

OPERATING INSTRUCTIONS

BRAKE-UNIT BG90-101



Functions

Start-Up Instructions



KW Aufzugstechnik GmbH Brake Unit BG90-101 Version V1.08 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 2006/95/EU
- Guideline 2014/33/EU
- EN81-20:2020 and EN81-50:2020
- EN12015:2005
- EN12016:2009

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 handling of the safety assembly group is familiar.

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 Brake-Unit BG90-101, **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

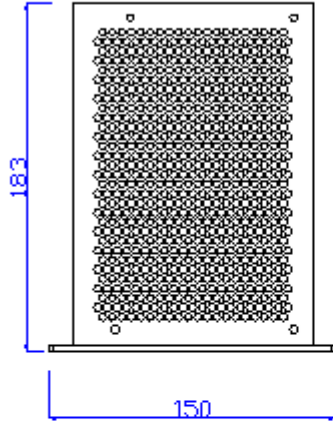
Product-Letter		
Name:	BG90-101	
Manufacturer:	KW-Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel Germany	
Function:	Circuit for the safe interruption of the energy flow to the electromechanical elevator brake without the use of brake contactors.	
Features:	Input-Voltage: 230VAC Control-Voltage-Safety-Circuit: 230VAC Output-Voltage: 50..200VDC Power-Output: 600W	
Use:	Control of the braking element for synchronous and asynchronous drives for traction systems	
Relayelements:	REL1 & REL2 = Message-relay for Monitoring contactor	
Dimensions (with basin):	(Length x Bright x High) 150,0 mm x 69,0 mm x183,0 mm	
Weight:	~ 1200 Gramm	
Terminal J1: Powersupply	Terminal L Terminal N Terminal PE	230VAC / 4,0A 0VAC Neutral Earth
Terminal J2: Control- & Monitoring Terminals	Terminal N1 Terminal LT Terminal LB Terminal PE Terminal SÜ1 Terminal SÜ2	0V AC Monitoring Neutral 230VAC / 20mA 230VAC / 10mA Erde +24V DC / 50mA +24V DC / 50mA
Terminal J3: Output Voltage	Terminal BR+ Terminal BR-	200V DC / 3A 0V DC erth
Switching Cycles:	1.000.000 Switching Cycles	
Protective Class:	I	
Pollution Degree:	Pollution level III	
Ambient temperature:	0 to +45 °C	

Due to EMC requirements, the complete circuit board is installed in a closed metal housing, which also ensures cooling and protection against accidental contact.
An accredited EMC laboratory has verified the compliance with the interference radiation as well as the interference immunity.

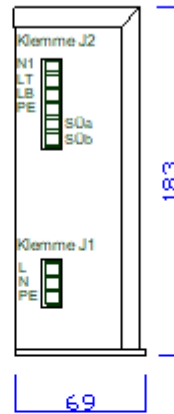
Side view



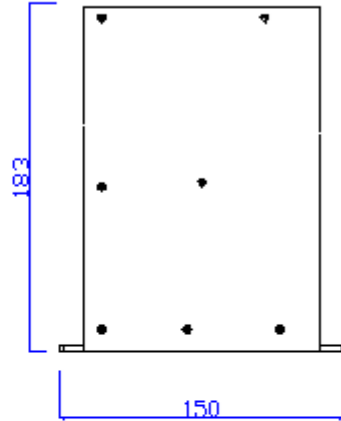
Front view



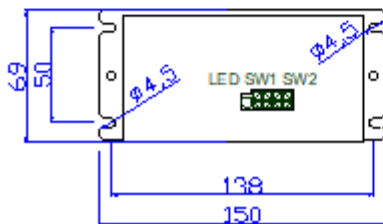
Side view



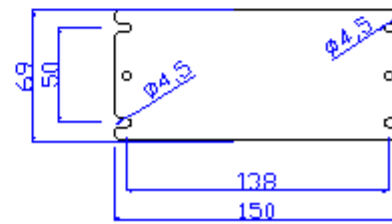
Back view



Top view



Bottom view



Pic. Technical measures

1.5 Funktionsbeschreibung

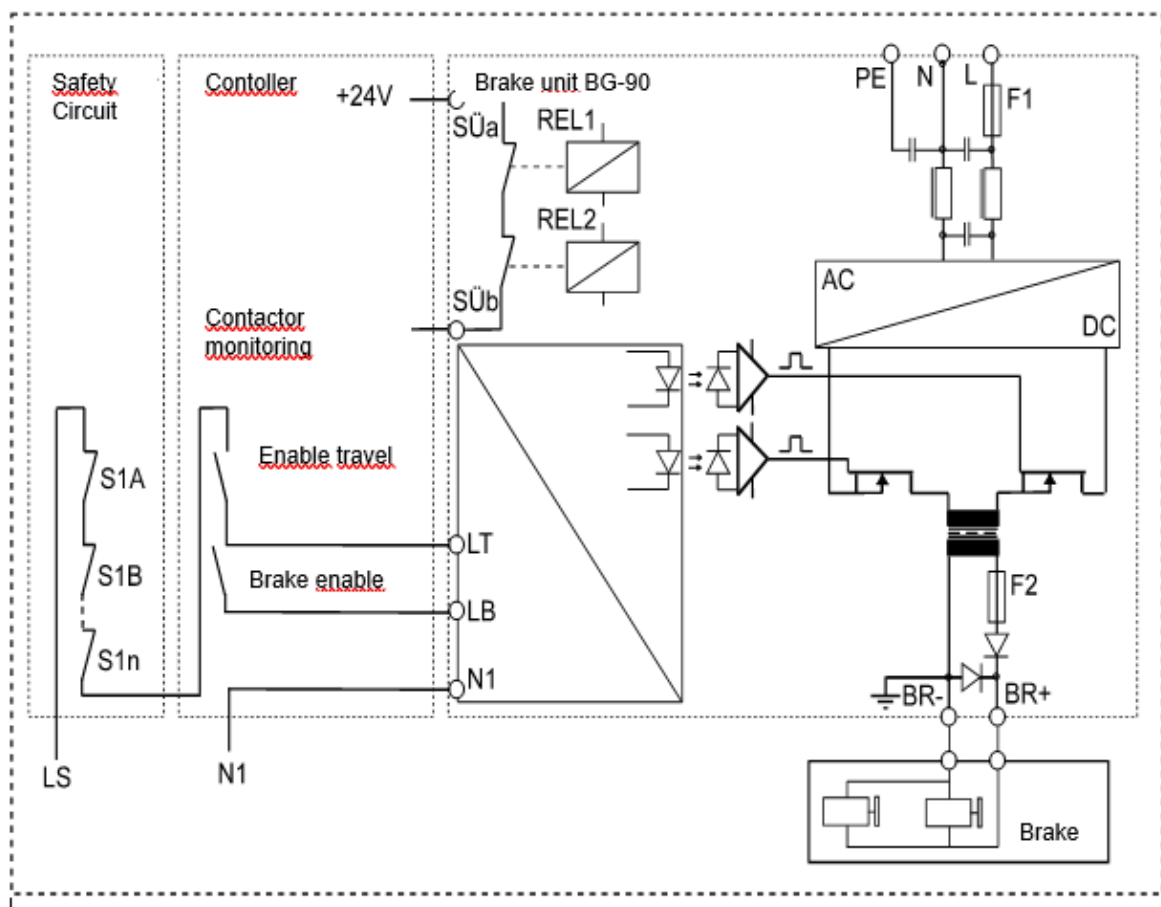
The mechanical brake of an elevator motor is opened by one or more electromagnetic brake magnets.

According to **EN 81-1/12.4.2** or **EN 81-20-5.9.2.2.3**, the operational holding open of the braking device must be effected by an uninterrupted supply of electrical energy. The energy supply must be interrupted by at least two independent electrical devices (contactors).

The brake contactors can only be energized if the safety circuit is closed.

The aim of this brake control is to replace the interruption of the energy supply by two independent electrical devices (previously brake contactors) prescribed by EN81-1/12.4.2 or EN 81-20-5.9.2.2.3 with an electronic circuit without brake contactors (EN 81-20-5.11.2.3).

This is possible if an intrinsically safe circuit effectively prevents energization of the brake magnet when the safety circuit is open and this circuit can be regarded as a safety component, taking into account the criteria according to EN 81-50:2015, 5.6.



Function-Picture

A mains voltage with 230VAC is applied to the input terminal J1 with the pins L, N and PE. This mains voltage is rectified and the energy of the rectified mains voltage is transferred to the secondary side with the aid of a safety ferrite transformer. The DC voltage generated there supplies current to the brake winding, which is connected via the BR+ and BR- terminals of connector J3.

The duty cycle of the transmission determines the level of the output voltage on the secondary side. Thus the output voltage can be reduced after switching on (overexcitation -> economy circuit). The setting of the holding voltage and the boost time is done via the two coding switches SW1 and SW2.

The **holding voltage** is set via the **coding switch SW1**. The value range extends from 50V to 150V DC, or it is possible to send the maximum output voltage of 200 V DC.

The **boost time**, i.e. the time for overexcitation, can be set at the **coding switch SW2** and varies between 0.5 and 4 seconds.

The control of the transmission is galvanically separated from a control circuit, which is supplied with the energy of the safety circuit.

Only if the safety circuit is closed and only if both terminals LT and LB of connector J2 are controlled with 230VAC, the control pulses for clocking the ferrite transformer can be transmitted.

The two terminals SÜa and SÜb on connector J2 are used to monitor the positively driven contacts of the two relays REL1 and REL2 and are looped into the contactor monitoring of the controller. This ensures the contactor monitoring chain according to EN 81-20-5.9.2.2 / 1 and a sticking error (permanent high or low signal) can be detected.

1.6 EMC Declaration of Conformity

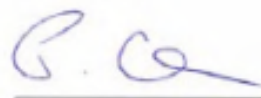
EMV Prüfbericht		SERVICEFORCE.COM <small>SERVICES FOR COMMUNICATIONS AND AUTOMATION ENGINEERING</small>	
Prüflabor: ServiceForce.Com GmbH Kleyerstraße 92 60326 Frankfurt am Main		Prüfbericht-Nr.: SFC_085_13E Datum : 30.08.2013 Projekt-Nr.: 505000400	

Auftraggeber: Ansprechpartner: Adresse:	KW-Aufzugstechnik GmbH Stefan Müller Zimmersmühlenweg 69 61440 Oberursel	Telefon: +49 (0) 6171 989510 Fax: +49 (0) 6021620485 E-mail: Mueller@KW-Aufzugstechnik.de
Prüflabor: Ansprechpartner: Adresse:	ServiceForce.Com GmbH Hartmut Berndt Kleyerstraße 92 60326 Frankfurt am Main Germany	Telefon: +49 (0)69-365090-6271 Fax: +49 (0)69-365090-5511 E-mail: hartmut.berndt@serviceforce-com.de
Prüfart: (falls nicht mit der Adresse des Labors identisch)		

Prüfling:	Schaltnetzteil für Aufzugsbremse BG90
Seriennummer:	Prototype
Beschreibung:	Es handelt sich um ein Schaltnetzteil, welches die elektromechanische Bremsspule eines Aufzugsmotors ansteuert. Das Schaltnetzteil wird auf der Primärseite ständig mit 230VAC versorgt, die Schalttransistoren werden bei Fahrtbeginn des Aufzugs angesteuert um die elektromechanische Bremse des Aufzugsmotors zu öffnen.
Eingangsdatum:	16.07.2013
Aufgabenstellung:	Durchführung der Prüfung gemäß der DIN EN12015:2005 (Störaussendung) bzw. DIN EN12016:2009 (Störfestigkeit).
Prüfzeitraum:	16.07.2013 bis 23.08.2013
Ergebnis:	Der o. g. Prüfling hat die durchgeführten Tests bestanden.

Bearbeiter: Petra Gehrke
Datum: 30.08.2013

Freigabe: Hartmut Berndt
Datum: 30.08.2013



Test Ingenieur



Laborleiter

Alle Ergebnisse dieses Prüfberichtes beziehen sich auf den Prüfgegenstand. Jegliche Abwandlung des Prüfgegenstands führt zur Ungültigkeit des Prüfberichts. Dieser darf nur in seiner Gesamtheit und ohne Ergänzungen vervielfältigt werden. Eine auszugsweise Vervielfältigung oder Veröffentlichung darf ohne die schriftliche Zustimmung der ServiceForce.Com GmbH nicht erfolgen. Prüfberichte ohne Unterschrift haben keine Gültigkeit.

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1.7 EU- Declaration of Conformity for safety construction

Producer:	KW Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel
Authorisierte Person:	Dipl.-Ing. (TU) Hans-Werner Walbert - CEO
Designation / Type:	Security circuit Brake-Unit BG-90-101
Intended purpose:	Circuit for safe interruption of the energy flow to the electromechanic elevator brake without the use of brake contactors.
Production / Serial-number	2024-001 bis 2024-800
Year of construction:	2024
Guideline:	2014/33/EU
Normen :	DIN EN 81-20: 2020, Klausel 5.9.2.2.2.3, 5.11.2.3 DIN EN 81-50: 2020, Klausel 5.6 und 5.15 Safety rules for the construction and the installation of the person and freight elevators as well as small goods elevators
Notified body of the EU type examination	Liftinstituut B.V. Buikslotermeerplein 381 1025 XE Amsterdam, Netherlands NB no.: 0400
No. of EG-Type of construction-Inspection certificate:	NL17-400-1002-170-04 rev.1

Hereby we explain the component Brake-Unit BG90-101 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, 2.01.2024



Hans-Werner Walbert
Geschäftsführer

1.8 Construction inspection certificate Liftinstituut B.V. Amsterdam



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EU-TYPE EXAMINATION CERTIFICATE


Issued by Liftinstituut B.V.
identification number Notified Body 0400,
commissioned by Decree no. 2018-0000125182

Certificate no.	: NL17-400-1002-170-04	Revision no.: 1
Description of the product	: Electronic brake control	
Trademark	: KW Aufzugstechnik	
Type no.	: BG90-101	
Name and address of the manufacturer	: KW-Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel Germany	
Name and address of the certificate holder	: KW-Aufzugstechnik GmbH Zimmersmühlenweg 69 61440 Oberursel Germany	
Certificate issued on the following requirements	: Lifts Directive 2014/33/EU	
Certificate based on the following standard	: EN 81-20:2020, clause 5.9.2.2.2.3, 5.11.2.3 and EN 81-50:2020, clause 5.6 and 5.15	
Test laboratory	: CETECOM ICT SERVICES, Germany Sebert Trillingstechniek B.V., The Netherlands	
Date and number of the laboratory report	: 09-04-2014; 1-6099/13-01-02 03-04-2017; Report M17.001-P17.001 Liftinstituut	
Date of EU-type examination	: January – April 2017 Rev.1; April 2022	
Additional document with this certificate	: Report belonging to the EU-type examination certificate no.: NL17-400-1002-170-04 rev.1	
Additional remarks	: -	
Conclusion	: The safety component meets the requirements of the Lifts Directive 2014/33/EU taking into account any additional remarks mentioned above.	

Amsterdam

Date : 19-04-2022
Valid until : 19-04-2027


ing A.J. van Ommen
International Business
Manager


Certification decision by



Report EU-type examination

Report belonging to EU-type examination certificate number : NL17-400-1002-170-04

Date of issue of original certificate : 20-04-2017

Certificate applies to : Lift safety component

Revision number / date : 1 / 19-04-2022

Requirements : Lifts Directive 2014/33/EU
Standard(s): EN 81-20 clause 5.9.2.2.2.3, 5.11.2.3
and EN 81-50 clause 5.6 and 5.16

Project number : P220174

1. General specifications

Description of the product : Electronic brake control

Trademark : KW Aufzugstechnik

Type no. : BG90-101

Name and address of the manufacturer : KW-Aufzugstechnik GmbH
Zimmersmühlenweg 69
61440 Oberursel, Germany

Laboratory : CETECOM ICT SERVICES, Germany
Sebert Trillingstechniek B.V., The Netherlands

Address of examined component : -

Date of examination : January – April 2017
Rev.1; April 2022

Examination performed by : P.J. Schaareman

2. Description safety component

The mechanical brake of the lift motor is accomplished with one or more electromechanical brake coils. According EN 81-20 clause 5.9.2.2.2.3 it shall require a continuous flow of current to hold off the brake. The interruption of this current shall be made by two independent electromechanical devices or an electrical circuit satisfying clause 5.11.2.3.

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BR-1720EN

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The BG90-101 is an electronic device which interrupts the current to the brake without the use of contactors.

Power from the grid (230VAC) is rectified. Transistors in the DC circuit, feeding the primary side of a transformer, can be switched with a high frequency to convert power to the secondary side of the transformer where the brake is powered.

By changing the frequency of the transistor trigger the power can easily be lowered to provide a power save mode.

The control of the transistors switching power is galvanic separated with a control circuit. This control circuit is directly powered by the safety chain of the lift.

Only when the safety chain of the lift is closed (230VAC) it is possible to transfer the trigger pulses to the transistor / primary transformer circuit.

The electronics to control is powered directly from the end of the safety chain (230VAC). With the help of a transformer and rectifier the power supply for the electronics is generated. A microcontroller generates the trigger pulses for the transistors. The signals are galvanic separated with optocouplers. The power of the optocouplers is controlled by two safety relays also powered from the safety chain.

Terminals are available to monitor these safety relays on proper operation.

Technical details	: KW Aufzugstechnik, BG90-101
Dimensions	: 150,0x69,0x183,0mm (LVH)
Weight	: Ca. 1200 gram
Power connections	: J1:L 230VAC / 2,6A J1:N 0 VAC Neutral J1:PE Protected Earth
Control connections	: J2:N1 0 VAC Controlled Neutral J2:LT 230VAC / 20mA J2:LB 230VAC / 10mA J2:PE Protected Earth J2:SÜ1 +24 VDC / 50mA J2:SÜ2 +24 VDC / 50mA
Output	: J3:BR+ 200VDC / 3A J3:BR- 0VDC connected to earth
Switching capacity	: Ca. 1.000.000
Protective class	: I
Pollution degree	: PD III
Temperature	: 0 up to 45 °C
Altitude	: Up to 2000m above sea level
Degree of protection	: IP20
For further specifications see manual BG90-101	

See annex 1 for a general overview of the product.

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3. Examinations and tests

The end of the safety chain is connected to the BG90-101 printed circuit board.

Safety chain of the lift is connected to connector J2:LB and J2:LT. Maximum voltage is 230VAC.

The output for the brake is connected to J3, maximum voltage is 200VDC.

Other circuits are used on the PCB for controlling and triggering the electronic components used as electronic safety circuits. Maximum voltage 5 VDC.

According to EN 81-50 clause 5.15 the creepage and clearance distances shall fulfill the requirements of the EN-IEC 60664-1 taking into account:

- pollution degree 3
- material group III
- inhomogeneous electrical field
- over-voltage category III
- printed wiring column not used

For 230 VAC these distances shall be 4.0mm for creepage and 3.0mm for clearance.

For 5 VDC these distances shall be 1.0mm for creepage and 0.8mm for clearance.

The examination covered a check whether compliance with the Lift Directive 2014/33/EU is met, based on the harmonized product standards EN 81-20 and EN 81-50.

Issues not covered by or not complying these Standards are directly related to the above mentioned essential requirements based on the risk assessment resp. failure analyses.

The BG90-101 was already tested for vibration and bumping according EN 81-50 clause 5.6 by lab CETECOM (resp. TÜV Thüringen). We assessed and accept the results from these tests (Prüfbericht 1-6099/13-01-02).

Our examination included assessment of the relevant information of the component and the relevant key interface parameter(s) of the component to be used for UCMP.

The examination included:

- Examination of the technical file (See annex 2):
- Examination of the representative model in order to establish conformity with the technical file.
- Inspections and tests to check compliance with the requirements.
- Temperature tests according EN 81-50 clause 5.6



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4. Results

The creepage distances and clearances between terminals, connected to the safety circuit and tracks behind these terminals to each other and to another voltage do fulfill to the above (chapter 3) mentioned distances or alternative failure exclusion.

The energy flow to the brake is interrupted safely to guarantee that the brake remains off when the safety circuit of the lift is not available.

After the final examination the product and the technical file were found in accordance with the requirements. The functional tests passed without remarks.

The temperature, vibration and bumping tests according EN 81-50 clause 5.6 passed without remarks and did not lead to permanent deformations or loss of stability.

In relation to UCMP we measured a maximum response time of removing power to the brake after the opening of the safety chain of 10ms.

5. Conditions

Additional to or in deviation of the applicable demands in the considered requirements / standards (see certificate and/or page 1 of this report), the following conditions shall be taken into account:

- In the final acceptance test it shall be verified that the brake function operates as intended.
- The interruption of the current to the motor shall be separately done by the lift control according the relevant requirements of the standard.
- The safety relays of the BG90-101 shall be monitored on proper operation.
- If for UCMP the brake needs to be taken into consideration, a delay time of 10ms needs to be taken in account for switching off the output of the electronic brake device after opening of the safety chain of the lift.
- The electronic brake device shall be installed, set, commissioned and maintained according the instructions of the manufacturer.



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6. Conclusions

Based upon the results of the EU-type examination, Liftinstituut B.V. issues an EU-type examination certificate.

The EU-type examination certificate is only valid for products which are in conformity with the same specifications as the type-certified product. The certificate is issued based on the requirements that are valid at the date of issue. In case of changes of the product specifications, changes in the requirements or changes in the state of the art the certificate holder shall request Liftinstituut B.V. to reconsider the validity of the certificate.

7. CE marking and EU Declaration of conformity

Every safety component that is placed on the market in complete conformity with the examined type must be provided with a CE marking according to article 18 of the Lift directive 2014/33/EU under consideration that conformity with eventually other applicable Directives is proven. Also, safety component must be accompanied by an EU declaration of conformity according to annex II of the Directive in which the name, address, and Notified Body identification number of Liftinstituut B.V. must be included as well as the number of the EU-type examination certificate.

An EU type-certified safety component shall be random checked e.g. according to annex IX of the Lift directive 2014/33/EU before these safety components may be CE-marked and may be placed on the market. For further information see regulation 2.0.1 'Regulations for product certification' on www.liftinstituut.com.

Prepared by:

P.J. Schaareman
Product Specialist Certification

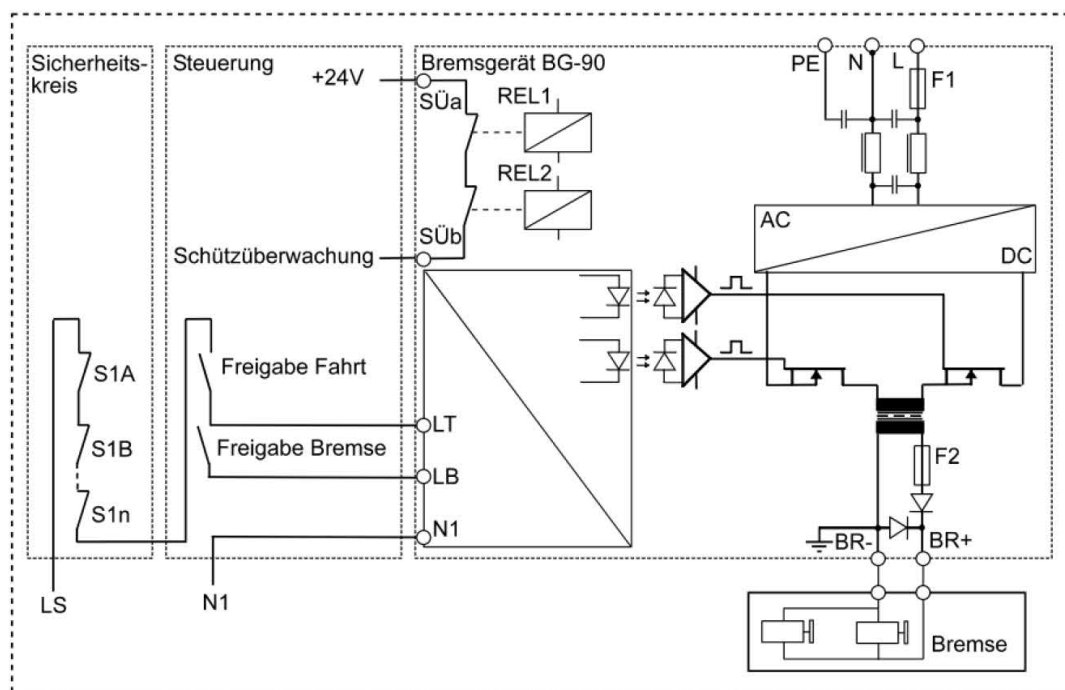
Certification decision by:

Annexes

Annex 1a. Impression BG90-101



Annex 1b. Principle diagram BG90-101



**Annex 2. Documents of the Technical File which were subject of the examination**

Title	Document number	Date
CETECOM testlab report	1-6099_13-01-02.pdf	21-10-2016
Declaration of conformity transformer	CE_K65-522A.pdf	21-10-2016
Detail design transformer	K65-522A_GTSPEC_ETD4.pdf	21-10-2016
Construction data transformer	K65-522A_VDE_0570_F161A.pdf	21-10-2016
EMC testlab report	SFC_085_13E.pdf	21-10-2016
Data plate BG90-101	BG90-QR-Code.pdf	06-02-2017
EU declaration of conformity BG90-101	EU-Deklaration-BG90-101.pdf	06-02-2017
Manufacturing and test manual	Montage-Prüfanweisung-BG-90-V100.pdf	06-02-2017
Manual BG90-101	Bremsgerät-BG90-101-V102-D.pdf	02-03-2017
Schematic and PCB file	BG90_104.brd	02-03-2017
Sebert Triltechniek testlab report	M17_001-P17.001 Liftinstitute report.pdf	03-04-2017
Schematic and PCB design file	BG90_104.brd	11-04-2022
Schematic and updated PCB design file	BG90_104a.brd	11-04-2022
Latest Manual BG90-101	Bremsgerät-BG90-101-V104-D.PDF	11-04-2022
Technical design document	W101-BG90-101-V105.pdf	11-04-2022

Annex 3. Reviewed deviations from the standards

EN 81-20 par.	Requirement	Accepted design
5.9.2.2.2.3	5.9.2.2.2.3 To hold off the brake shall require a continuous flow of current except as permitted by 5.9.2.2.2.7. a) 2) an electrical circuit satisfying 5.11.2.3. This means is regarded as a safety component and shall be verified according to the requirements in EN 81-50, clause 5.6	BG90-101; Requirements of 5.11.2.3 are fulfilled, component passed examination and tests successfully.

Annex 4. Revision of the certificate and its report

Rev.:	Date	Summary of revision
-	20-04-2017	Original
1	19-04-2022	5-yearly assessment, update to EN 81-20/50:2020 and design update.

2.0 Transport / Assembly / Start up

2.1 Transport and storage, assembling instructions

The protection circuit Brake-Unit BG90-101 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.

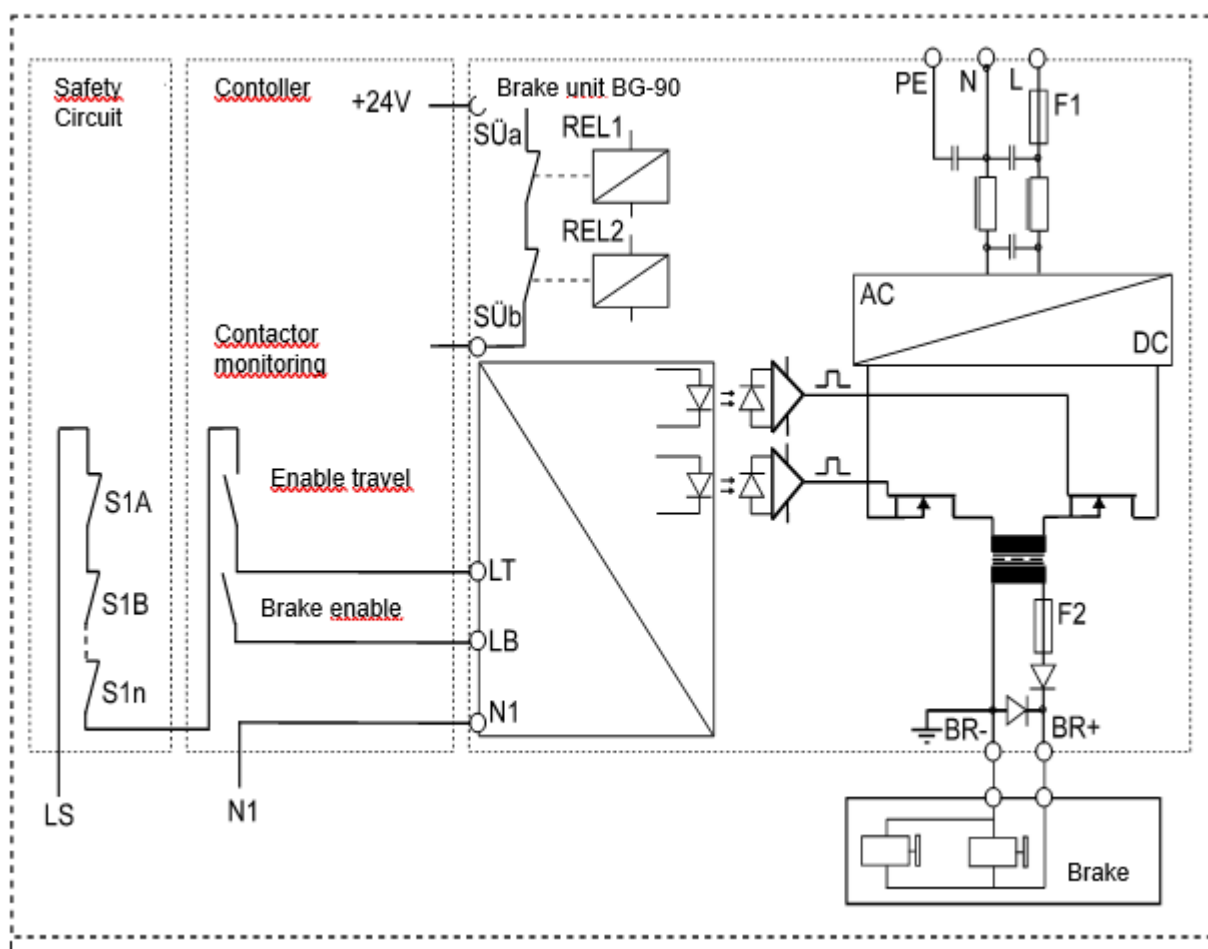
All leading connections lead also after switching off still tension until the condensers unloaded themselves (approx. 5 min). Lager dusty condition, penetration of water , high concentration of chemical-ly active pollutants, danger of fungus growth or penetration of parasits endanger safe enterprise of the complete system. Therefore the protection circuit SIS16-101 must be built into a switchgear cab-inet. The ambient temperature must be in a range between 0°C and + 45°C.

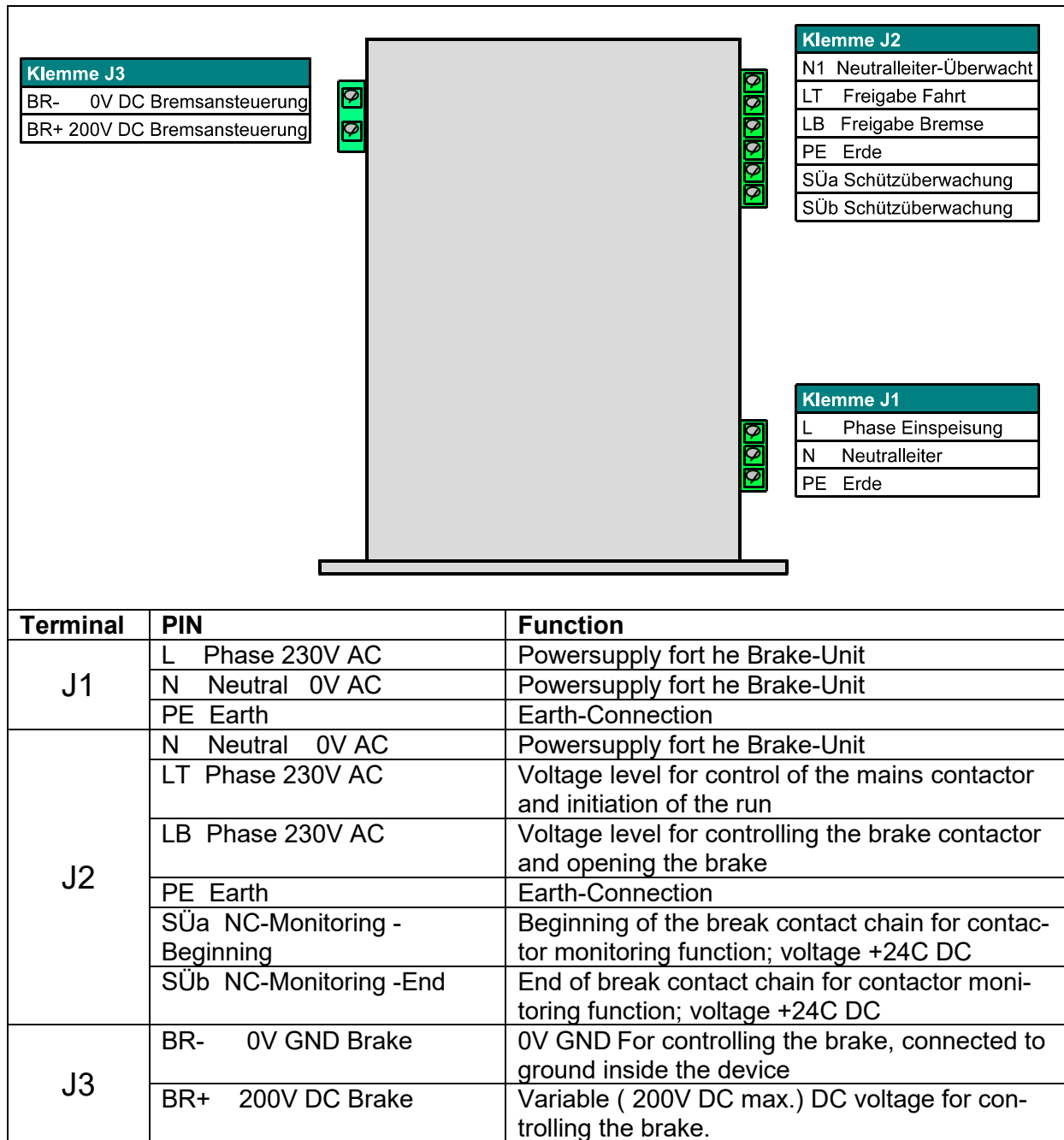
2.2 Connection of Component assembly



Never work under mains voltage – Danger of life!

Before you begin work on the protection circuit Brake-Unit BG90-101, **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!





The ABC of correct wiring

A	In principle, it must be prevented that external voltages generate an erroneous control of the brake. As already mentioned, the braking unit is only controlled with voltage from the end of the safety circuit. As soon as the safety circuit is interrupted, the brake cannot be controlled!
B	The wiring inside the switch cabinet is done with H07V-K or H07Z-K with 1mm ² wiring cable in the color white or blue according to company standard KW Aufzugs-technik GmbH. The cables are routed in insulating cable ducts and the terminal assignment on the BG90-101 braking unit must be observed exactly.
C	After the switching contacts of the pilot control, the cabling leads to the connection terminals of the BG90-101. The connection cable between BG90-101 (BR+ & BR-) and the braking device is a PVC sheathed cable SLÖZ-J 2 x 1mm ² or SLÖZ-J/O-H 2 x 1mm ² or equivalent.

2.3 Setting the holding voltage and the overexcitation time

IN GENERAL:

Before you make settings at the two coding switches of the BG90-101, please read the operating instructions including the technical data of the service brake. Basically there are brake solenoids with constant voltage and others, which are started with overexcitation and then after a time T_x are lowered to a holding voltage.

The operating instructions for your brake or, if necessary, the manufacturer's instructions will provide you with the necessary information.

Basically:

The coding switches may only be set when the braking unit is de-energized. For this purpose, the power supply at input J1 must be disconnected from the power supply!

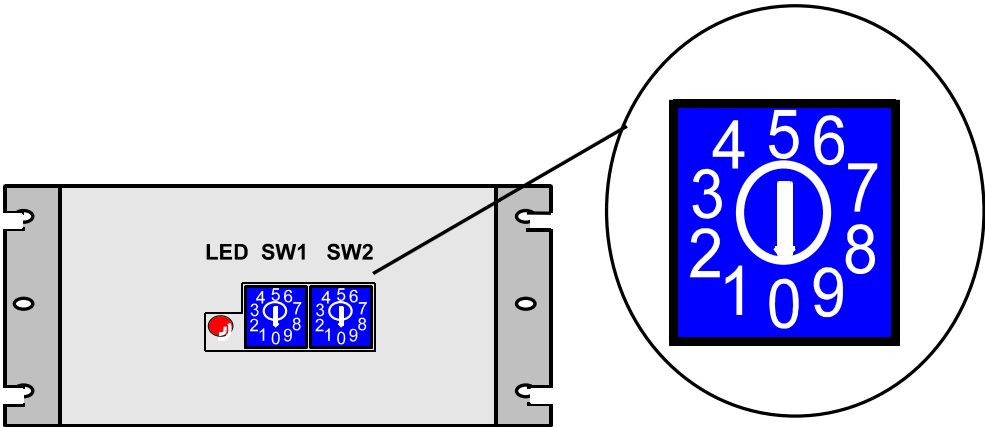
Adjustment for brake windings without overexcitation:

For brakes with constant voltage, e.g. 200V DC, the coding switch SW1 must be set to position 0, i.e. for 200V DC, and the coding switch SW2 must be set to 0 (0.0 seconds) for the boost time.

Adjustment for brake windings with overexcitation:

The brakes of the ThyssenKrupp worm gear winches of the TW series generally operate with overexcitation, i.e. the start voltage is 200V DC which is reduced to a holding voltage of 100V DC after approx. 1.0 seconds. For this example the following setting would have to be made:

The coding switch SW1 for the holding voltage on level 6 (100V DC). For the boost time, level 6 (1.0 seconds) would have to be selected via coding switch SW2.

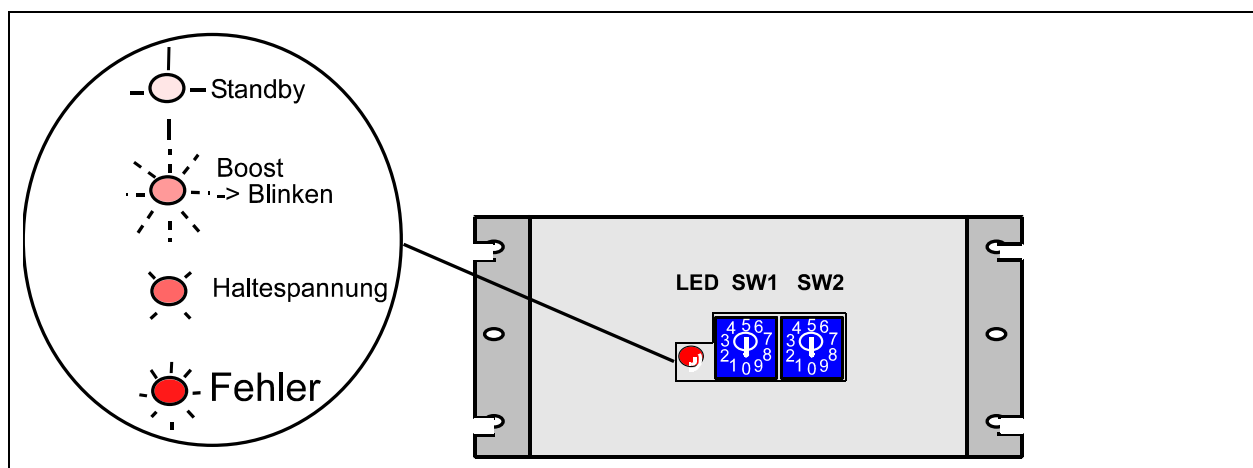
																																													
SW1 – Holding-Voltage	SW2 – Boost-Time (overexcitation time)																																												
<table border="1"> <thead> <tr> <th>SW1 Switchposition</th><th>Holding-Voltage</th></tr> </thead> <tbody> <tr><td>0</td><td>200V DC</td></tr> <tr><td>1</td><td>50V DC</td></tr> <tr><td>2</td><td>60V DC</td></tr> <tr><td>3</td><td>70V DC</td></tr> <tr><td>4</td><td>80V DC</td></tr> <tr><td>5</td><td>90V DC</td></tr> <tr><td>6</td><td>100V DC</td></tr> <tr><td>7</td><td>110V DC</td></tr> <tr><td>8</td><td>130V DC</td></tr> <tr><td>9</td><td>150V DC</td></tr> </tbody> </table>	SW1 Switchposition	Holding-Voltage	0	200V DC	1	50V DC	2	60V DC	3	70V DC	4	80V DC	5	90V DC	6	100V DC	7	110V DC	8	130V DC	9	150V DC	<table border="1"> <thead> <tr> <th>SW2 Switchposition</th><th>Boosttime in Seconds</th></tr> </thead> <tbody> <tr><td>0</td><td>0,0 Seconds</td></tr> <tr><td>1</td><td>0,5 Seconds</td></tr> <tr><td>2</td><td>0,75 Seconds</td></tr> <tr><td>3</td><td>1,0 Seconds</td></tr> <tr><td>4</td><td>1,25 Seconds</td></tr> <tr><td>5</td><td>1,5 Seconds</td></tr> <tr><td>6</td><td>1,75 Seconds</td></tr> <tr><td>7</td><td>2,0 Seconds</td></tr> <tr><td>8</td><td>2,5 Seconds</td></tr> <tr><td>9</td><td>3,0 Seconds</td></tr> </tbody> </table>	SW2 Switchposition	Boosttime in Seconds	0	0,0 Seconds	1	0,5 Seconds	2	0,75 Seconds	3	1,0 Seconds	4	1,25 Seconds	5	1,5 Seconds	6	1,75 Seconds	7	2,0 Seconds	8	2,5 Seconds	9	3,0 Seconds
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Attention!

Only set the coding switches in a de-energized state!

2.4 Display of the Functionsmode



Operation-Mode	Flashing frequency of the LED display
Standby	OFF
Boost	100ms-ON .. 100ms-OFF ... 100ms-ON
Hold-Voltage	200ms-ON .. 500ms-OFF ... 200ms-ON
Error	400ms-ON .. 100ms-OFF ... 400ms-ON

3.0 Fault Clearance

IN GENERAL

If the device shows an error in the operating mode via the LED display, please check the brake winding for short circuit. If the brake winding is free of faults and the LED still shows a fault or the display has even gone out completely, there is a defect in the BG90-101 braking unit. The BG90-101 may only be repaired by the manufacturer, as it is a safety module.

Basically

The housing cover may only be removed when the braking unit is de-energized. For this purpose, the power supply at input J1 must be disconnected from the power supply and secured against being switched back on!

4. Maintenance/ Repair/ Disposal of the Component assembly

Maintenance

The cleaning of the protection circuit Brake-Unit BG90-101 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 description 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 Brake-Unit BG90-101 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.