smaller than the absolute encoder neutral point - 600
value read > max. height + 600	Value read by absolute encoder is larger than highest landing + 600

Response: Lift is out of operation. After the elimination of the failure, the lift is put into normal operation.

Remedy: see meaning

PosFaul:

Meaning:

Message only if absolute encoder is used -> current counter value deviates from the absolute encoder value read.

Response:

Internal position correction.

Causes:

Signal error during travel -> Sm not put out or read.

Remedy:

check absolute encoder system.

imFaul:

Meaning:

Monitoring during the travel whether valid pulses arrive at the pulse input. The check is only carried out at medium and rated speed. If the counting pulses fail to arrive for 100 ms, the controller switches to low speed. If the travel is completed regularly in the flush position, the lift remains in operation.

Response:

None, only information.

Causes:

Pulses are missing or are not read.

Remedy:

- check encoder,
- check encoder connection and shielding,
- check pulse division.

ImFaul:

Meaning:

Monitoring during the travel whether valid pulses arrive at the pulse input. The check is only carried out at medium and rated speed. If the counting pulses fail to arrive for 100 ms, the controller switches to low speed. At the next zone signal or after 5 seconds an emergency stop is effected and the system is put out of operation while displaying "ImFaul".

Response:

Lift is out of operation.

Causes:

Pulses are missing or are not read.

Remedy:

see imFaul