



With the beginning of September 2017 the previous standards for lifts for the transport of persons and goods EN 81-1 and EN 81-2 have been fully replaced by the new EN-20 and EN 81-50. Lifts that are put into operation after this date have to be in accordance to the state of the art and higher safety regulations specified in these standards.

The safety relay SR3E has been especially developed in accordance to EN 81-20/50 for the use in elevators and has been certified by TÜV Rheinland. In addition to that, it is approved for applications up to PL e according to EN ISO 13849-1 and up to SIL 3 according to IEC 61508 and therefore fulfils the highest safety regulations under machinery directive.

Feasible applications in lifts are:

- safe light curtain monitoring
- detection of unintended car movements
- checking of the retardation in case of reduced stroke buffers
- as a bypass-circuit in case of maintenance.

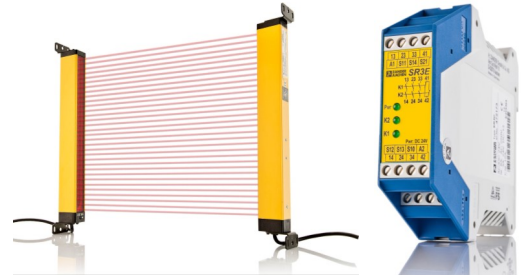
This document shows some possible applications in detail.



Application example 1

Safe monitoring of light curtains for prevention of injuries due to closing doors

Objects and / or persons can be squeezed due to unintended door closings. To prevent injuries a light curtain is often used to detect obstacles in the door area. The signals of this curtain must be monitored and processed by an electrical safety device according to EN 81-20 5.11.2. The SR3E fulfils these standards and enables the standard-compliant monitoring and introduction into a safe state. Therefore it is ensured that a door closing can not be executed while somebody or something is still located in between the doors.



Application example 2

Safe monitoring of light curtains in case of lifts without doors

In automatic cargo lifts light curtains are often used instead of cabin doors. Without doors it is even more critical to approve car movements only when there are no objects or persons in the door area. The light curtains need to be safely monitored to ensure that movements can only start when the cargo is fully loaded and persons are not in the area. The SR3E is used to safely monitor the light curtain signals and guarantee that no car movement is allowed when the curtain is triggered.

Application example 3

Bypassing the door switch and the locking element switch during levelling and re-levelling

For levelling and re-levelling the stopping position of the cabin there has to be the possibility to bypass the door switch and locking element switch, otherwise a cabin movement with open doors would not be possible. According to EN 81-20 5.3.8.1 such movements with open doors are limited to the unlocking zone (see figure 1: "unlocking zone"). In this application the SR3E can be used as a bypass device. After activating a maintenance mode, the SR3E bypasses the door switch and locking element switch to intermit the impact of the normal control system.

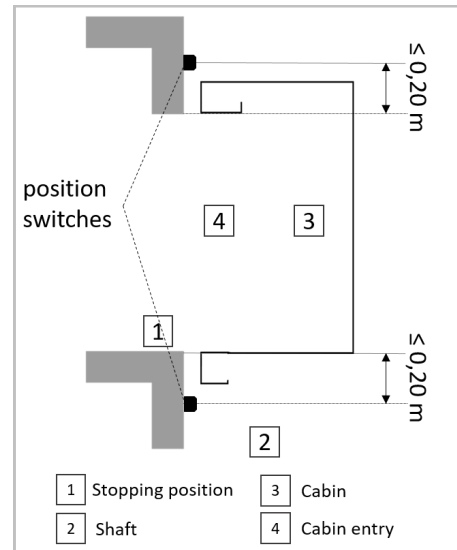


Figure 1: Unlocking zone, where door openings in normal operation are allowed

Application example 4

Protection against the danger of falling

According to EN 81-20 5.3.8.1 in normal operation it is not allowed to open the cabin doors when the cabin did not stop inside the unlocking zone (see figure 1: "unlocking zone"). The SR3E can be used as an electrical safety device according to EN 81-20 5.11.2 to monitor position sensors that determine the position of the cabin. If the sensors signal a cabin position outside of the defined unlocking zone, a door opening will not be approved.

Application example 5

Detection of unintended car movement with open doors

An unexpected car movement with open doors from the stopping position may lead to injuries and damage on persons or goods. According to EN 81-20 5.6.7.7 such movements have to be detected by an electrical safety device and lead to the car standstill in defined limits (see figure 2: "stopping area"). The SR3E monitors zone switches or other position switches to detect car movements out of the stopping area with open doors. In this case the SR3E immediately takes measures to stop the lift.

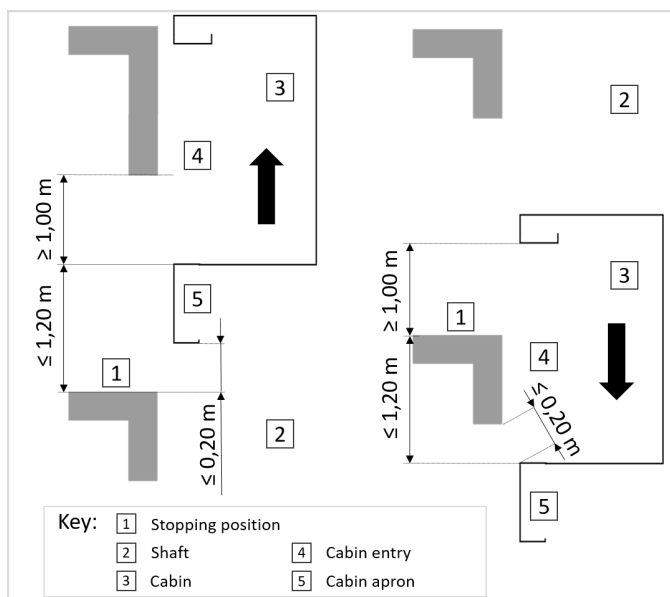


Figure 2: Maximum allowed stopping area after detection of unintended car movements.



For further information, please consult the enclosed SR3E operating instructions. This document serves only for first suggestions of application examples and **does not** replace the operating instructions.