



**SAFEMASTER**  
**Emergency Stop Module**  
**BG 5925**

**Translation**  
**of the original instructions**

**0262921**



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Before installing, operating or maintaining this device, these instructions must be carefully read and understood.



Keep instructions for future reference



The installation must only be done by a qualified electrician!



Do not dispose of household garbage!  
The device must be disposed of in compliance with nationally applicable rules and requirements.

To help you understand and find specific text passages and notes in the operating instructions, we have important information and information marked with symbols.

### Symbol and Notes Statement



**DANGER:**  
Indicates that death or severe personal injury will result if proper precautions are not taken.



**WARNING:**  
Indicates that death or severe personal injury can result if proper precautions are not taken.



**CAUTION:**  
Indicates that a minor personal injury can result if proper precautions are not taken.



**INFO:**  
Referred information to help you make best use of the product.



**ATTENTION:**  
Warns against actions that can cause damage or malfunction of the device, the device environment or the hardware / software result.

### General Notes

The product hereby described was developed to perform safety functions as a part of a whole installation or machine. A complete safety system normally includes sensors, evaluation units, signals and logical modules for safe disconnections. The manufacturer of the installation or machine is responsible for ensuring proper functioning of the whole system. DOLD cannot guarantee all the specifications of an installation or machine that was not designed by DOLD. The total concept of the control system into which the device is integrated must be validated by the user. DOLD also takes over no liability for recommendations which are given or implied in the following description. The following description implies no modification of the general DOLD terms of delivery, warranty or liability claims.

### Designated Use

The BG 5925 is used to interrupt a safety circuit in a safe way. It can be used to protect people and machines in applications with e-stop buttons and safety gates.

When used in accordance with its intended purpose and following these operating instructions, this device presents no known residual risks. Non-observance may lead to personal injuries and damages to property.

### Safety Notes



**Risk of electrocution!**  
**Danger to life or risk of serious injuries.**

- Disconnect the system and device from the power supply and ensure they remain disconnected during electrical installation.
- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed.
- The contact protection of the elements connected and the insulation of the supply cables must be designed in accordance with the requirements in the operating instructions / data sheet.
- Note the VDE and local regulations, particularly those related to protective measures.



**Risk of fire or other thermal hazards!**  
**Danger to life, risk of serious injuries or property damage.**

- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed. In particular, the current limit curve must be heeded.
- The device may only be installed and put into operation by experts who are familiar with this technical documentation and the applicable health and safety and accident prevention regulations.



**Functional error!**  
**Danger to life, risk of serious injuries or property damage.**

- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed.
- The device may only be installed and put into operation by experts who are familiar with this technical documentation and the applicable health and safety and accident prevention regulations.
- The unit should be panel mounted in an enclosure rated at IP 54 or superior. Dust and dampness may lead to malfunction.



**Installation fault!**  
**Danger to life, risk of serious injuries or property damage.**

- Make sure of sufficient protection circuitry at all output contacts for capacitive and inductive loads.



**Attention!**

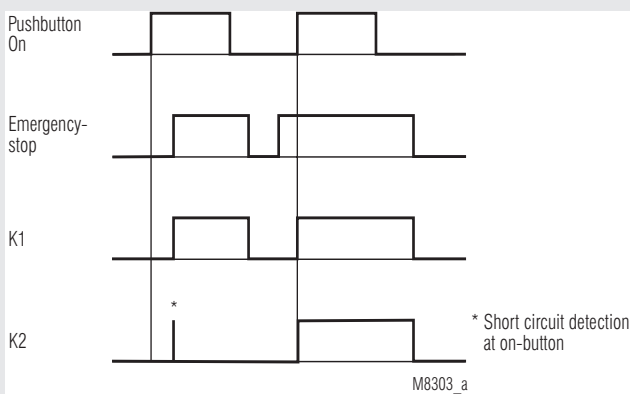
- The safety function must be triggered during commissioning.
- The line fault detection is only active when S12 and S22 are switched simultaneously.
- If a line fault occurs after the voltage has been connected to S12, S22, the unit will be activated because this line fault is similar to the normal On-function.
- Switch S1 must not be set while device is under supply voltage.
- **AUTOMATIC START !**  
According to IEC/EN 60 204-1 part 9.2.5.4.2 and 10.8.3 it is not allowed to restart automatically after emergency stop. Therefore the machine control has to disable the automatic start after emergency stop.
- Opening the device or implementing unauthorized changes voids any warranty





- According to
  - Performance Level (PL) e and category 4 to EN ISO 13849-1
  - SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
  - Safety Integrity Level (SIL) 3 to IEC/EN 61508
- Output: Max. 3 NO contacts, see contacts
- Single and 2-channel operation
- Line fault detection on On-button
- Manual restart or automatic restart, switch S2
- With or without cross fault monitoring in the E-stop loop, switch S1
- LED indicator for channel 1 and 2 and Power
- Removable terminal strips
- Wire connection: Also 2 x 1.5 mm<sup>2</sup> stranded ferruled (isolated), DIN 46228-1/-2/-3/-4 or 2 x 2.5 mm<sup>2</sup> stranded ferruled DIN 46228-1/-2/-3
- Width 22.5 mm

### Function Diagram



### Approvals and Markings



\* see variants

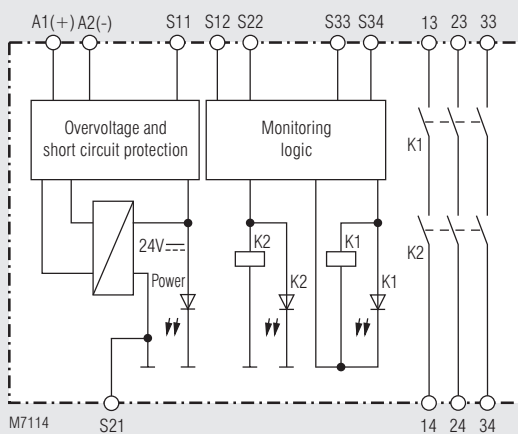
### Applications

- Protection of people and machines
- Emergency stop circuits on machines
  - Monitoring of safety gates

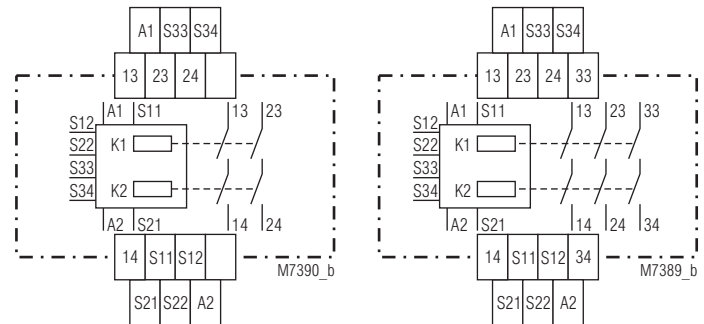
### Indicators

- LED Power: On when supply connected  
LED K1/K2: On when relay K1/K2 energized

### Block Diagram

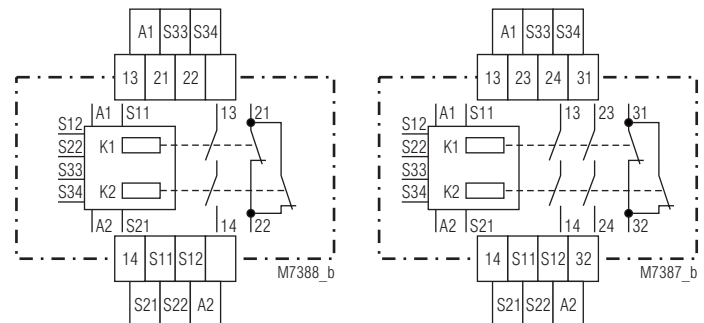


### Circuit Diagrams



BG 5925.02

BG 5925.03



BG 5925.16

BG 5925.22

### Connection Terminals

Terminal designation	Signal description
A1+	+ / L
A2	- / N
S12, S22, S33, S34	Inputs
S11, S21	Outputs
13, 14, 23, 24, 33, 34	Forcibly guided NO contacts for release circuit
21, 22, 31, 32	Forcibly guided indicator output

## Notes

Line fault detection on On-button:

The line fault detection is only active when S12 and S22 are switched simultaneously. If The On-button is closed before S12, S22 is connected to voltage (also when line fault across On-Button), the output contacts will not close.

A line fault across the On-button which occurred after activation of the relay, will be detected with the next activation and the output contacts will not close. If a line fault occurs after the voltage has been connected to S12, S22, the unit will be activated because this line fault is similar to the normal On-function. The gold plated contacts of the BG 5925 mean that this module is also suitable for switching small loads of 1 mVA - 7 VA, 1 mW - 7 W in the range 0.1 - 60 V, 1 - 300 mA. The contacts also permit the maximum switching current. However since the gold plating will be burnt off at this current level, the device is no longer suitable for switching small loads after this (not for variant BG 5925.22/102).

The terminal S21 permits the operation of the device in IT-systems with insulation monitoring, serves as a reference point for testing the control voltage and is used to connect the E-stop loop when cross fault monitoring is selected.

Connecting the terminal S21 to the protective ground bridges the internal short-circuit protection of Line A2 (-). The short-circuit protection of line A1 (+) remains active.

To alter the functions automatic start - manual start and with or without cross fault monitoring, the switches S1 and S2 are used. These are located behind the front cover (see unit programming).

The setting with or without cross fault monitoring on E-stop buttons is made with S1. S2 is used to change between automatic an manual restart. On automatic start also the terminals S33 - S34 have to be linked. For connection please see application examples.

## Technical Data

### Input circuit

<b>Nominal Voltage <math>U_N</math>:</b>	DC 24 V, AC/DC 24 V
<b>Voltage range</b>	DC AC/DC
at 10% residual ripple:	0.9 ... 1.1 $U_N$ 0.95 ... 1.1 $U_N$
At 48% Rresidual ripple:	0.8 ... 1.1 $U_N$ 0.8 ... 1.1 $U_N$
<b>Nominal consumption:</b>	DC approx. 2 W
<b>Min. Off-time:</b>	250 ms
<b>Control voltage on S11:</b>	DC 23 V at $U_N$
<b>Control current over S12, S22:</b>	40 mA at $U_N$
<b>Min. voltage between terminals S12, S22 and S21:</b>	DC 21 V when relay activated and $U_N$ on A1 - A2
<b>Short-circuit protection:</b>	Internal PTC
<b>Overvoltage protection:</b>	Internal VDR

### Output

#### Contacts

BG 5925.02:	2 NO contacts
BG 5925.03:	3 NO contact
BG 5925.16:	1 NO, 1 NC contact
BG 5925.22:	2 NO, 1 NC contact

The NO contacts are safety contacts.

**The NC contacts 21-22 or 31-32 can only be used for monitoring.**

#### Operate delay typ. at $U_N$ :

Manual start:	40 ms
Automatic start:	250 ms
BG 5925._ _ /101:	100 ms

#### Release delay typ. at $U_N$ :

Disconnecting the supply:	50 ms
Disconnecting S12, S22:	15 ms

#### Contact type:

Forcibly guided

AC 250 V

DC: See arc limit curve

$\geq 100$  mV

$\geq 1$  mA

$\geq 10$  mA / DC 24 V

#### Thermal current $I_{th}$ :

On 1 contact path: Max. 5 A

see current limit curve

#### Switching capacity

to AC 15		
NO contact:	3 A / AC 230 V	IEC/EN 60947-5-1
NC contact:	1 A / AC 230 V	IEC/EN 60947-5-1
To DC 13		
NO contact:	1 A / DC 24 V	IEC/EN 60947-5-1
NC contact:	1 A / DC 24 V	IEC/EN 60947-5-1
To DC 13		
NO contact:	4 A / 24 V at 0.1 Hz	
NC contact:	4 A / 24 V at 0.1 Hz	

#### Electrical contact life

to AC 15 at 2 A, AC 230 V:	10 <sup>5</sup> switching cycles	IEC/EN 60947-5-1
To DC 13 at 1 A, DC 24 V:	> 1.5 x 10 <sup>5</sup> switching cycles	

#### Permissible operating frequency:

Max. 1 200 operating cycles / h

#### Short circuit strength

max. fuse rating:	6 A gG / gL	IEC/EN 60947-5-1
Line circuit breaker:	C 8 A	

#### Mechanical life:

10 x 10<sup>6</sup> switching cycles

## Technische Daten

### General Data

<b>Operating mode:</b>	Continuous operation
<b>Temperature range</b>	
Operation:	- 15 ... + 55 °C
Storage :	- 25 ... + 85 °C
<b>altitude:</b>	≤ 2000 m
<b>Clearance and creepage distances</b>	
Rated impuls voltage / pollution degree:	4 kV / 2 (basis insulation) IEC 60664-1 IEC/EN 62061
<b>EMC</b>	
Interference suppression:	Limit value class B EN 55011
<b>Degree of protection</b>	
Housing:	IP 40 IEC/EN 60529
Terminals:	IP 20 IEC/EN 60529
<b>Housing:</b>	Thermoplastic with V0 behaviour according to UL subject 94
<b>Vibration resistance:</b>	Amplitude 0.35 mm IEC/EN 60068-2-6 frequency 10 ... 55 Hz
<b>Climate resistance:</b>	15 / 055 / 04 IEC/EN 60068-1
<b>Terminal designation:</b>	EN 50005
<b>Wire fixing:</b>	Box terminal with wire protection, removable terminal strips
<b>Mounting:</b>	DIN rail IEC/EN 60715
<b>Weight:</b>	220 g

### Dimensions

**Width x height x depth:** 22.5 x 84 x 121 mm

## UL-Data

The safety functions were not evaluated by UL. Listing is accomplished according to requirements of Standard UL 508, "general use applications"

<b>Nominal voltage <math>U_N</math>:</b>	
BG 5925, /101, /102, /103, /104:	DC 24 V AC/DC 24 V
<b>Ambient temperature:</b>	- 15 ... + 55 °C
<b>Switching capacity:</b>	
Ambient temperature 45 °C	Pilot duty B300 5A 250Vac Resistive 5A 24Vdc Resistive or G.P.
Ambient temperature 55 °C:	Pilot duty B300 4A 250Vac Resistive 4A 24Vdc Resistive or G.P.
<b>Wire connection:</b>	60 °C / 75 °C copper conductors only AWG 20 - 12 Sol Torque 0.8 Nm AWG 20 - 14 Str Torque 0.8 Nm



Technical data that is not stated in the UL-Data, can be found in the technical data section.

## CSA-Data

<b>Nominal voltage <math>U_N</math>:</b>	
BG 5925/113, /114:	DC 24 V AC/DC 24 V
<b>Ambient temperature:</b>	- 15 ... + 55 °C
<b>Switching capacity:</b>	5A 230Vac
<b>Wire connection:</b>	60 °C / 75 °C copper conductors only AWG 20 - 12 Sol Torque 0.8 Nm AWG 20 - 14 Str Torque 0.8 Nm



Technical data that is not stated in the UL-Data, can be found in the technical data section.

## Standard Type

BG 5925.03/61 AC/DC 24 V	
Article number:	0049169
• Output:	3 NO contacts
• Nominal voltage $U_N$ :	AC / DC 24 V
• Width:	22.5 mm

## Variants

BG 5925._._/60:	CSA-approval
BG 5925._._/61:	UL-approval
BG 5925._._/101:	E-stop with fast automatic start without line fault detection on the ON-button
BG 5925._._/102:	Automatic-restart, without crossfault monitoring
BG 5925.02/103:	Manual restart, with crossfault monitoring for DC 24 V Switching capacity to AC 15: 5 A / 230 V Contact fuse 6 A fast / 4 A slow without internal switches S1 and S2
BG 5925.02/104:	Automatic restart, with cross fault monitoring for DC 24 V Switching capacity to AC 15: 5 A / 230 V Contact fuse 6 A fast / 4 A slow without internal switches S1 and S2

## Ordering example for variants

BG 5925	.	.	/	.	.	/61	DC 24 V	
								Nominal voltage
								With UL-approval
								Variant, if required
								Contacts
								Type

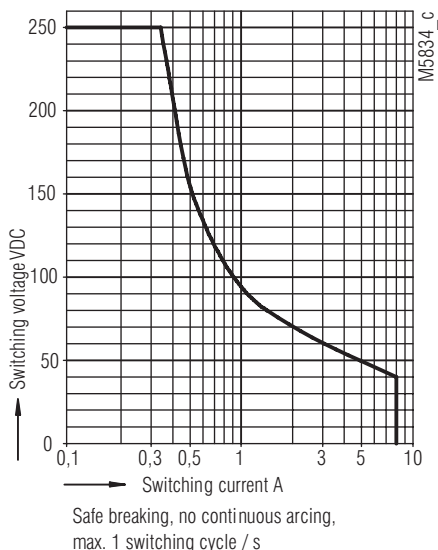
## Troubleshooting

Failure	Potential cause
LED "Power" does not light up	- Power supply not connected - Cross fault between S11 and S21
LED "K1" lights up, but "K2" remains off	- Safety relay K1 is welded (replace device) - A 1-channel switch-off occurred on S12 (switch channel off on S22)
LED "K2" lights up, but "K1" remains off	- Safety relay K2 is welded (replace device) - A 1-channel switch-off occurred on S22 (switch channel off on S12)
Device cannot be activated	Manual start mode: - Line fault on start-button (disconnect power supply and remove fault) Automatic start mode: - S33-S34 not bridged - A safety relay is welded (replace device) - Incorrect setting of switch S1

## Maintenance and repairs

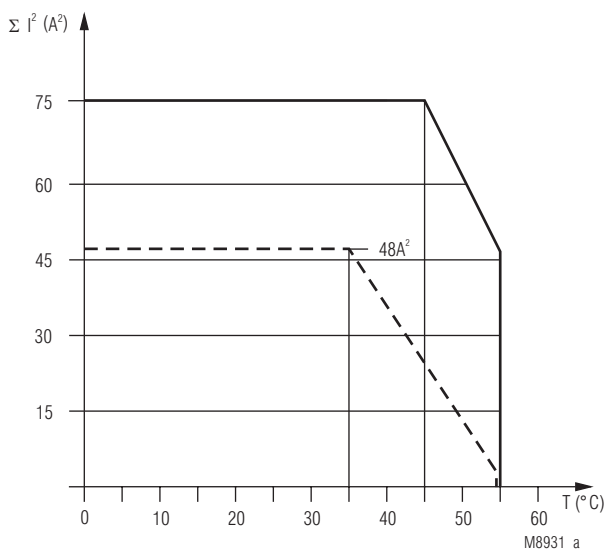
- The device contains no parts that require maintenance.
- In case of failure, do not open the device but send it to manufacturer for repair.

## Characteristics



Arc limit curve

## Characteristics



— Device mounted on distance with air circulation.  
Max. current at 55°C over  
3 contactrows =  $4A \cong 3 \times 4^2 A^2 = 48A^2$

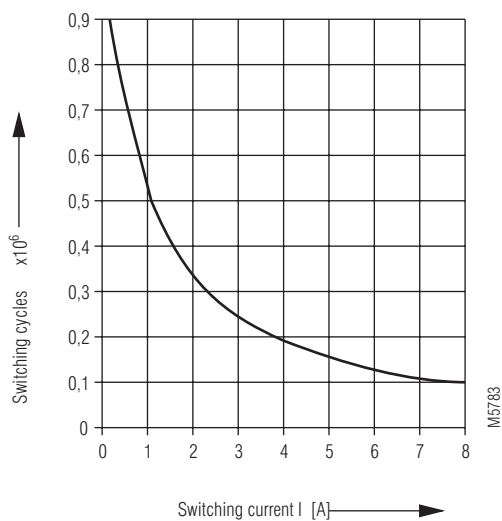
- - - Device mounted without distance heated by  
devices with same load.  
Max. current at 55°C over  
3 contactrows =  $1A \cong 3 \times 1^2 A^2 = 3A^2$

$$\Sigma I^2 = I_1^2 + I_2^2 + I_3^2$$

$I_1, I_2, I_3$  - Current in contactrows

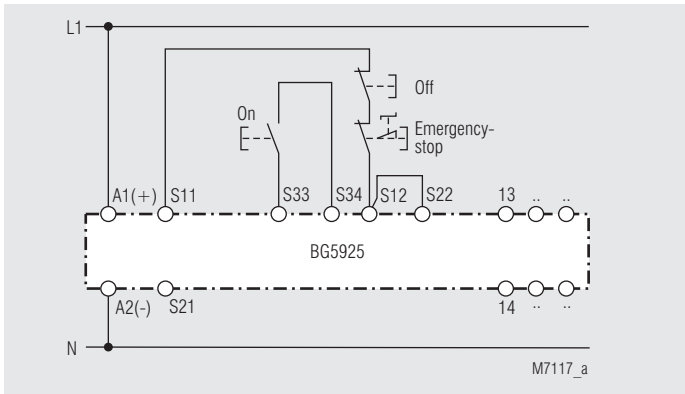
## Quadratic total current limit curve

Electric life DC13 24V DC /  $t_{on} 0,4s$ ;  $t_{off} 9,6s$   
2 contacts in series



Contact service life

## Application Examples



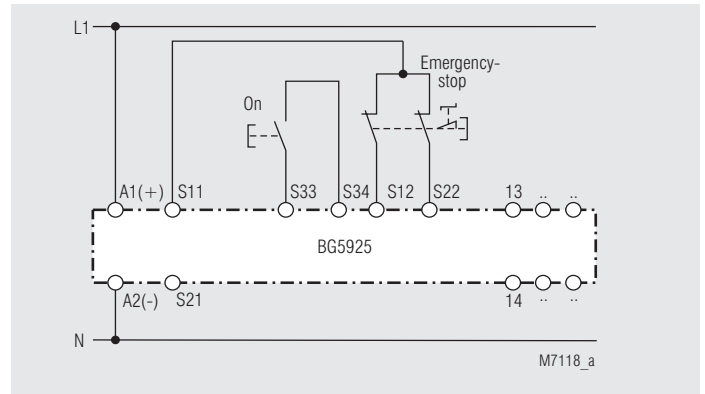
Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit.

**Note: Refer to „Unit programming“!**

Switches in pos.: S1 no cross fault detection

S2 manual start

Suited up to SIL2, Performance Level d, Cat. 3



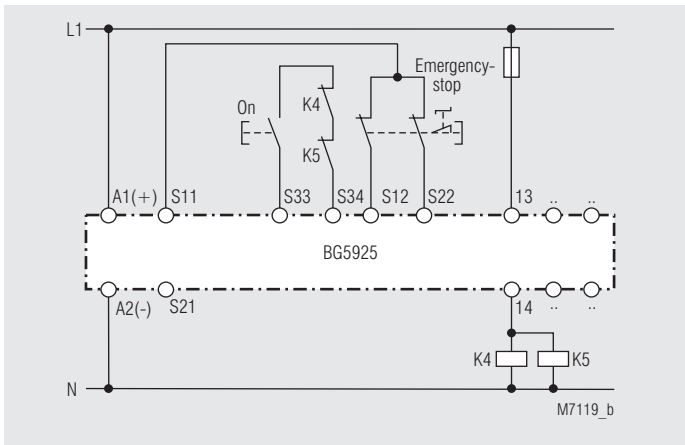
2-channel emergency stop circuit without cross fault monitoring.

**Note: Refer to „Unit programming“!**

Switches in pos.: S1 no cross fault detection

S2 manual start

Suited up to SIL3, Performance Level e, Cat. 4



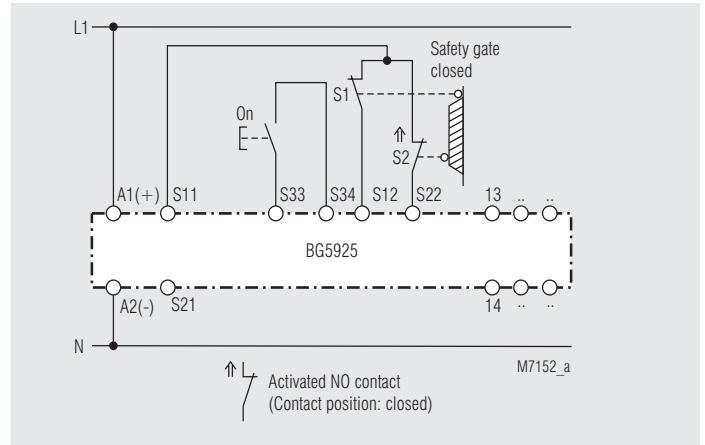
Contact reinforcement by external contactors controlled by one contact path.

**Note: Refer to „Unit programming“!**

Switches in pos.: S1 no cross fault detection

S2 manual start

Suited up to SIL3, Performance Level e, Cat. 4



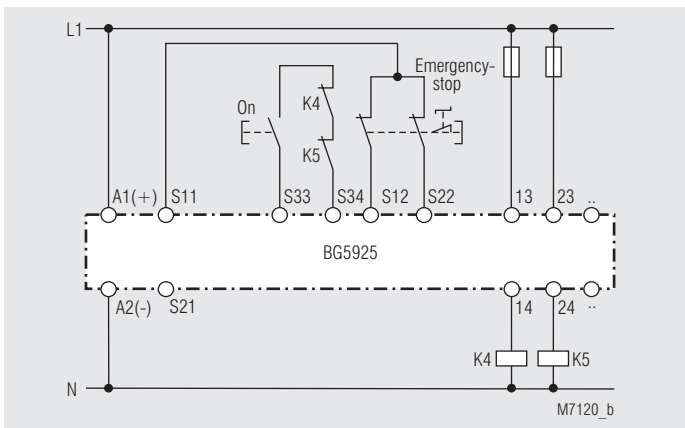
2-channel safety gate monitoring.

**Note: Refer to „Unit programming“!**

Switches in pos.: S1 no cross fault detection

S2 manual start

Suited up to SIL3, Performance Level e, Cat. 4



Contact reinforcement by external contactors, 2-channel controlled.

The output contacts can be reinforced by external contactors with forcibly guided contacts for switching currents > 8 A.

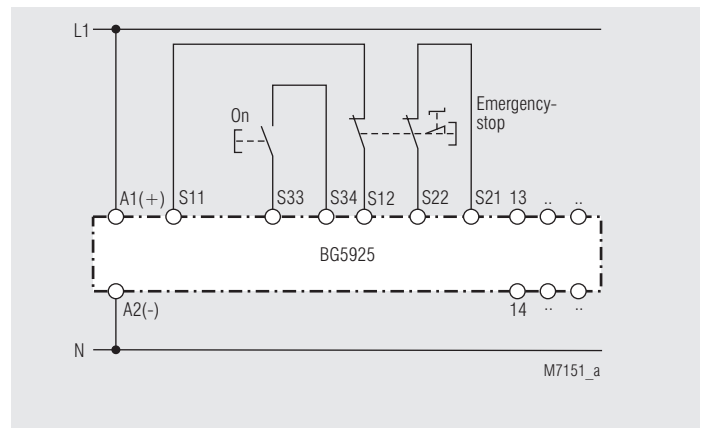
Functioning of the external contactors is monitored by looping the NC contacts into the closing circuit (terminals S33-S34).

**Note: Refer to „Unit programming“!**

Switches in pos.: S1 no cross fault detection

S2 manual start

Suited up to SIL3, Performance Level e, Cat. 4



2-channel emergency stop circuit with cross fault detection

**Note: Refer to „Unit programming“!**

Switches in pos.: S1 cross fault detection

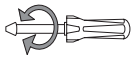
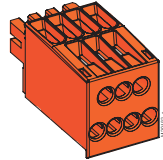
S2 manual start

Suited up to SIL3, Performance Level e, Cat. 4



DE	<b>Anschlussstechnik</b>
EN	<b>Labeling and connections</b>
FR	<b>Marquage et raccordements</b>
IT	<b>Marcatura e collegamenti</b>

Schraubklemme, abnehmbar  
Screw terminal, removable  
Borne à vis, amovible

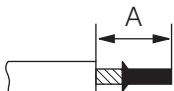


ø 4 mm / PZ 1  
0,8 Nm  
7 LB. IN



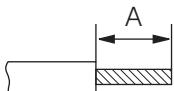
M10248

A = 10 mm  
1 x 0,5 ... 4 mm<sup>2</sup>  
1 x AWG 20 to 12  
2 x 0,5 ... 1,5 mm<sup>2</sup>  
2 x AWG 20 to 16



M10249

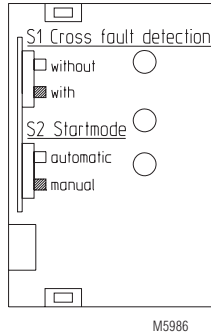
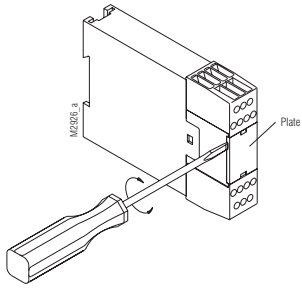
A = 10 mm  
1 x 0,5 ... 2,5 mm<sup>2</sup>  
1 x AWG 20 to 14  
2 x 0,5 ... 1,5 mm<sup>2</sup>  
2 x AWG 20 to 16



M10250

A = 10 mm  
1 x 0,5 ... 4 mm<sup>2</sup>  
1 x AWG 20 to 12  
2 x 0,5 ... 1,5 mm<sup>2</sup>  
2 x AWG 20 to 16

DE	<b>Geräteprogrammierung</b>
EN	<b>Setting</b>
FR	<b>Programmation de l'appareil</b>
IT	<b>Impostazione del modulo</b>

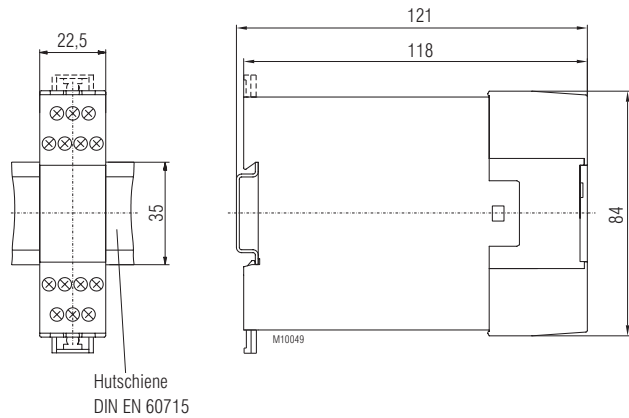


DE	<b>S1 Querschlusserkennung</b> <input type="checkbox"/> nicht sicher <input checked="" type="checkbox"/> sicher <b>S2 Start</b> <input type="checkbox"/> Auto <input checked="" type="checkbox"/> Hand
FR	<b>S1 Transversal</b> <input type="checkbox"/> sans <input checked="" type="checkbox"/> avec <b>S2 Reset</b> <input type="checkbox"/> Auto <input checked="" type="checkbox"/> Manu

IT	<b>S1 Controllo del corto-circuito trasversale</b> <input type="checkbox"/> non è sicuro <input checked="" type="checkbox"/> sicuro <b>S2 Start</b> <input type="checkbox"/> automatico <input checked="" type="checkbox"/> manuale
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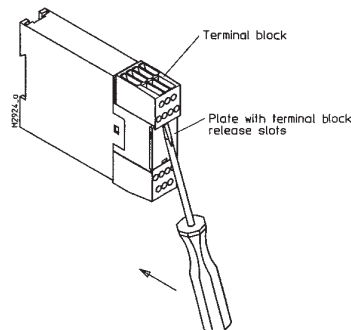
	S1	S2	Funktion Function Fonction Funzione
	Im Gerät available in unit intégré nei modelli		
BG 5925	ja yes oui si	ja yes oui si	
BG 5925._._/101	ja yes oui si	ja yes oui si	
BG 5925._._/102	nein no non no	nein no non no	Auto + nicht sicher automatic + without Auto + sans automatico + non è sicuro
BG 5925._._/103	nein no non no	nein no non no	Hand + sicher manual + with Manu + avec manuale + sicuro
BG 5925._._/104	nein no non no	nein no non no	Auto + sicher automatic + with Auto + avec automatico + sicuro

DE	<b>Maßbild (Maße in mm)</b>
EN	<b>Dimensions (dimensions in mm)</b>
FR	<b>Dimensions (dimensions en mm)</b>
IT	<b>Dimensioni (dimensione in mm)</b>



DE	<b>Montage / Demontage der Klemmenblöcke</b>
EN	<b>Mounting / disassembly of the terminal blocks</b>
FR	<b>Montage / Démontage des borniers amovibles</b>
IT	<b>Montaggio / Smontaggio di morsetti estraibili</b>

DE	S1 darf nur bei unbestromtem Gerät betätigt werden! Die Schalterstellung zeigt den Lieferzustand.
EN	Disconnect unit before setting of S1 Drawing shows setting at the state of delivery
FR	Commutation de S1 uniquement hors tension. Appareil livré tel que sur le schéma.
IT	Scollegare il modulo prima di impostare S1. La figura mostra l'impostazione al momento della consegna.



DE	<b>Sicherheitstechnische Kenndaten</b>
EN	<b>Safety Related Data</b>
FR	<b>Données techniques sécuritaires</b>
IT	<b>I dati di sicurezza</b>

<b>EN ISO 13849-1:</b>		
Kategorie / Category:	4	
PL:	e	
MTTF <sub>d</sub> :	236,3	a (year)
DC <sub>avg</sub> :	99,0	%
d <sub>op</sub> :	365	d/a (days/year)
h <sub>op</sub> :	24	h/d (hours/day)
t <sub>cycle</sub> :	3600	s/cycle
	≥ 1	/h (hour)

<b>IEC/EN 62061 IEC/EN 61508:</b>		
SIL CL:	3	IEC/EN 62061
SIL:	3	IEC/EN 61508
HFT <sup>*)</sup> :	1	
DC:	99,0	%
PFH <sub>D</sub> :	1,97E-10	h <sup>-1</sup>
T <sub>1</sub> :	20	a (year)
*) HFT = Hardware-Fehlertoleranz Hardware failure tolerance Tolérance défauts Hardware Tolleranza ai guasti hardware		

Anforderung seitens der Sicherheitsfunktion an das Gerät		Intervall für zyklische Überprüfung der Sicherheitsfunktion
Demand to our device based on the evaluated necessary safety level of the application.		Intervall for cyclic test of the safety function
Consigne résultant de la fonction sécuritaire de l'appareil		Interval du contrôle cyclique de la fonction sécuritaire
Richiesta al nostro dispositivo basato sul livello di sicurezza necessary valutata dell'applicazione		Intervall per test ciclico della funzione di sicurezza
nach; acc. to; selon; conformi a EN ISO 13849-1	PL e with Cat. 3 or Cat. 4	einmal pro Monat once per month mensuel una volta al mese
	PL d with Cat. 3	einmal pro Jahr once per year annual una volta al mese
nach; acc. to; selon; conformi a IEC/EN 62061, IEC/EN 61508	SIL CL 3, SIL 3 with HFT = 1	einmal pro Monat once per month mensuel una volta al mese
	SIL CL 2, SIL 2 with HFT = 1	einmal pro Jahr once per year annual una volta al mese



DE	Die angeführten Kenndaten gelten für die Standardtype. Sicherheitstechnische Kenndaten für andere Geräteausführungen erhalten Sie auf Anfrage. Die sicherheitstechnischen Kenndaten der kompletten Anlage müssen vom Anwender bestimmt werden.
EN	The values stated above are valid for the standard type. Safety data for other variants are available on request. The safety relevant data of the complete system has to be determined by the manufacturer of the system.
FR	Les valeurs données sont valables pour les produits standards. Les valeurs techniques sécuritaires pour d'autres produits spéciaux sont disponibles sur simple demande. Les données techniques sécuritaires de l'installation complète doivent être définies par l'utilisateur.
IT	I rating sopra si applicano al tipo standard. Dati di sicurezza per gli altri modelli sono disponibili su richiesta. I dati caratteristici relativi alla sicurezza per l'intero sistema deve essere determinato dall'utente.

