



SAFEMASTER
 Delay module,
 release delayed
 BG 7925, BH 7925

Translation
 of the original instructions

Contents

Symbol and Notes Statement.....	11
General Notes	11
Designated Use	11
Safety Notes	11
Function Diagram for devices with auxiliary voltage	13
Function Diagram for devices without auxiliary voltage.....	13
Approvals and Markings	13
Application	13
Indication	13
Block Diagram	13
Notes	14
Connection Terminals	14
Technical Data	14
Technical Data	14
UL-Data	15
CCC-Data	15
Characteristics.....	15
Characteristic.....	16
Standard Types.....	16
Variants.....	16
Application examples.....	25
Application examples.....	26
Circuit diagrams.....	27
Connection Technology	28
Mounting / disassembly of the terminal blocks	28
Dimensions (dimensions in mm)	28
Safety Related Data	29
CE-Declaration of Conformity.....	30
CE-Declaration of Conformity.....	31



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 7925 e.g. BH 7925 delayed switch-off in safety-control circuits, stop-category 1 according to IEC/EN 60 204-1.

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!

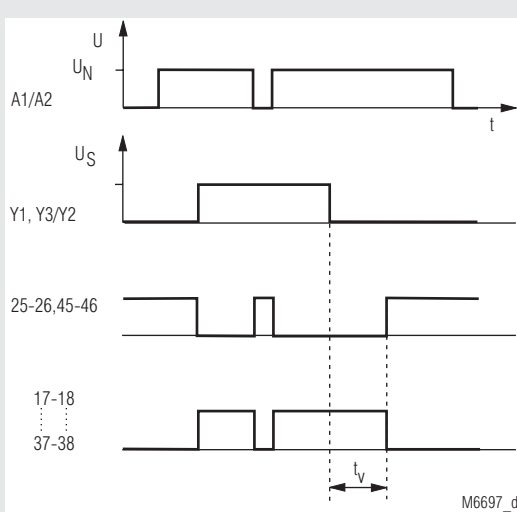
- The safety function must be triggered during commissioning.
- Before activating the unit it has to be checked by monitoring the NC contacts 25/26 or 45/46, if both relays have been de-energized.
- Opening the device or implementing unauthorized changes voids any warranty

SAFEMASTER Delay module, release delayed BG 7925, BH 7925

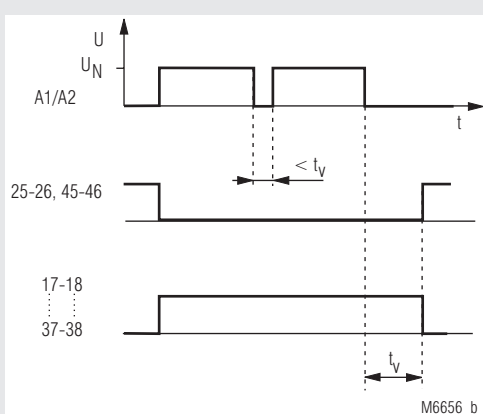


- Can be used in conjunction with a suitable switchgear / control unit in safety applications as follows:
 - Up to PL d and category 2 according to EN ISO 13849-1
 - Up to SIL 2 according to EN 61508 and EN 61511
- Variants /__2 and /__3 can be used in conjunction with a suitable switchgear / control unit in safety applications as follows:
 - Up to PL d and category 3 according to EN ISO 13849-1
 - Up to SIL 2 according to EN 61508 and EN 61511
- Adjustable time delay
- Long time stability by digital timing circuit
- With auxiliary voltage
- 1 timing circuit
- BH 7925 in dual voltage version
- BH 7925 optionally for AC 230 V
- Output:
 - 1 NC contact, 1 NO contact, forcibly guided or
 - 1 NC contact, 3 NO contacts, forcibly guided
- Indication of state of operation
- Removable terminal strips
- Wire connection: also 2 x 1.5 mm² stranded ferruled (isolated), 2 x 2.5 mm² stranded ferruled DIN 46228-1/-2/-3/-4 or
- Optionally with 2 timing circuits
- Optionally fixed time delay
- Optionally without auxiliary voltage on BH 7925
- Optionally for switching small loads
- BG 7925: Width 22.5 mm
- BH 7925: Width 45 mm

Function Diagram for devices with auxiliary voltage



Function Diagram for devices without auxiliary voltage



Approvals and Markings



* See variants ¹⁾ Only for BH 7925

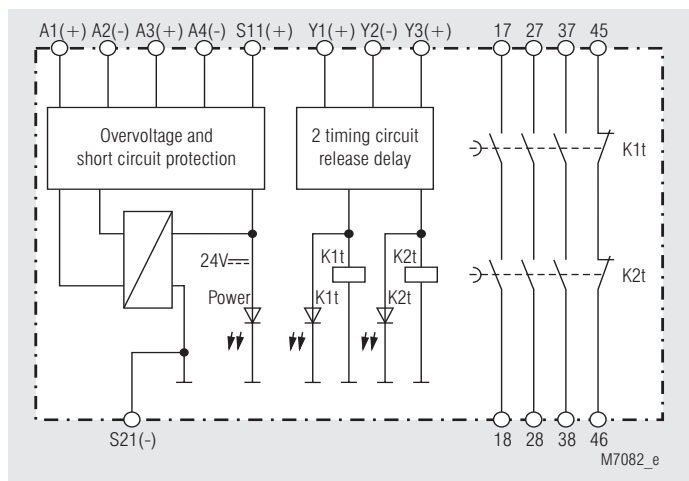
Application

Delayed switch-off in safety-control circuits, stop-category 1 according to IEC/EN 60204-1

Indication

- LED "Power": On, when operating voltage applied
- LED K1t: On, when output relay K1t activated
- LED K2t: On, when output relay K2t activated

Block Diagram



Block diagram for units with 2 timing circuits.
In units with only 1 circuit K2t is missing.

Notes

The output contacts of the two timing circuits are connected in series. This results in so-called switch off redundancy, i.e. the contact path is opened reliably after expiry of the predefined delay time, even if a contact in this path is welded.

AC-models can be connected to DC 24 V via terminals A3-A4.

For units with auxiliary supply the control of the time circuits is made via terminals Y1, Y3/Y2 (see application examples). Plus is connected to Y1, Y3 and minus to Y2. Units without auxiliary supply are controlled with the nominal voltage U_N .

Attention!

Before activating the unit it has to be checked by monitoring the NC contacts 45, 46, if both relays have been de-energized.

The gold plated contacts of the BG 7925.21/40_ mean that this module is also suitable for switching small loads of 10 mVA ... 12 VA, 10 mW ... 12 W in the range 2 ... 60 V, 2 ... 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.

Connection Terminals

Terminal designation	Signal description
A1 (+), A3 (+)	+ / L
A2 (-), A4 (-)	- / N
Y1(+), Y2(-), Y3 (+)	Inputs
S11(+), S21 (-)	Outputs
17, 18, 27, 28, 37, 38	Forcibly guided NO contacts for release circuit
25, 26, 45, 46	Forcibly guided indicator output

Technical Data

Time circuit

Time delay t_v :	Adjustable	Fixed
	0.1 ... 1 s	1 s
	0.3 ... 3 s	3 s
	0.5 ... 5 s	5 s
	1 ... 10 s	10 s
	3 ... 30 s	30 s
	10 ... 100 s	
	30 ... 300 s	
	3 ... 30 min	

Longer time on request. Units without auxiliary supply are available only up to 10 s with 1 timing circuit or 5 s with 2 timing circuits.

Repeat accuracy: ± 1 % of the setting value

Min. turn-on time: 10 % of full scale value
50 % of full scale value for units without auxiliary supply

Input

Nominal voltage U_N (Auxiliary voltage U_H)

BG 7925: AC/DC 24 V
BH 7925: AC/DC 24 V¹⁾ and AC 230 V²⁾
¹⁾ on terminals A3 - A4
²⁾ on terminals A1 - A2

Voltage range:
with 10 % residual ripple: AC 0.8 ... 1.1 U_N
with 48 % residual ripple: DC 0.9 ... 1.1 U_N

Nominal frequency: 50 / 60 Hz

Nominal consumption: Typically DC 2.0 W
Typically AC 4.2 VA

Control voltage U_s

at Y1, Y2, Y3: Typically DC 24 V
current in Y1, Y3: Typically 6.5 mA

Technical Data

Output

Contacts

BG 7925.21, BH 7925.21: 1 NO contact, 1 NC contact
BG 7925.96, BH 7925.96: 3 NO contacts, 1 NC contact

The NO contacts are safety contacts.

The NC contacts 25-26 or 45-46 can only be used for monitoring.

Contact type: Relay, forcibly guided

Release delay typ. at U_N

BG7925, BH7925/0xx
Disconnecting the supply: 35 ms
Disconnecting Y1, Y2, Y3: 35 ms + t_v

BH5925/1xx
Disconnecting the supply: 35 ms + t_v
Disconnecting Y1, Y2, Y3: 35 ms + t_v

Nominal output voltage: AC 10 ... 250 V
DC 10 ... 110 V
max. 5 A

Thermal current I_{th} :

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
BG/BH 7925.21
NO contact: 2 A / DC 24 V IEC/EN 60947-5-1
NC contact: 2 A / DC 24 V IEC/EN 60947-5-1

BG/BH 7925.96
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 / DC 24 V at 0.1 Hz

BG/BH7925.21
NC contact: 3 A / DC 24 V at 0.1 Hz

BG/BH7925.96
NC contact: 4 A / DC 24 V at 0.1 Hz

Electrical life

at 5 A, AC 230 V $\cos \varphi = 1$: $> 2 \times 10^5$ switching cycles

Permissible operating frequency:

Max. 2000 switching cycles / h
please note minimum closing time

Short circuit strength

max. fuse rating: 6 A gG / gL IEC/EN 60947-5-1

Mechanical life: 10×10^6 switching cycles

General Data

Operating mode: Continuous operation

Temperature range

Operation: - 15 ... + 55 °C

Storage: - 25 ... + 85 °C

Clearance and creepage distances

Rated impuls voltage / pollution degree: 4 kV / 2 IEC 60664-1

EMC
EN 61326-3-1
Interference suppression: Limit value class B EN 55011

Degree of protection

Housing: IP 40 IEC/EN 60529

Terminal plate: IP 20 IEC/EN 60529

Housing: Thermoplastic with V0 behaviour according to UL subject 94

Vibration resistance: Amplitude 0.35 mm, IEC/EN 60068-2-6

frequency 10 ... 55 Hz

15 / 055 / 04 IEC/EN 60068-1

Climate resistance: Terminal screws M 3.5

Wire fixing: Box terminal with wire protection

DIN rail IEC/EN 60715

Mounting: 210 g

Weight:

Dimensions

Width x height x depth

BG 7925: 22,5 x 84 x 121 mm

BH 7925: 45 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"

Nominal voltage U_N :
BG7925, /001, /002, /003: AC/DC 24V

Ambient temperature: - 15 ... + 55 °C

Switching capacity
NO contact: Pilot duty B300
5A 250Vac Resistive
5A 24Vdc Resistive or G.P.

NC contact: 5A 250Vac Resistive
5A 24Vdc Resistive or G.P.

Wire connection: 60 °C / 75 °C copper conductors only
AWG 20 - 12 Sol Torque 0.8 Nm
AWG 20 - 14 Sol Torque 0.8 Nm



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

CCC-Data

Nominal voltage U_N :
BH 7925: AC/DC 24 V und AC 230 V

Thermal current I_{th} : Max. 4 A
(see quadratic total current limit curve)

Switching capacity
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



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

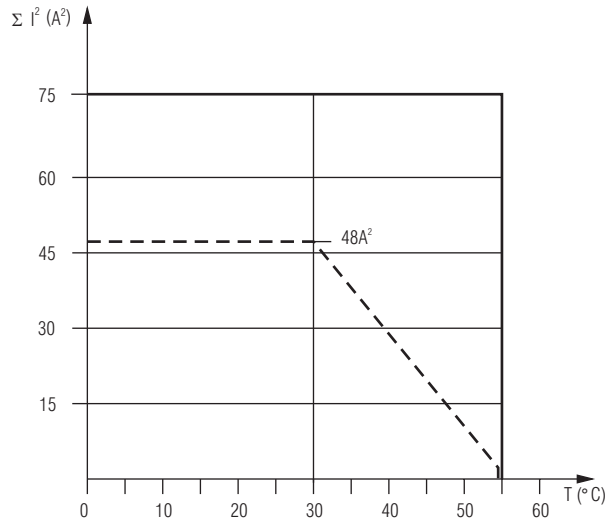
Troubleshooting

Failure	Potential cause
LED "Power" does not light up	Power supply A1/A2 not connected
LED "K1t" lights up, but "K2t" remains off	- Signal on Y2 is not present - Wrong setting of operation mode (cross fault detection)
LED "K2t" lights up but "K1t" remains off	- Signal on Y1 is not present
Device cannot be activated	Safety relay is welded (replace device)

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



M7601_a

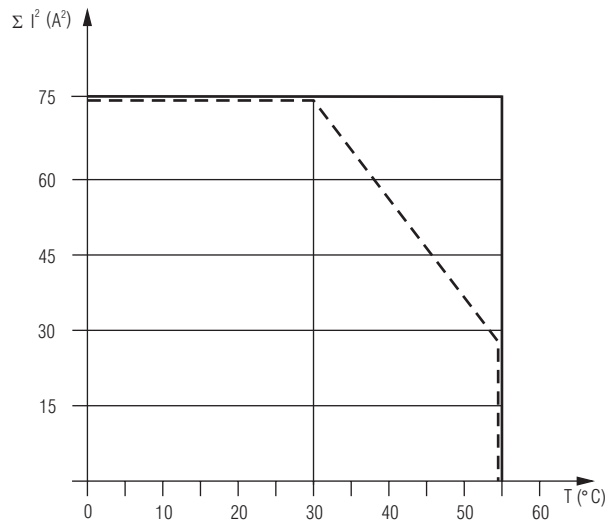
— Device mounted on distance with air circulation.
Max. current at 55°C over
3 contactrows = $5A \cong 3 \times 5^2 A^2 = 75A^2$

- - - 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

Total current limit curve BG 7925



M9940

— Device mounted on distance with air circulation.
Max. current at 55°C over
3 contactrows = $5A \cong 3 \times 5^2 A^2 = 75A^2$

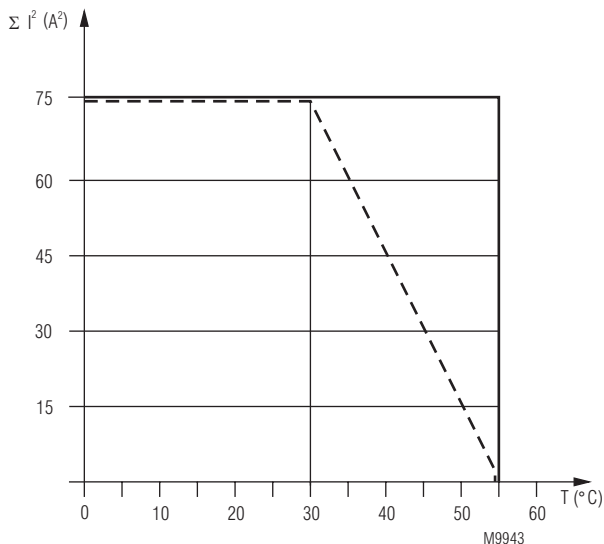
- - - Device mounted without distance heated by
devices with same load.
Max. current at 55°C over
3 contactrows = $3A \cong 3 \times 3^2 A^2 = 27A^2$

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

I_1, I_2, I_3 - Current in contactrows

Total current limit curve BH 7925 AC/DC 24 V

Characteristic



— Device mounted on distance with air circulation.
Max. current at 55°C over
3 contactrows = 5A \cong 3x5²A² = 75A²

- - - Device mounted without distance heated by
devices with same load.
Max. current at 55°C over
3 contactrows = 1A \cong 3x1²A² = 3A²

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

I_1, I_2, I_3 - Current in contactrows

Total current limit curve BH 7925 AC 230 V

Standard Types

BG 7925.21 AC/DC 24 V 50/60 Hz 1 ... 10 s

Article number: 0049628

- With auxiliary voltage
- 1 timing circuit
- Adjustable time delay 1 ... 10 s
- Output: 1 NO contact, 1 NC contact
- Nominal voltage U_N : AC/DC 24 V
- Width: 22,5 mm

BH 7925.21/100 AC/DC 24 V + AC 230 V 50/60Hz 1 ... 10 s

Article number: 0050034

- Without auxiliary voltage
- 1 timing circuit
- Adjustable time delay 1 ... 10 s
- Output: 1 NO contact, 1 NC contact
- Nominal voltage U_N : AC/DC 24 V + AC 230 V
- Width: 45 mm

Variants

BG 7925/61:

with UL approval

	Gold plated contacts 5 μ m Au	Without auxiliary supply	With auxiliary supply	AC/DC 24 V	AC/DC 24 V + AC 230 V	1 timing circuit		2 timing circuits	
						adjustable	fixed	adjustable	fixed
BG 7925.21			X	X		X			
BG 7925.21/001			X	X			X		
BG 7925.21/002			X	X				X	
BG 7925.21/003			X	X					X
BG 7925.21/400	X		X	X		X			
BG 7925.21/401	X		X	X			X		
BG 7925.21/402	X		X	X				X	
BG 7925.21/403	X		X	X					X
BG 7925.96			X	X		X			
BG 7925.96/001			X	X			X		
BG 7925.96/002			X	X				X	
BG 7925.96/003			X	X					X
BH 7925.21			X		X	X			
BH 7925.21/001			X		X		X		
BH 7925.21/002			X		X			X	
BH 7925.21/003			X		X				X
BH 7925.96			X		X	X			
BH 7925.96/001			X		X		X		
BH 7925.96/002			X		X			X	
BH 7925.96/003			X		X				X
BH 7925.21/100	X			X	X	X			
BH 7925.21/101	X			X	X		X		
BH 7925.21/102	X			X	X			X	
BH 7925.21/103	X			X	X				X
BH 7925.96/100	X			X	X	X			
BH 7925.96/101	X			X	X		X		
BH 7925.96/102	X			X	X			X	
BH 7925.96/103	X			X	X				X

BG 7925 modules require auxiliary voltage. BH 7925 modules are available with or without auxiliary voltage.

The devices with gold plated contacts are suitable for switching small loads.

Ordering example for Variants

BG 7925 . . . / . . . AC/DC 24 V 50 / 60 Hz 0,5 ... 5 s

