



Industrie Service

EC type-examination certificate

Certificate no.: AEB 004
Notified body: TÜV Industrie Service GmbH
 TÜV SÜD Gruppe
 Zertifizierungsstelle für Aufzüge und
 Sicherheitsbauteile
 Westendstraße 199, 80686 München - Germany
**Applicant/
 Certificate holder:** NEW LIFT Steuerungsbau GmbH
 Lochhamer Schlag 8
 82166 Gräfelfing - Germany
Date of submission: 2005-02-10
Manufacturer: NEW LIFT Steuerungsbau GmbH
 Lochhamer Schlag 8
 82166 Gräfelfing - Germany
Product, type: Safety circuit including electronic components on the p.
 c. board Type FST 5002.x, the safety circuit has the EC
 type-examination no. AEB 004, a monitoring circuit has
 been installed additionally
Test Laboratory: TÜV Industrie Service GmbH
 TÜV SÜD Gruppe
 Abteilung Aufzüge und Sicherheitsbauteile
 Westendstraße 199, 80686 München - Germany
**Date and
 number of test report:** 2005-08-23
 AEB 004
EC-directive: 95 / 16 / EG
Statement: The safety circuit conforms as safety component to the
 directives safety requirements for the respective scope
 of application stated of the Annex to this EC type-
 examination certificate. The monitoring circuit complies
 with the requirements of the standard EN 81-1/2:1998
 + AC:1999.
Certificate date: 2005-08-23

Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
 EC identification number: 0036

P. Tkalec
 Peter Tkalec



Annex to EC type-examination no. AEB 004 dated 2005-08-23

1. Scope of Application / Description

- 1.1 The electrical safety component AEB 004 is a safety circuit on the p. c. board type FST 5002.x. The safety circuit is designed with and without a relay socket. In addition, a monitoring circuit is included for the safety chain. These two parts of the p. c. board remain unchanged, if the letter x will be changed into a version number based on modifications in the other part of the p. c. board.
- 1.2 The safety circuit evades the electrical safety switches of the lift car door and the pit door, when the car approaches the area of a station. The car and pit doors can open when entering the area. Additionally, the safety component evades the door safety switches for a levelling *upwards* or *downwards*, with the car and pit doors being open, if this is required during a halt at a station. The monitoring circuit transmits the switching state at different positions of the safety chain to the data unit without any reaction by means of potential isolation by an optocoupler.
- 1.3 The safety circuit AEB 004 on the p.c. board type FST 5002.x include two sensors A and B to recognise the area of a station. The sensors A and B can be chosen by the user and they can be of the same type. They must comply with the conditions stated in the standard EN 81-1/2: 1998 + AC1999.
- 1.4 No protection against explosion, water or accidental contact (IP00) is provided for the safety component AEB 004 and the p. c. board type FST 5002.x.
The ambient temperature may be between 0°C and +65°C.
- 1.5 The circuit voltage for the safety component type FST 5002.x is 24 V d. c. voltage.
The control voltage in the safety chain is 230 V a. c. voltage.

2. Recommendations

- 2.1 The prescribed installation of the p. c. board type FST 5002.x and the electrical connection of the safety component AEB 004 are described in the mounting instructions for the p. c. board.
- 2.2 The recommendations on the general functions of the p. c. board are stated on the sheet **FST 5002.x – Recommendations**, which is marked by a certification stamp.
The explanations on the safety circuit AEB 004 are stated on the sheet **Safety Circuit - Recommendations**.
- 2.3 The p. c. board must contain the type number FST 5002.x, the name of the manufacturer and the EC type-examination certification mark AEB 004.
- 2.4 The two sheets **FST 5002.x – Recommendations** and **Safety Circuit - Recommendations** are marked by a certification stamp dated of 23 August 2005. The EC type-examination AEB 004 must only be used together with this Annex and the two sheets mentioned above.

Kocher

FST 5 00 2.x – Recommendations

1. Monitoring circuit on the safety circuit

When the line-sided neutral conductor is connected with the binder A1:X15.6 (input), it is connected with all optocouplers, the safety circuit and the monitoring circuit. The neutral conductor is lead through via a strip conductor on the binder A1:X20.2 (output). Any circuit breakers of the drive and the brake as well as the hydraulic valve coils must be connected with the neutral conductor from the binder A1:X20.2. The strip conductors of safety-relevant electric circuits have a minimum distance of 4 mm to each other and to other electric circuits on the p. c. board, meeting the surge voltage level 3 pursuant to IEC 664-1.

Test instructions:

- Start lift, loosen the binder A1:X15.6 and pull out the neutral conductor. **CAUTION! Use insulated screw driver, as this binder is alive now.**
- The circuit breakers for the drive and brake as well as the hydraulic valves mentioned above must release immediately.
- Disconnect the unit from the line. – Reconnect the neutral conductor to A1:X15.6.

2. Inspection operation

Uncontrolled movements of the doors are prevented, the car speed is 0.63 m/s at a maximum. The regular terminal stops are not exceeded.

3. Emergency electrical operation

The car speed is 0.63 m/s at a maximum.

4. Safety Circuit (Prerequisite: die binder A1:X15.7 is connected)

- The safety circuit is designed with and without a relay socket.
- If two identical zone switches are used, they must meet the conditions of EN 81 Part 1 and Part 2 Section F 6.3.1.1 (vibration test).
- Malfunctions are recognised by the control and lead to a shutdown of the unit.
- A detailed function and examination description is included on page 2 of this recommendation.
- The mounting and operating instructions of the control must be observed.

5. Motor run time limiter

The motor run time limiter is integrated in series in all control variants.

Test Instructions:

- The driving mechanism must be shut down when the car begins to move.
If the lift is hydraulically driven, it can be stopped by e.g. disconnecting the "UP" or "DOWN" valve.
If the lift is actuated by a traction drive, it can be stopped by e.g. disabling the power converter. The procedure is described in the operating instructions of the drive.
- If the drive stands still and a run is commanded, the control is shut down after the time set in the control menu. – The drive cannot reactivate itself automatically.
- Clear the simulated malfunction. – The lift goes into service again by switching the control "ON"/"OFF".

6. Version

The version of the p. c. boards is determined by the last two digits of the sub-assembly specification. All p. c. boards of version 2.x have the same strip conductors for the safety circuit and the monitoring circuit of the safety circuit. The "x" stands for the sub-version numbers 0 to 9.



FSM 5 20 2.x – Recommendations

Safety circuit on the p. c. board

The safety circuit elements on the car are directly connected to the car control module (abbrev. FSM). The two assemblies FST 5 00 2.x and FSM 5 20 2.x – connected by the lift cable – form one unit and are mutually dependent. On the car control module, the safety circuit is conducted by strip conductors between the binders and the lift cable plug. These strip connectors of safety-relevant electric circuits have a minimum distance of 4 mm to each other and to other electric circuits on the p. c. board, meeting the surge voltage level 3 pursuant to IEC 664-1. Since these strip conductors have been designed for a rated current of 4 A, the safety circuit must be protected by a fuse of max. 4 A.

23. Aug. 2005

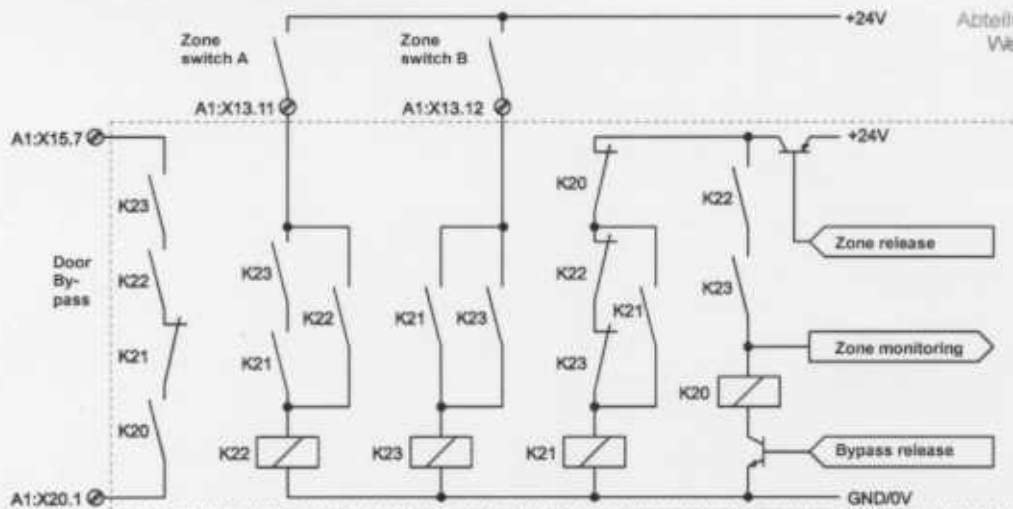
- GEPRÜFT -

TÜV Industrie Service GmbH
TÜV SÜD Gruppe
Abteilung Aufzüge und Sicherheitsbauteile
Westendstr. 199, D-80686 München
Der Sachverständige

Kaden



Safety Circuit – Recommendations



Function description

1. A zone release (+24V) must be supplied by the control. The zone release is only active if necessary, i. e. if the control is supposed to open the car door at a requested station.
2. First, K21 must pick up, requiring K20, K22 and K23 to be released. K21 is held as long as the zone release is active and K20 does not pick up.
3. K23 may only pick up after K21, when the zone switch B is closed. K23 is held as long as zone switch B is closed.
4. K22 can only pick up after K23 and K21, when the zone switch A is closed. K22 is held as long as the zone switch A is closed.
5. When K23 and K22 have picked up, K20 may pick up as soon as the control switches through the bypass release (0V). This only occurs when necessary and when the car speed is $< 0,3$ m/s. – Not until K20 picks up, K21 is released. Now, the door bypass is active until the bypass release is deactivated and K20 is released again.
6. K22 and K23 are not released until the switches A and B are re-opened by a run outside the door zone. – Another cycle cannot begin until both relays have been released, with K21 picking up as soon as the control switches another zone release.

Self-monitoring of the safety circuit:

After each run, the active bypass signal, when levelled and with the car door being open, is returned via an optocoupler at the end of the safety-circuit monitoring circuit. If this bypass signal is not active, a malfunction has occurred and the control is shut down.

Furthermore, it is monitored whether the bypass is deactivated after each run, i.e. when levelled, at a standstill and with the car door being open, the bypass release is reset and K20 is released. This process is recognised by the optocoupler. If the optocoupler does not recognise this change, the control is shut down as well.

Test instruction:

- Simulate that the zone switch A is open by disconnecting the binder A1:X13.11.
- The control recognises this malfunction in the station, preventing a further run.
- If the lift is hydraulically driven, the automatic return system to the bottom station is furthermore activated after the car door is closed. At this point, the only unit that is active is the command to open the car door.
- As soon as the simulated malfunction has been cleared, the lift goes into service again by switching the control "ON"/"OFF".

Operating conditions:

The safety circuit is integrated on the p. c. board as an inherent part of the FST 5002.x. It has been designed for a temperature range between 0°C and $+65^{\circ}\text{C}$ at 15 to 85 % relative humidity of air. The operating voltage is 24 VDC, whereas the operating contacts and the strip conductors have been designed for a safety circuit with 230 VAC protected by a fuse of max. 4 A. The strip conductors of safety-relevant electric circuits have a minimum distance of 4 mm to each other and to other electric circuits on the p. c. board, meeting the surge voltage level 3 pursuant to IEC 664-1. No protection against explosion, water or accidental contact is provided (IP00).