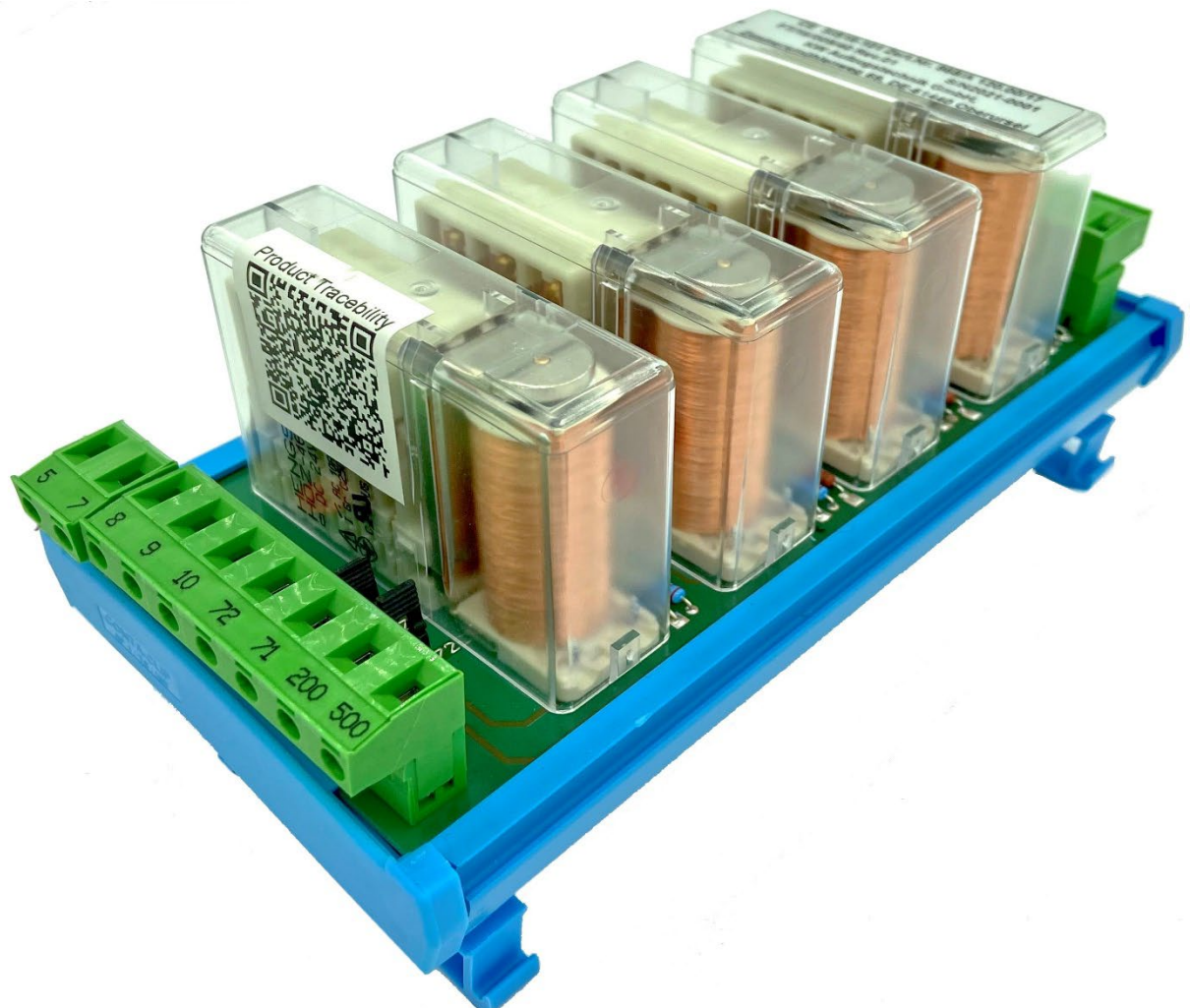


OPERATING INSTRUCTIONS SECURITY CIRCUIT SIS16-101



Functions
Start-Up Instructions

EN81-20/50
Konform

KW Aufzugstechnik GmbH Security circuit SIS16-101 Version V1.17 English

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1.0 System description

1.1 Product liability and guarantee

All work on this protection circuit may be made only by qualified technical personnel (Electrical specialist or electrotechnically instructed person). Please consider the safety references in this guidance.

This manual is for elevator technicians, which installs and commissions the control as well as at controller constructor, which inserts the controller into the switchgear and makes necessary wiring.

We guarantee for the accuracy of the product in the sense of the product informations published by us and this manual. It does not become warranty, legal responsibility, still any adhesion for economy or error free function for another purpose, than in chapter 1.2 defined granted.

Terms of guarantee

On the function of the equipment in accordance with this manual a warranty is granted by 24 months. A condition for the free repair are the proven attention of the manual with storage, transport, installation, start-up and enterprise. The general trading conditions of the company KW Aufzugstechnik GmbH are valid.

1.2 Intended use

The protection circuit SIS16-101 is intended for the employment in lifts. Other application type are be coordinated with the company KW Aufzugstechnik GmbH. The following legal agreements are to be considered with the installation and enterprise:

- Low-voltage guideline 2014/35/EU
- EN 81 -20 Number 5.11.2.3
- TRA 264.2
- Guideline 2014/33/EU appendix IV A
- EN 81-20: 2020-06 and EN 81-50: 2020-06

1.3 Safety references

The manual of the protection circuit SIS16-101 must be freely accessible for the service personnel. It must be ensured that the operating personnel read the manual and in the handing of the safety assembly group is familier.

A condition is the intended enterprise of the protection circuit SIS16-101 according to chapter 1.2.

In the case of ignoring this regulation the danger exists of heavy damages to property and person. All work on the protection circuit SIS16-101 may be accomplished only by qualified technical personnel. The following safety regulations are to be considered:

DIN VDE0100, DIN VDE0110, IEC-364, IEC-664 and VBG 4.

Qualified technical personnel in the sence of this operating instructions are persons with

- Assembly
- Start up
- Maintenance
- Attention of the national rules for the prevention of accidents

are trusts and can show appropriate vocational qualifications.



Never work under mains voltage – Danger of life!

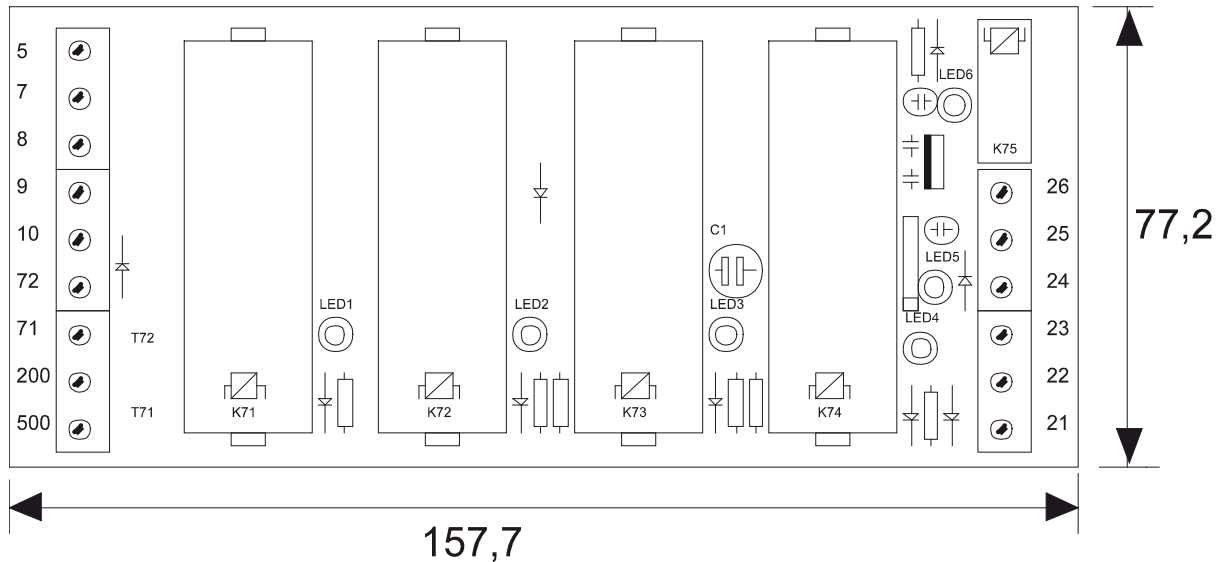
Before you begin work on the protection circuit SIS16-101, **interrupt voltage supply** by main switches and the appropriate safety devices and secure you against **erroneous restarting!**

Survey the supply lines for **tension free!**

Neighbouring clamps and components, which could be energized must be covered!

1.4 Technical data and measures

The component assembly SIS16-101 is equipped with four safety relay, as well as small relay for the concise announcement. The c-clamps are laterally on the right of and on the left of the component assembly. The SIS16-101 is preparatory for the DIN rail assembly.



Relay- and Indicating elements:	K71= Zone Relays 71 with red LED-Display LED1 K72= Zone Relays 72 with red LED-Display LED2 K73=Control Relay 73 with red LED-Display LED3 K74=Start Relay Drive/Releveling with red LED-Display LED4 K75=Concise Relay with red LED-Display LED 6 LED Status= Color green, Control display LED 5
Dimensions (with basin):	(L x B x H) 157,7mm x 77,2mm x 65,0mm
Weight:	Approx. 700 Gram
Voltage Supply:	Terminals 5,7 - 250V AC / 4A Terminals 71,72 - +24V DC / 50mA Terminals 200 - +24V DC / 100mA Terminals 24 - +12V bis +24V DC / 250mA source of emergency power Akku Terminals 26 - +12V bis +24V DC / 250mA Concise announcement
Switching Cycles:	Ca. 1.000.000 Switching cycles
Protective Class	IP 43
Ambient temperature:	0°C to +65 °C
Reaction time from departure of the zone to switch off maincon-tactor	Worst-Case: 0,021 Seconds

1.5 Description of function

According to the legal defaults bringing and in releveling (during more opened shaft- and driving basket door and the resulting bypass of the door and magnetic circuit) must be supervised by two independent switching elements.

An independent switching element, also referred to as a zone switch, may be a magnetic switch, a Hall switch, a fork light barrier, an inductive switch, a capacitive switch, a roller switch, a switch which can detect a zone in the prior art. In the same way, a zone can be output via an absolute position measuring system in cooperation with the control computers. In conjunction with one of the above-described switching elements (S71 via discrete switching element, S72 via absolute value encoder & control computer output), this results in a higher level of safety than the use of similar switches (avoidance of system errors). In order to ensure perfect speech control we are talking about zone sensors (devices) that generate a zone signal!

In addition, this assembly is designed to protect against accidental movement of the car according to EN 81-20: 2014-11. The demanded of each other independent zone switch S71 and S72 are supervised in the security circuit SIS16-101 with the help of the relays K71, K72 and K73 on error free function. The monitoring circuit of the protection circuit SIS16-101 which is active between the terminals 200 and 22 controls the perfect switching status of the relays K71, K72 and K73. With antivalence(that's mean with different switching attitude of the relays K71 and K72) the current flow is interrupted to clamp 22 and the green LED5 of the status indication expires(following EN 81-20: 2014-11). With a hydraulic elevator an emergency sinking is accomplished and prevented then each further trip. With a rope elevator the next trip can be prevented immediately. The bypass door and bolts of the magnetic circuit between the clamps 5 and 7 is closed only in the zone range with running in and releveling. With opened doors within the zone range the contacts of the safety circuit affect directly the driving contactors, so that with running in an releveling immediately the elevator is switching off during the interruption. Via evaluation zone switch of the S71 can take place when ist activation via the zone magnet an external control of a concise announcement(over the relay K75 galvanic seperation). But only if the car is in the concise range of the floor. On the protection circuit is in addition the red LED 6 which indicates the switching status of the concise relay to K75.

For the protection of unintended car movement away from the landing with the landing door not in the locked position and the car door not in the closed position according to the new standard EN 81-20: 2014-11.

is done by the security circuit SIS16-101. The security circuit SIS16-101 causes the interruption of the safety circuit and thus acts directly on the drive contactors.

The monitoring is done by independent input channels of brake control elements monitoring of the control unit, or the regulation unit.

For hydraulic lifts according to the new standard EN 81-20: 2014-11 with one-way lock valve, like ALGI S5, BLAIN L10 and BUCHER LRV (DSV) A3, there is no monitoring of brake control elements necessary, because, the one-way lock valve is not operating normally used to control speed or delay.

The DSV-A3 is a one-way lock valve that can be held open electrically. The power circuit is designed in such a way that the valve is open when the power is on, and closed (locked) when the power is off – closing the valve automatically brakes and then stops downward movement of the cabin. For hydraulic lifts according to the new standard EN 81-20: 2014-11with A3 Certification like Valves with integrated, self-monitored redundancy, e.g. BUCHER iValve or GMV Oildynamic NGV-A3.

The Bucher Hydraulics iValve and the GMV Oildynamic NGV-A3 are equipped with a redundant locking device for the down ride to fulfil the requirements of EN 81-20: 2014-11. If the cabin moves away from the landing with the door open, the A3 solenoid of the iValve shuts off to brake and stop the cabin.

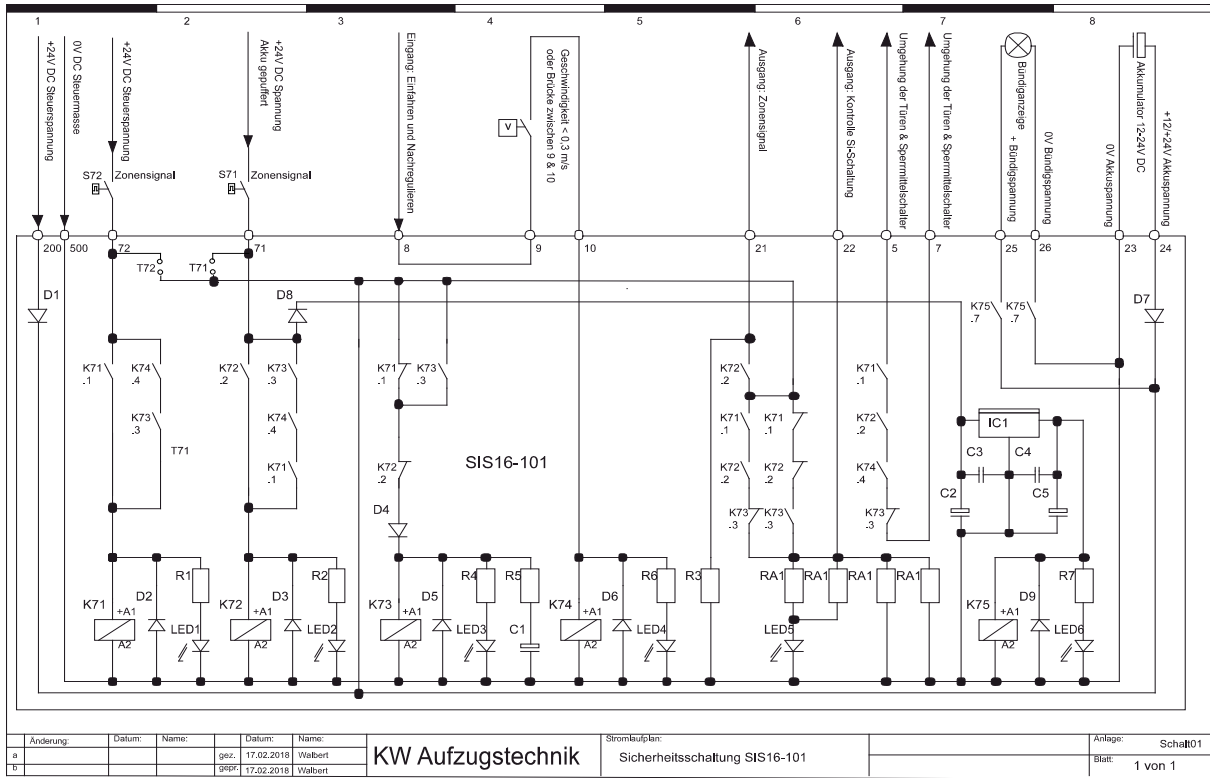
This function of the iValve (i.e. the closing of the 2 redundant locking devices for the down ride) is monitored electronically.

At hydraulic lifts of the company ALGI and the types AZRS and AZFR , according to the new standard EN 81-20: 2014-11, the Down Travel is initiated with two series-connected hydraulic valves, which have a monitoring of the open and closed position. The monitoring is done by independent input channels of brake control elements monitoring of the control unit, or the regulation unit.

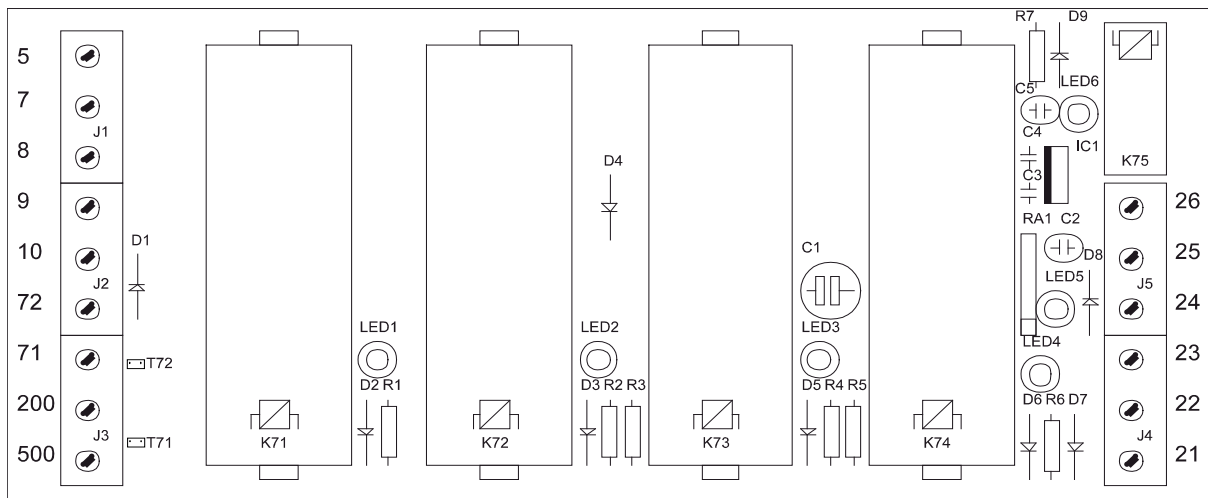
The detection zone for leaving the area with an open door, which is caused disruption of the safety circuit and thus acts directly on the drive contactors, again through the security circuit SIS16-101.

With traction elevator systems to EN 81-20: 2014-11 with certified braking devices to the new standard EN 81-20: 2014-11, like e.g. the types MAYER, Warner, ..., as a operating brake on the drives of the companies Wittur-SAD, Thyssenkrupp-Liftequipe, Ziehl-Abegg, Tornado, Sassi,..., or with A3 Certification brake control unit on the driving wheel, like the types of MAYER, Warner, ..., on the drives of Thyssenkrupp-Liftequipe-NBS, Sassi,..., the monitoring is done by independent input channels of brake control elements monitoring of the control unit, or the regulation unit.

The detection zone for leaving the area with an open door, which is caused disruption of the safety circuit and thus acts directly on the drive contactors, again through the security circuit SIS16-101.



1.6 Component diagram and list of components



POS.	Designation	Description
1	C1	Elko 100uF / 63V
2	C2, C5	Elko 2,2uF / 63V
3	C3, C4	Condenser ceramic 100nF
4	D1, D2, D3, D4, D5, D6, D7, D8	Diode 1N 4007
5	IC1	Fixed Voltage controller uA 7805
6	J1, J2, J3, J4, F5	C-clamp GMKDS3/3-762
7	K71, K72, K73, K74	Safety Relay OA 5602.54/2083
8	K75	Small Relay 30.22.7-5V
9	LED1, LED2, LED3, LED4, LED6	LED, 3mm, Color red
10	LED5	LED, 3mm, Color green
11	R1, R2, R4, R6, R7	Resistor 2,7 K ¼W
12	R3	Resistor 1,2K 1W and/or 1,2K 2W
13	R5	Resistor 330R 1W and/or 330K 2W
14	RA1	Resistor array SIL 8-4 4,7K
15	T71	DIL Contact strip R2.54
16	T72	DIL Contact strip R2.54

1.7 EG-Declaration of Conformity

EG-Declaration of Conformity for safety construction units

After appendix II of the guideline 2014/33/EU

Designation / Type:	Security circuit SIS16-101
Intended purpose:	Bypass of the Door- and bolt magnet
Year of construction:	2003
2014/33/EU	guideline
DIN EN 81-1: 2010-06 DIN EN 81-2: 2010-08 DIN EN 81-20: 2020-06 DIN EN 81-50: 2020-06	Safety rules for the construction and the installation of the person and freight elevators as well as small goods elevators
EN 12015	Electromagnetic compatibility Product family standart of elevators, escalators and of moving pavements – interference emission
EN 12016	Electromagnetic compatibility Product family standart of elevators, escalators and of moving pavements- noise immunity
73/23 EWG changed 93/6 EWG	Low tensionrule
Designated place of EG-Type of construction certificate	Inspector CERT-Certification place for elevators and of safety constructions units of Inspector Anlagentechnik GmbH, Kenn.No.00035
No. of EG-Type of construction-Inspection certificate:	Register-No. 968/A 120.03/22
Producer:	KW Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel

After appendix IV A of the guideline 2014/33/EU

Designation / Type:	Security circuit SIS16-101
Intended purpose:	Detection of unintended car movement away from the landing with the landing door not in the locked position and the car door not in the closed position, as a part of protection of unintended car movement.
Year of construction:	2011
2014/33/EU	guideline
DIN EN 81-1: 2010-06 DIN EN 81-2: 2010-08 DIN EN 81-20: 2020-06 DIN EN 81-50: 2020-06	Safety rules for the construction and the installation of the person and freight elevators as well as small goods elevators Part2: Electrically claimant person, freight elevators and Hydraulically claimant person and freight elevators
Designated place of EG-Type of construction certificate	Inspector CERT-Certification place for elevators and of safety constructions units of Inspector TÜV Thüringen e.V., Melchendorfer Straße 64, 99096 Erfurt
No. of EG-Type of construction-Inspection certificate:	Register-No. FT/16/0009/40 Rev.01
Producer:	KW Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel

Hereby we explain the component assembly SIS16-101 due to conceiving and construction mentioned above which to general protection requirements corresponds to the EEC elevator guideline 2014/33/EU. The manual is attached to the devices. The safety references are to be exactly read before employment of the equipment. Through with us this explanation their validity loses not coordinated changes.

Oberursel, den 07.04.2016



Hans-Werner Walbert
Geschäftsführer

Technischer Überwachungs-Verein Thüringen e.V. Zertifizierungsstelle für Aufzüge und deren Sicherheitsbauteile



Melchendorfer Str. 64
99096 Erfurt
Tel.: (0361) 42 83 0
Fax: (0361) 42 83 242
e-mail: info@tuev-thueringen.de

Anlage 1 zur EU-Baumusterprüfbescheinigung

Nr. der EU-Baumusterprüfung: FT/16/009/40 Rev.01

1 Anwendungsbereich

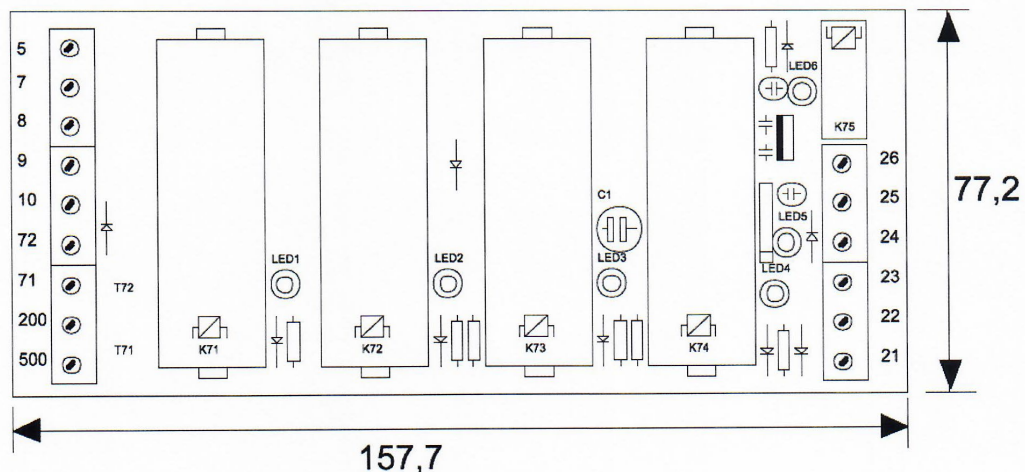
1.1 Die Sicherheitsschaltung SIS16-101 ist für den Einsatz in Aufzugsanlagen vorgesehen. Sie dient zur Detektierung des Verlassens der Entriegelungszone durch den Fahrkorb bei offener Fahrkorbtür. Bei Bewegungen des Fahrkorbes über die Entriegelungszone hinaus ist sie in der Lage eine Kette von Kontaktelementen zu öffnen.

1.2 Technische Daten:

Typ / Revisionsstand:	SIS16-101 / Version 116-D
Versorgungsspannung:	24V DC / 0,1A (Klemmen 200, 500)
Eingangsimpedanz:	> 510 Ohm (Klemmen 71, 72)
Ausgangsspannung:	0 - 250V AC (Klemmen 5, 7)
Ausgangsstrom:	< 4A (Klemmen 5, 7)
Betriebstemperatur:	0...+65°C
Schutzgrad:	IP 43 (durch Gehäuseschutzgrad sicherzustellen)
Montage:	auf Hutschiene im Gehäuse
Verzögerungszeit	21 ms

(Die Verzögerungszeit ist die Zeit welche zwischen Änderung des Signals am Eingang (Klemmen 71, 72) und der Änderung des Signals am Ausgang (Klemmen 5, 7) vergeht.)

2 Abmessungen und Aufbau



Technischer Überwachungs-Verein Thüringen e.V.
 Zertifizierungsstelle für Aufzüge und deren Sicherheitsbauteile
 Anlage 1 zur Baumusterprüfbescheinigung Nr. FT/16/009/40 Rev.01
 Seite 2 von 2



Relais- und Anzeigenelemente:	K71= Zonenrelais mit roter LED-Anzeige LED1 K72= Zonenrelais mit roter LED-Anzeige LED2 K73=Kontrollrelais mit roter LED-Anzeige LED3 K74=Startrelais Einfahrt/Nachregulieren mit roter LED-Anzeige LED4 K75=Bündigrelais mit roter LED-Anzeige LED 6 LED Status= Farbe Grün, Kontrollanzeige LED 5
Abmessungen (mit Schale):	(Länge x Breite x Höhe) 157,7mm x 77,2mm x 65,0mm
Gewicht:	Ca. 700 Gramm
Spannungsversorgung:	Klemmen 5,7 - 250V AC / 4A Klemmen 71,72 - +24V DC / 50mA Klemmen 200 - +24V DC / 100mA Klemmen 24 - +12V bis +24V DC / 250mA Notstromquelle Akku Klemmen 26 - +12V bis +24V DC / 250mA Bündiganzeige
Schaltzyklen:	Ca. 1.000.000 Schaltspiele
Schutzgrad	IP 43
Umgebungstemperatur:	0 bis +65 °C
Reaktionszeit vom Verlassen der Zone bis zum Abfall der Hauptschützes	Worst-Case: 0,021 Sekunden

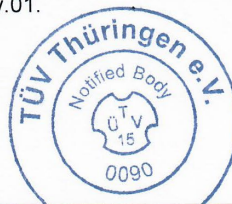
3 Bedingungen

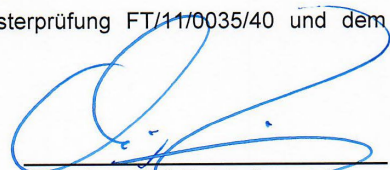
- 3.1 Das Bauteil SIS16-101 stellt nur einen Teil (Detektor) der Schutzeinrichtung gegen unbeabsichtigte Bewegungen des Fahrkorbes bei offenen Türen dar. Erst in Verbindung mit weiteren Bauteilen, welche ebenfalls EU-Baumustergeprüft sein müssen, ist das Gesamtsystem geeignet die Anforderungen an eine Schutzeinrichtung nach DIN EN 81-20:2020-06, Pkt. 5.6.7 zu erfüllen.
Die Eignung der Gesamtschutzeinrichtung bedarf einer eigenen Prüfung.
- 3.2 Das Sicherheitsbauteil ist mit einem Typenschild mit folgenden Mindestangaben zu versehen:
 - a) der Name des Herstellers der Schutzeinrichtung,
 - b) die Nummer der EU-Baumusterprüfbescheinigung,
 - c) der Typ der Schutzeinrichtung.
- 3.3 Der Montagebetrieb hat eine Prüfanweisung zu erstellen und ggf. notwendige Hilfsmittel bereitzuhalten um eine gefahrlose Prüfung (z.B. bei geschlossenen Türen) zu gewährleisten.
- 3.4 Die Montage der Signalgeber muss in der Entriegelungszone erfolgen.
- 3.5 Die korrekte Installation und Funktion ist wiederkehrend zu überprüfen.

4 Hinweise

- 4.1 Die Baumusterprüfung umfasst nur die Teile der Anforderungen aus DIN EN81-20:2020-06, Pkt. 5.6.7 welche sich mit der Detektion der unbeabsichtigten Bewegung befasst. Sie ist keine Baumusterprüfung für das Gesamtsystem "Schutzeinrichtung gegen unbeabsichtigte Bewegung des Fahrkorbes".
- 4.2 Die Baumusterprüfbescheinigung darf nur zusammen mit dieser Anlage verwendet werden.
- 4.3 Dem Bauteil SIS16-101 ist die Betriebsanleitung mit Angaben zur Montage, Inbetriebnahme und Prüfung sowie eine Kopie der Baumusterprüfbescheinigung beizugeben.
- 4.4 Die EU-Baumusterprüfung basiert auf der freiwilligen Baumusterprüfung FT/11/0035/40 und dem Bewertungsbericht FT/16/009/40 Rev.01.

Zella-Mehlis, 08.04.2021
 Ort, Datum




 Dipl.-Ing. (FH) Reichelt
 Leiter der Zertifizierungsstelle

Sie wurden betreut durch:
 Hauptgeschäftsstelle:
 LP_NB-L_ZP_006_ZERT_2016_03_Anlage BMP Sicherheitsbauteil

Service-Center Südthüringen, Am Köhlersgehäu 58, 98544 Zella-Mehlis, Tel.-Nr.: 03682 4528
 TÜV Thüringen e. V. Melchendorfer Straße 64, 99096 Erfurt,
 E-Mail: info@tuev-thueringen.de, Internet: www.tuev-thueringen.de

Seite 2 von 2

Anlage 1 EU-BMP-16-009-40 rev01-SIS16-101.doc

1.9 Construction inspection certificate, safety certificate TÜV Rheinland

Certificate



Nr./No.: 968/A 120.03/22

Prüfgegenstand Product tested	Elektrische Sicherheitseinrichtung in Form einer Sicherheitsschaltung Electric safety device in the form of a safety circuit	Zertifikats- inhaber Certificate holder	KW Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel Germany
Typbezeichnung Type designation	SIS16-101 (als Bestandteil des Prozessorsystems DAVID 2003) (as part of the processor system DAVID 2003)		
Prüfgrundlagen Codes and standards	EN 81-20:2020, 5.11.2.3	EN 81-50:2020, 5.6 + 5.15	
Bestimmungsgemäße Verwendung Intended application	Einsatz in Personen- und Lastenaufzügen: - Überwachung des Einfahrens, Nachstellens und von vorbereitenden Maßnahmen gemäß EN 81-20, 5.12.1.4 a). Use in passenger and goods passenger lifts: - Check on levelling, re-levelling and preliminary operations acc. to EN 81-20, 5.12.1.4 a).		
Besondere Bedingungen Specific requirements	Die Hinweise in der zugehörigen Betriebsanleitung sowie der Anlage zu diesem Zertifikat sind zu beachten. The instructions of the associated Operating Manual as well as the annex to this certificate shall be considered.		
Gültig bis / Valid until 2027-04-26			

Der Ausstellung dieses Zertifikates liegt eine Evaluierung entsprechend dem Zertifizierungsprogramm CERT FSP5 V1.0:2017 in der aktuellen Version zugrunde, deren Ergebnisse im Bericht Nr. 968/A 120.03/22 vom 12.04.2022 dokumentiert sind. Dieses Zertifikat ist nur gültig für Erzeugnisse, die mit dem Prüfgegenstand übereinstimmen.

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP5 V1.0:2017 in its actual version, whose results are documented in Report No. 968/A 120.03/22 dated 2022-04-12. This certificate is valid only for products, which are identical with the product tested.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln

Köln, 2022-04-26

Certification Body Safety & Security for Automation & Grid


Dipl.-Ing. Gebhard Bouwer

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Genau. Richtig.

26.04.2022

Anlage zum Zertifikat Nr. 968/A 120.03/22 vom 26.04.2022

1. Komponente	Sicherheitsschaltung als Bestandteil des Prozessorsystems DAVID 2003																
2. Hersteller	KW Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel																
3. Typbezeichnung / Baugruppe	SIS16-101																
4. ID-Nr. / Kennzeichnung auf der Komponente	968/A 120.03/22 (Sicherheitsschaltung ist kompatibel mit 01/208/FWB/B/0306-1584 und 968/A 120.00/17)																
5. Anwendungsbereich	Anwendung bei Personen- und Lastenaufzügen																
6. Bestimmungsgemäßer Gebrauch / Bestimmungsgemäße Verwendung	Sicherheitsschaltung gem. EN 81-20, 5.11.2.3 zum Einsatz an Stelle von zwangsöffnenden Sicherheitsschaltern zur Überbrückung der Tür- und Sperrmittelschalter während des Einfahrens, Nachstellens und von vorbereitenden Maßnahmen gem. EN 81-20, 5.12.1.4 a).																
7. Nenndaten	<table border="0"> <tr> <td>Ausgangsspannungsbereich (Klemmen 5, 7):</td> <td>0 - 250 V AC</td> </tr> <tr> <td>Ausgangsstrom (Klemmen 5, 7):</td> <td>< 4 A</td> </tr> <tr> <td>Versorgungsspannung der SIS16-101 (Klemmen 200, 500):</td> <td>24 V DC / 0,1 A</td> </tr> <tr> <td>Eingangsimpedanz (Klemmen 200, 500):</td> <td>> 510 Ohm</td> </tr> <tr> <td>Verschmutzungsgrad:</td> <td>3</td> </tr> <tr> <td>Werkstoffgruppe:</td> <td>III</td> </tr> <tr> <td>Schutzgrad¹:</td> <td>IP 43</td> </tr> <tr> <td>Betriebstemperatur:</td> <td>0...+65°C</td> </tr> </table> <p>Weitere technische Daten entsprechend der Betriebsanleitung für die Baugruppe SIS16-101 der Fa. KW Aufzugstechnik GmbH.</p>	Ausgangsspannungsbereich (Klemmen 5, 7):	0 - 250 V AC	Ausgangsstrom (Klemmen 5, 7):	< 4 A	Versorgungsspannung der SIS16-101 (Klemmen 200, 500):	24 V DC / 0,1 A	Eingangsimpedanz (Klemmen 200, 500):	> 510 Ohm	Verschmutzungsgrad:	3	Werkstoffgruppe:	III	Schutzgrad ¹ :	IP 43	Betriebstemperatur:	0...+65°C
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Schutzgrad ¹ :	IP 43																
Betriebstemperatur:	0...+65°C																
8. Wartung	Die korrekte Funktion ist regelmäßig zu überprüfen.																
9. Installation	<ul style="list-style-type: none"> - Die Vorgaben in der Betriebsanleitung für die Installation, die Inbetriebnahme sowie den Betrieb der Sicherheitsschaltung sind zu beachten. - Bei der Installation sind die relevanten nationalen Bestimmungen und die EN 81-20 einzuhalten. - Die Zuleitungen zu den Sensoren (z.B. Zonenschalter) sowie der Ausgangskreis sind kurzschlussicher auszuführen. - Durch Wahl eines geeigneten Einbauorts muss sichergestellt sein, dass Umwelteinflüsse wie z.B. Wasser, leitfähige Stäube und Betauung keine negativen Auswirkungen auf die Funktion der Sicherheitsschaltung haben. 																
10. Besondere Bedingungen	<p>Im Rahmen der Erstinbetriebnahme und der wiederkehrenden Prüfungen des Aufzugs sind folgende Überprüfungen durchzuführen:</p> <ul style="list-style-type: none"> - Prüfung der Hardwareversion, - Prüfung der korrekten Installation, - Prüfung der Sicherheitsfunktion der Sicherheitsschaltung gemäß Betriebsanleitung – Kapitel 2.4 Funktionsprüfung – Einfahrt mit offener Tür / Nachregulierung. 																

¹ Durch Gehäuse / Schaltschrank zu gewährleisten.

2022-04-26

Annex to Certificate No. 968/A 120.03/22 dated 2022-04-26

1. Component	Safety circuit as part of the processor system DAVID 2003																
2. Manufacturer	KW Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel Germany																
3. Type designation / Component	SIS16-101																
4. ID-No. / Marking on the component	968/A 120.03/22 (safety circuit is compatible with 01/208/FWB/B/0306-1584 and 968/A 120.00/17)																
5. Area of application	Use in passenger and goods passenger lifts																
6. Intended use / Intended application	Safety circuit acc. to EN 81-20, 5.11.2.3 to be used instead of positively opening safety switches for bypassing of the door and the locking element switches during levelling, re-levelling and preliminary operations acc. to EN 81-20, 5.12.1.4 a).																
7. Characteristics	<table border="0"> <tr> <td>Output voltage range (terminals 5, 7):</td> <td>0 - 250 V AC</td> </tr> <tr> <td>Output current (terminals 5, 7):</td> <td>< 4 A</td> </tr> <tr> <td>Supply voltage of the SIS16-101 (terminals 200, 500):</td> <td>24 V DC / 0,1 A</td> </tr> <tr> <td>Input impedance (terminals 200, 500):</td> <td>> 510 Ohm</td> </tr> <tr> <td>Pollution degree:</td> <td>3</td> </tr> <tr> <td>Material group:</td> <td>III</td> </tr> <tr> <td>Protection degree²:</td> <td>IP 43</td> </tr> <tr> <td>Operating temperature:</td> <td>0...+65°C</td> </tr> </table> <p>Further technical data according to the operating manual for the component SIS16-101 of company KW Aufzugstechnik GmbH.</p>	Output voltage range (terminals 5, 7):	0 - 250 V AC	Output current (terminals 5, 7):	< 4 A	Supply voltage of the SIS16-101 (terminals 200, 500):	24 V DC / 0,1 A	Input impedance (terminals 200, 500):	> 510 Ohm	Pollution degree:	3	Material group:	III	Protection degree ² :	IP 43	Operating temperature:	0...+65°C
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Pollution degree:	3																
Material group:	III																
Protection degree ² :	IP 43																
Operating temperature:	0...+65°C																
8. Maintenance	The correct operation has to be checked periodically.																
9. Installation	<ul style="list-style-type: none"> - The instructions in the operating manual for the installation, commissioning and the operation of the safety circuit have to be considered. - The relevant national regulations and the EN 81-20 have to be followed during installation. - The wiring of the sensors (e.g. zone signals) as well as the output circuit shall fulfil the requirements for short-circuit proof. - By selection of an appropriate installation space it has to be ensured, that environmental influences like water, conductive dusts and condensation have no negative effect on the operation of the safety circuit. 																
10. Particular conditions	<p>In line with the initial operation and the recurring checks of the lift the following checks have to be performed:</p> <ul style="list-style-type: none"> - Check of the hardware version, - Check of the correct installation, - Check of the safety function of the safety circuit acc. to the operating manual – chapter 2.4 'Funktionsprüfung – Einfahrt mit offener Tür / Nachregulierung'. 																

² To be ensured by housing / enclosure.

2.0 Transport / Assembly / Start up

2.1 Transport and storage, assembling instructions

The protection circuit SIS16-101 is to be protected before inadmissible demand in the case of transport and handling. The contact of electronic elements and contacts is to be avoided.

Electrical components may not be damaged or destroyed mechanically. Clamping procedures at the strips may be accomplished only with tension-free equipment.

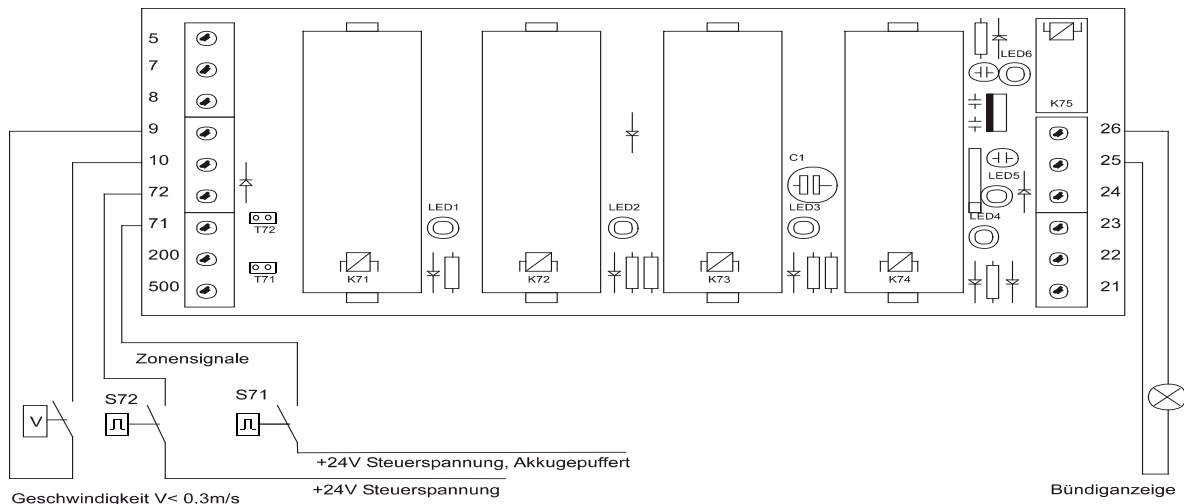
All leading connections lead also after switching off still tension until the condensers unloaded themselves (approx. 5 min). Lager dusty condition, penetration of water , high concentration of chemically active pollutants, danger of fungus growth or penetration of parasites endanger safe enterprise of the complete system. Therefore the protection circuit SIS16-101 must be built into a switchgear cabinet. The ambient temperature must be in a range between 0°C and + 65°C.

2.2 Connection of Component assembly



Never work under mains voltage – Danger of life!

Before you begin work on the protection circuit SIS16-101, **interrupt voltage supply** by main switches and the appropriate safety devices and secure you against **erroneous restarting!** Survey the supply lines for **tension free!** Neighbouring clamps and components, which could be energized must be covered!



Terminal	Function	
5 and 7	- Evasion door and check central switch	An independent switching element for the zone, also known as a zone switch, can be a magnetic switch, a Hall switch, a fork light barrier, an inductive switch, a capacitive switch, a roller switch ..., a "sensor" that detects a zone according to the state of the art may be. A zone can also be output via an absolute position measuring system in cooperation with the control computer. In interaction with one of the switching elements described above (S71 via discrete switching element, S72 via absolute encoder & control computer output), this results in a higher level of security than the use of switches of the same type (avoidance of system errors). In order to guarantee a perfect speech regulation we are talking about zone sensors (devices) which generate a zoom signal!
8	- Entrance running-in and releveling	
9 and 10	- Stud or contact V < 0.3m/s	
71	- Zone switchers S71	
72	- Zone switchers S72	
200	- Connection +24V DC Control voltage	
500	- Connection 0V DC GND	
21	- Output +24V DC Zones signal	
22	- Control exit +24V DC	
23	- Negative pole of the source of emergency power	
24	-Positive pole of the source of emergency power +12V to +24V DC	
25	- Positivel concise announcement	
26	- Negativel concise announcement	

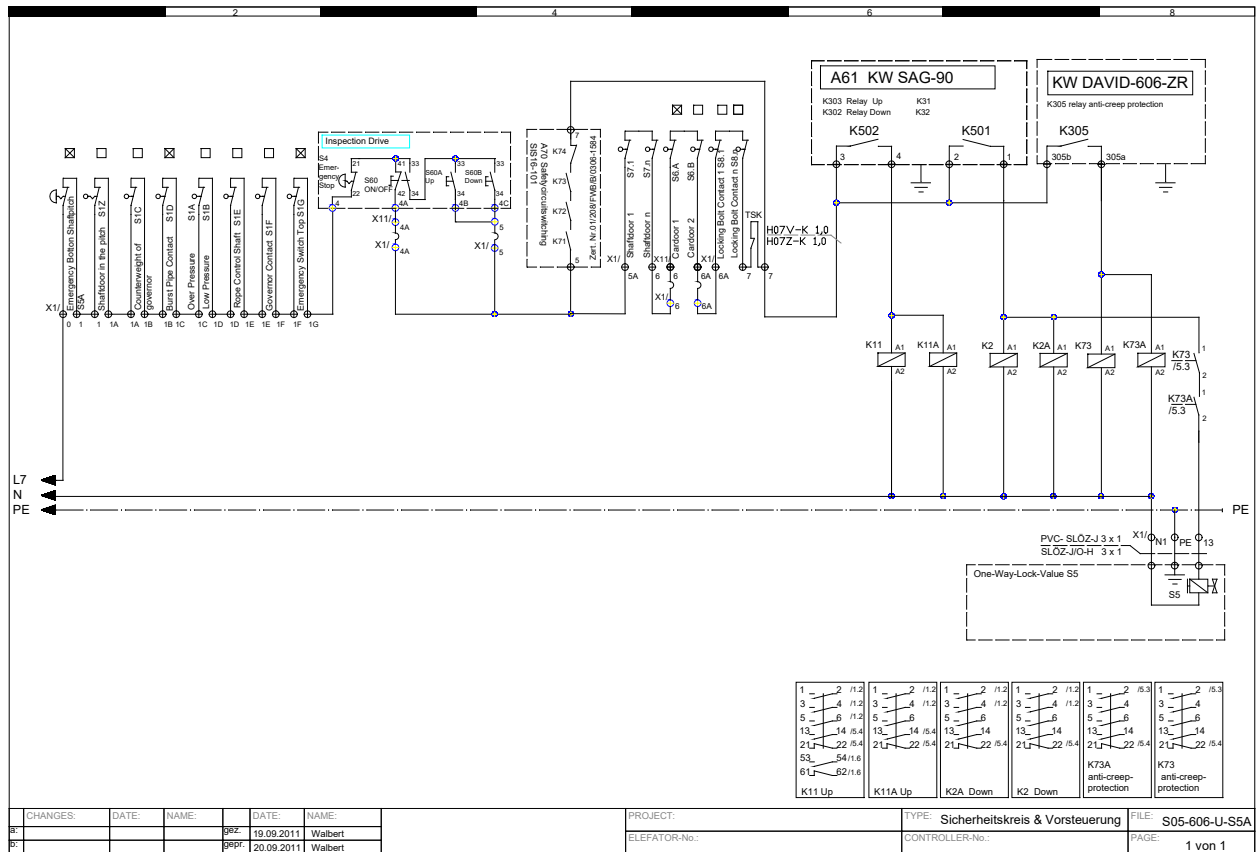
Together with the operating instructions SIS16-101-V115-D from March 25, 2018, the input terminals S71 and S72 were changed for one another. If a SIS16-101 is used as a spare part, pay attention to the terminal designation of the original SIS16-101 that is to be replaced and, if necessary, adapt the wiring!

For the safe function of the SIS16-101, the zone sensors S71 and S72 must be fed from the same voltage source, i.e. both have the same ground reference to terminal 500 - 0V DC control ground.

2.3 Connecting the assembly instructions after EN81-20:2020-06

Principle is to prevent external voltages to prevent a drop in the up-and down-contactors and the braking element, despite safety circuit interruption.

An example is shown in the drawing below, the safety circuit of a hydraulic elevator system with control of up-and down-contactors, as well as controlling a one-way lock valve.



As mentioned above, the one-way lock valve from the safety circuit is powered. When the safety circuit is interrupted, the one-way lock valve closes immediately.

The wiring inside the cabinet is done with H07V-K, or K-H07Z white with 1mm² cable wiring in color according to company standard KW Aufzugstechnik GmbH.

Cables are routed in cable-conduits.

The terminal connections on the control unit A61 SAG-90 and the control unit ZR-DAVID D606 is observed exactly.

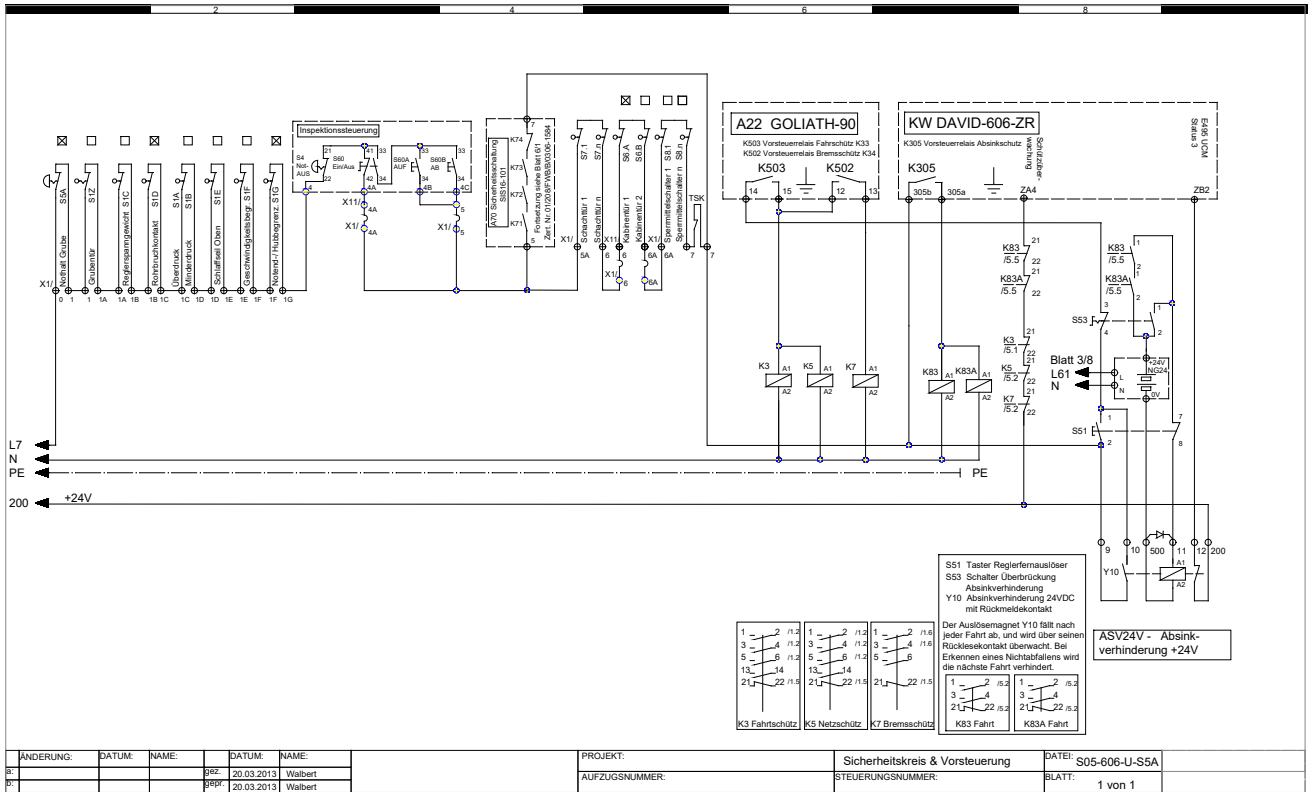
The output terminals 4 on the contactors K11 / K11A, or the output terminals 1 for the down-contactor from K2 / K2A, or the output terminals 305a limits for anti-creep protection contactors K73 / K73A from 3 sides at ground potential, due to trace routing, or down to ground metal housing.

External voltage > = 230 lead directly to a metal housing parts to trigger the circuit breakers for safety.

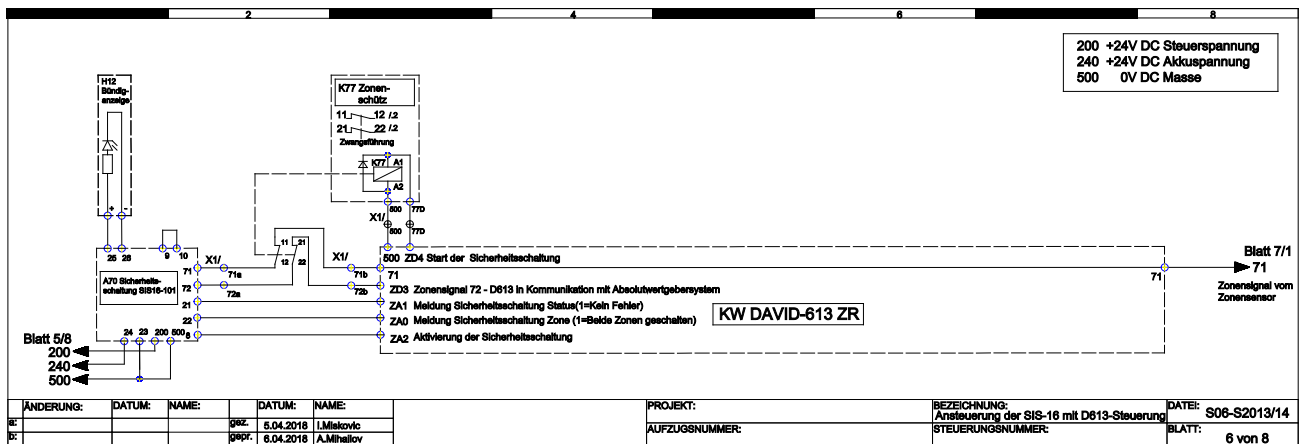
According to the switching contacts of the contactors wiring leads to the terminals of the one-way lock valve.

When connecting PVC pipe SLÖZ-J 3 x 1mm² or SLÖZ-J/OH 3 x 1mm² is used. The valve must be grounded on the PE wire.

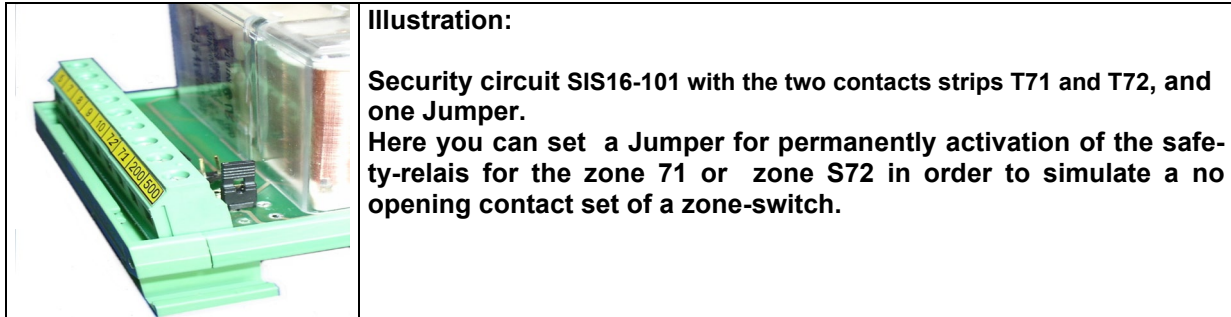
Similarly, the design for a rope-frequency-controlled system with a creep protection at the speed limiter. As soon as the safety circuit is interrupted, the contactors K83 and K83A drop out, as a result of which the solenoid of the fall-prevention device becomes current-free and drops. The contactors K83 and K83A are integrated in the chain of contactor monitoring.



Wiring of the SIS16-101 safety circuit for DAVID-613 processor controllers is the same for cable and hydraulic controls. The example circuit diagram below should be noted:



2.4 Functional test – Bypass of the Door- and bolt magnet



Definition

An independent switching element for the zone, also referred to as a zone switch, may be a magnetic switch, a Hall switch, a forked light barrier, an inductive switch, a capacitive switch, a roller switch, a "sensor" which according to the prior art can detect a zone, Likewise, a zone can be output via an absolute position measuring system in cooperation with the control computers. In conjunction with one of the switching elements described above (S71 via discrete switching element, S72 via absolute value encoder & control computer output), this results in a higher level of safety. In order to guarantee a perfect speech regulation we talk about zone sensors (devices), which generate a zone signal!

General

The zone switches S71 and S72 are installed after the defaults in the solenoid plan and the switching contacts are closed, i. E. the car is within the zone range.

Experation

Give a call to any floor and keep you closed with the start of the car the zone switch to S71. In addition you push a Jumper over the upper Dil-contact strip T71 with the clamp 71.

At the entry into the finish level now no bypass of the door contacts and the check central switch take place. The green LED „status“ does not shine any longer and the next trip remains closed.

Procedure for systems with external Servicepanel

Give you a call in any floor and hold it at the start of the car closed the zone switch S71. This is the terminal to 71 to 200 bridges.

At the entrance to the destination floor now takes no bridging de door contacts and the locking means switch instead. In the HPG, the error message "F92 – safety circuit".

Properties

With elevators with hydraulic drive and adjusted sinking trip an error of the protection circuit 16-101 leads not to an immediate blockage during the next trip, but only after the emergency sinking and reaching the sinking level. With rope elevator plants the reaction is adjustable in the menu production circuit.

Unblocking

Ater you removed the Jumper over the Dil contact strip T71 you must switching off and on the controller. The accumulator buffering must be interrupted however likewise at short notice(to take off emergency powe akkus).

Repetition

The same procedure must be repeated now for the zone switch S72. Therefore the Dil contact strip T72 is to you at the disposal. The further operational sequence the reaction as well as the unblocking is an equivalent procedure.



Attention!

Remote the put Jumper in any case after the functional test!

Functional test – Detection of an unintended car movement EN 81-20:2014-11**To initiate the journey from the zone, note the following:**

- 1.) Stopping the elevator car flush with the bottom landing (top stop) .
- 2.) Turning the Return Motion Drive -> Close the doors.
- 3.) Function "UCM-zone drive" in the TÜV Menue-C416 activate
- 4.) Return Motion Drive UP (DOWN), until the security circuit SIS16-101 interrupt.
- 5.) Open the shaft door and measure the stopping distance.
- 6.) Close the shaft door
- 7.) In the **C0 RESET menu** error „F60 A3-case“ reset
- 8.) Cabin with Return Motion Drive downwards (top down) drive.
- 9.) Return Motion Drive off -> door opens -> normal operation
- 10.) Repeated process for the top stop on your way down zone -> () note entries!

General

According to the new standard **EN 81-20: 2014-11** "protection of unintended car movement away from the landing with the landing door not in the locked position and the car door not in the closed position" the car must leave the door zone and must come to a halt within the legal stopping distance.

As a worst-case scenario here, the "Motor-driven exit" door opener in the zone with acceleration values of the normal operation is considered.

Basically, the simulation of the process never done with an open door!

To facilitate this, a separation in the control terminal, is available a Relay "K69", the safety circuit of the door lock of SIS16-101 / feedforward separates drive contactors in the simulation case. In order to allow the elevator to the start of the journey, is a software function in TÜV menu of the control computer of the series D606, D912 and D2005 activates the security circuit for a drive, so that the drive and braking elements contactors are energized until they leave the zone. After leaving the zone, the drive is disconnected and so the car comes to a stop. You can now open the landing door with the emergency release and determine the stopping distance, based on the hatch door to the cabin doorway clamp.

Experation

The elevator car is parked in the lowest landing floor and turned on the Return Motion Drive. This will be the landing and car door closed and a Call input over indoor and outdoor control is suppressed.

Please listen in with the local intercom in the cabin, if there are people in it. You can take the handheld terminal HPG-60 in the control computer to the TÜV menu 416th UCM-zone drive. The UCM-zone drive is set to ON. Now you can start with the Return Motion Drive Switch UP holt the drive, which ends when you leave the zone. Automatically increase the speed to rated speed and the acceleration was increased to 100% (in conjunction with GOLIATH inverter).

The stopping distance is displayed in mm on the display. The system is locked with the error "F60 A3-case". Optionally, you can open the Landing door chess with the emergency release and measure the stopping distance (Chess doorway to the cabin door threshold).

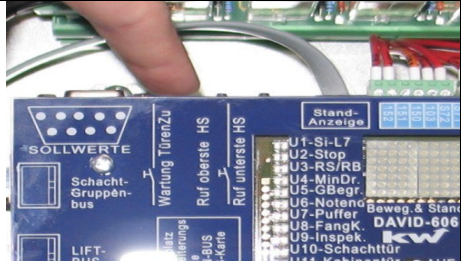
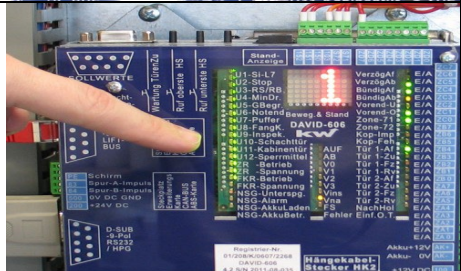
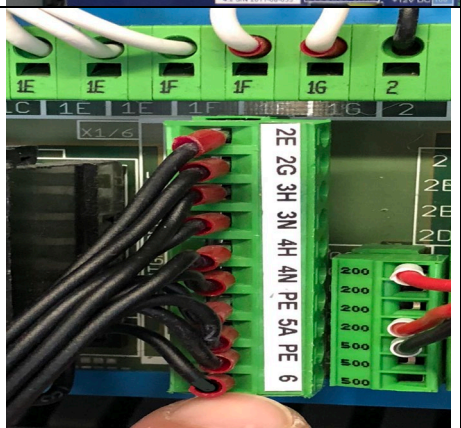

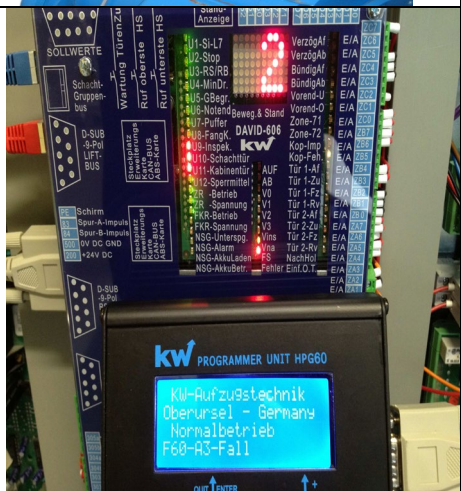
After re-closing the landing door and turning off the safety circuit fuse F7. Before switching on the safety fuse F7 in the circuit, **C0 RESET menu** must be reset the A3 error then you can drive with the Return Motion Drive Switch DOWN, the elevator car in the lowest station.

Repetition

The same process must now be repeated for the top stop. Therefore, the elevator car at the top station is placed flush with the zone and performs way down.

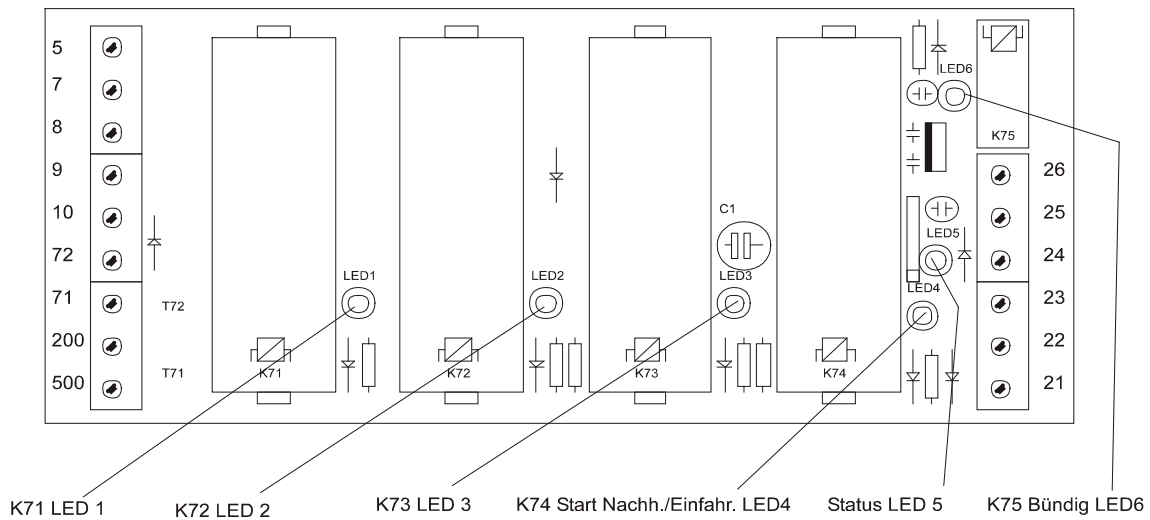
2.6 Functional test – Mech. Brake-Opening in landing and the car door is not in the closed position EN 81-20: 2014-11

According to the new standard EN 81-1:1998 + A3: 2009 resp. EN 81-2:1998 + A3: 2009 “protection of unintended car movement away from the landing with the landing door not in the locked position and the car door not in the closed position” the car must leave the door zone and must come to a halt within the legal stopping distance. **Basically, the simulation of the process never done with an open door!**

	<p>1.) Stopping the elevator car aligned in a middle floor.</p>
	<p>2.) Listening-with the phone, if there are people in the elevator car.</p> <p>3.) If there any persons, then push the service-button on the upper left of the central unit D606/ D613/ D2005 to close the doors.</p> <p>4.) All the doors are closed, when all the LED lights are green of the Safety-Circuit-Positions U1 to U12!</p> <p>5.) Switch off the landing control via the switch S36 in the service panel in right position.</p>
	<p>6.) Please switch off the fuse F7 of Safety-Circuit.</p> <p>7.) Please put away the wire X1/6 Number 6.</p> <p>8.) Please isolate the wire!</p> <p>9.) Please switch on the fuse F7 of Safety-Circuit.</p> <p>10.) Now the LEDs are red for the Safety-Circuit-Positions of the doors, but in reality are the doors closed!</p>
	<p>11.) Mechanical press brake lever until the safety circuit SIS16-101 interrupts the journey when leaving the zone, or at a safety device with anti-creep until the catch engages.</p>
	<p>12.) The Communicator HPG-60 shows the error F60 A3 case. The elevator system is locked!</p> <p>13.) Please open the shaft door and possibly measure the stopping distance. Then close shaft door again.</p> <p>14.) Please switch off the fuse F7 of Safety-Circuit.</p> <p>15.) Please put in the wire X1/6 with the designations 6.</p> <p>16.) Please switch on the fuse F7 of Safety-Circuit.</p> <p>17.) Reset the error "F60 A3-case" in the C0-RESET menu.</p> <p>18.) Switch on the landing control via the switch S36 in the service panel in right position.</p>

3.0 Fault clearance

3.1 Switching status of the Component assembly SIS16-101



The following table shows the possible switching status of the relays K71, relays K72 and relay K73 by the assigned LEDs. The „0“ means that the relay is not active and from there the LED does not shine. Turned around „1“ means an active relay and a shining LED.

K71	K72	K73	Condition	Door and check central switch bridge
0	0	0	Error	-
0	0	1	Outside of the zone range	-
0	1	0	Error	-
0	1	1	Error	-
1	0	0	Error	-
1	0	1	Error	-
1	1	0	Car door in zone range	Yes
1	1	1	Error	-

Risk analysis

Construction	Error response	Consequence
Relay K71	Relay stay energized	K73 cannot energize, thus K72 cannot energize; The door bypass circle between clamp 5 and 7 can be never closed -> safe condition!
Relay K71	Relay never energize	The door bypass circle between clamp 5 and 7 can be never closed -> safe condition!
Relay K72	Relay stay energize	K73 cannot energize, thus K71 cannot energize; The door bypass circle between clamp 5 and 7 can be never closed -> safe condition!
Relay K72	Relay never energize	The door bypass circle between clamp 5 and 7 can be never closed -> safe condition!
Relay K73	Relay never energize	K71 cannot energize, thus K72 cannot energize; The door bypass circle between clamp 5 and 7 can be never closed -> safe condition!

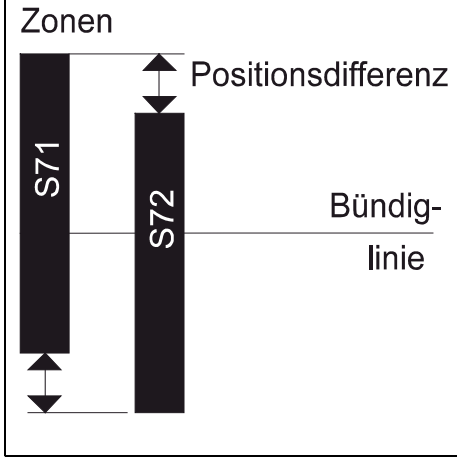
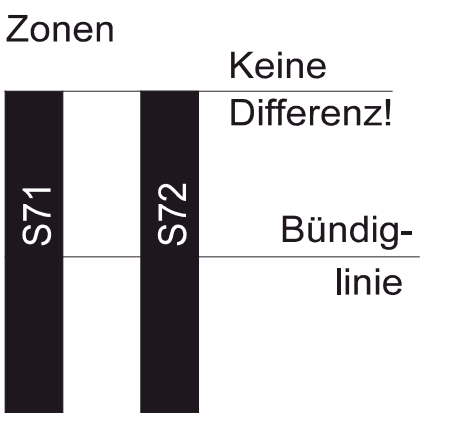
Table1: Error exclusions after EN81-50 of the used construction units

3.2 Fault clearance

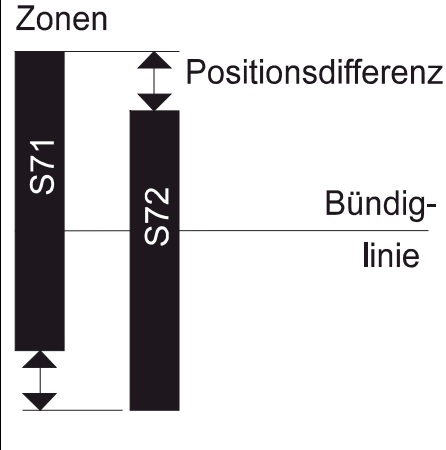
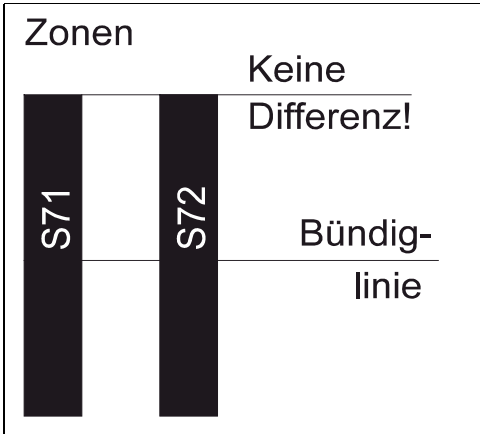
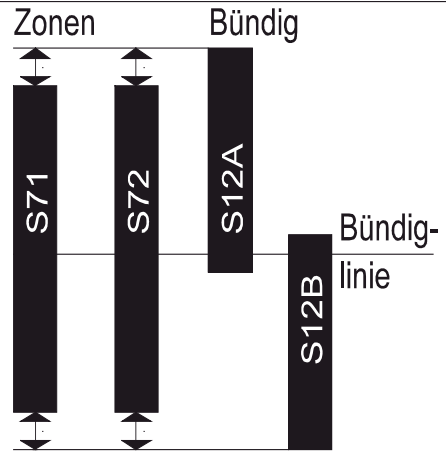
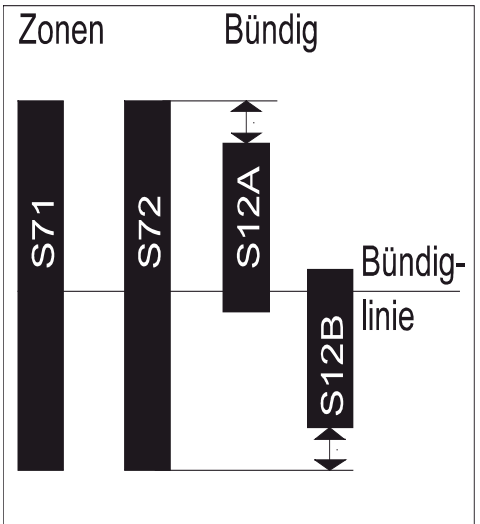
In the microprocessor system DAVID-2001/2003 an error memory with a depth of 100 possible entries exists. You find the handling of the microprocessor system in the technical manual. On the basis the entry in the error memory and announcement of the **LED from K71,K72,K73** and of the **status LED** can be made an exact fault-tracing.

Definition

An independent switching element for the zone, also referred to as a zone switch, may be a magnetic switch, a Hall switch, a forked light barrier, an inductive switch, a capacitive switch, a roller switch, a "sensor" which according to the prior art can detect a zone, Likewise, a zone can be output via an absolute position measuring system in cooperation with the control computers. In conjunction with one of the switching elements described above (S71 via discrete switching element, S72 via absolute value encoder & control computer output), this results in a higher level of safety. In order to guarantee a perfect speech regulation we talk about zone sensors (devices), which generate a zone signal!

Visualization by the status LED-> Green LED does not shine!		
Error	Error causes	Error correction
F36 Releveling – range leave & F89 DSK – No Zone	One the zone sensors, and/or all two zone sensors are defective.	Fairs of the tension at the inputs 71 and 72. Is the connection of the zone signals correct? Exchange of the defective zone sensors.
F36 Releveling – range leave & F89 DSK – No Zone	Position and situation of the magnets, switch distance	Control on the basis the magnet plan the situation of the magnets up <ul style="list-style-type: none"> - Covering of magnet & Switch - Polarity of the magnets(North & South) - Distance between magnet & switch - Correct sequence of the magnets
F89 DSK – No Zone	There is a position difference with the zone signals: 	The two zone signals must sit on the same height. The range of the tolerance amounts to max. 300ms! 

Visualization by the status LED-> Green LED shine!		
Error	Error causes	Error correction
F36 Releveling – range leave & F89 DSK – No Zone	One the zone switchers, and/or all two zone switchers are defective.	Fairs of the tension at the inputs 71 and 72. Exchange of the defective zone switchers.
F36 Releveling – range leave & F89 DSK – No zone	Position and situation of the magnets, switch distance	Control on the basis the magnet plan the situation of the magnets up <ul style="list-style-type: none"> - Covering of magnet & Switch - Polarity of the magnets(North & South) - Distance between magnet & switch - Correct sequence of the magnets
F36 Releveling- rance leave & F89 DSK – No zone	Defective information lines between DAVID-613 ZR and of the protection circuit SIS16-101	Examine they clamps 8, 21 and 22 for tightness and their lines for soundness.

<p>F89 DSK – No zone</p>	<p>There is a position difference with the zone signals:</p> 	<p>The two zone signals must sit on the same height! The range of the tolerance amounts to max. 300ms!</p> 
<p>F36 Releveling- range leave</p>	<p>The concise signals 12B & 12B are before the zone signals 71 & 72</p> 	<p>The zone signals 71 & 72 must come before the concise signals 12B & 12B !</p> 
<p>F89 DSK – No zone</p>	<p>The zone is over-drives</p>	<p>Control please the following attitude on the regulation:</p> <ul style="list-style-type: none"> - Entry speed V0 too highly? - Switching off way too briefly? - Bringing in ramp increase!
<p>F36 Releveling- range leave</p>	<p>With the Releveling the zone range will leave.</p>	<p>Control please the following attitude on the regulation:</p> <ul style="list-style-type: none"> - Releveling speed degrade!

4. Maintenance/ Repair/ Disposal of the Component assembly

Maintenance

The cleaning of the protection circuit SIS16-101 is only with halogeneous-free and dry substances permissible. Examine with each maintenance the c-clamps for their fixity. With each maintenance you must drive through one „**Functional test of the Component assembly**“. You find the discription in **chapter 2.3**



Never work under mains voltage – Danger of life!

Before you begin work on the protection circuit SIS16-101, **interrupt voltage supply** by main switches and the appropriate safety devices and secure you against **erroneous restarting!**

Survey the supply lines for **tension free!**

Neighbouring clamps and components, which could be energized must be covered!

Repair of the Component assembly

Defective protection circuits SIS16-101 can be repaired only by the manufacturer since it acts over safety components assembly. Therefore you return defective components assembly to the manufacture.



Never work under mains voltage – Danger of life!

Before you remove and/or dismantle the protection circuit consider the safety and assembling instructions from chapters 1.3 and 2.2!

Waste management of the Component assembly

The company KW Aufzugstechnik GmbH takes old devices back when delivery to KW Aufzugstechnik-Werk Oberursel is free of charge.

With user disposal and with the exchange of components the regionally in each case valid waste treatment and disposal regulations for spezial refuse is to be considered.

The company KW Aufzugstechnik GmbH does not take over adhesion for duly not disposed of construction units and components.