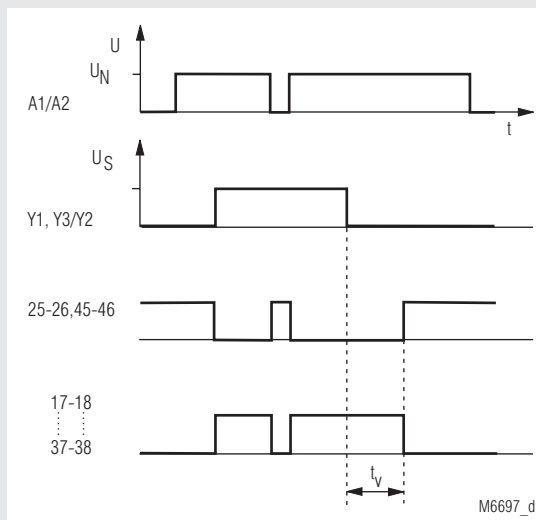


Delay module BG 7925, BH 7925, release delay SAFEMASTER®



- According to
 - SIL-Claimed Level (SIL CL) 2 to EN 62061
 - Performance Level (PL) d to DIN EN ISO 13849-1
- 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, positive guided or 1 NC contact, 3 NO contacts, positive guided
- Indication of state of operation
- Removable terminal strips
- Wire connection: also 2 x 1.5 mm² stranded ferruled (isolated), DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm² stranded ferruled DIN 46 228-1/-2/-3
- 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



Approvals and marking



* see variants

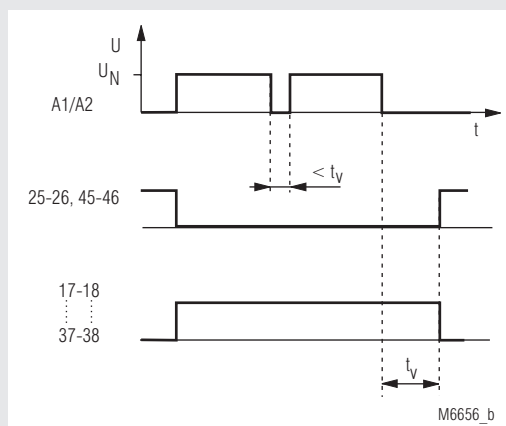
Application

Delayed switch-off in safety-control circuits, stop-category 1 according to IEC/EN 60 204-1

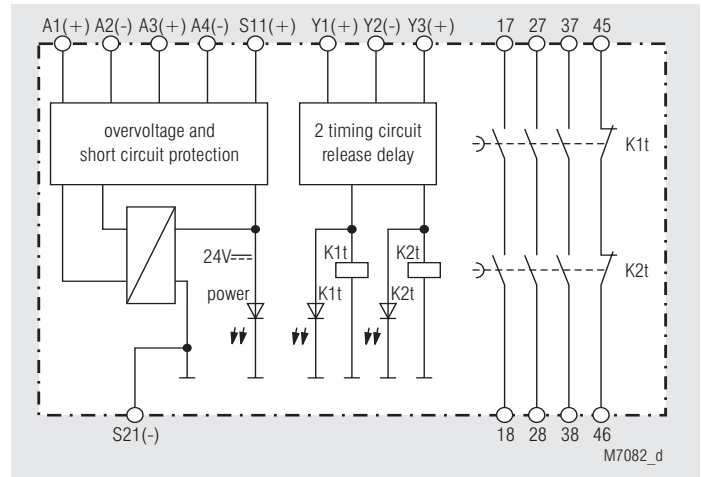
Indication

upper LED: on when operating voltage applied
lower LEDs: on when output relay activated

Function diagram for devices without auxiliary voltage



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.

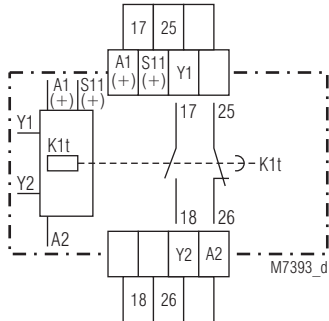
For units with auxiliary supply the control of the time circuits is made via terminals Y1, Y3/Y2 (see application examples). Plus is connected to Y1, Y3 and minus to Y2. Units without auxiliary supply are controlled with the nominal voltage U_N .

Attention!

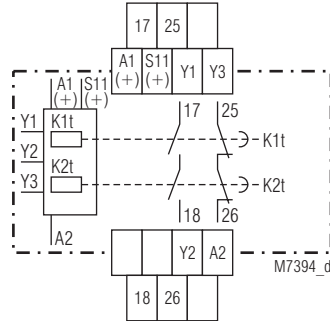
Before activating the unit it has to be checked by monitoring the NC contacts 45, 46, if both relays have been de-energised.

The gold plated contacts of the BG 7925.21/40_ 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.

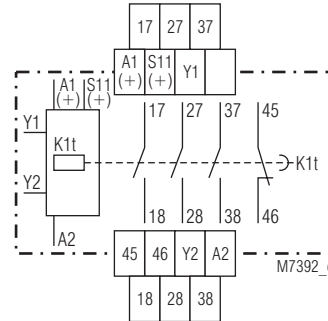
Circuit diagrams



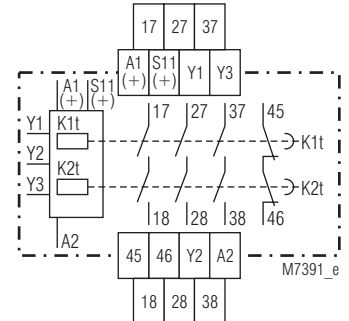
BG 7925.21, BG 7925.21/001
1 timing circuit



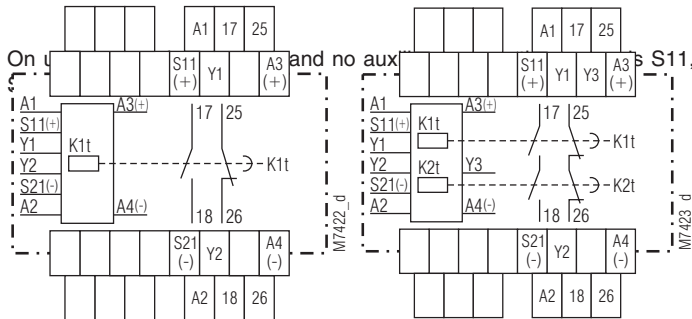
BG 7925.21/002, BG 7925.21/003
2 timing circuits



BG 7925.96, BG 7925.96/001
1 timing circuit

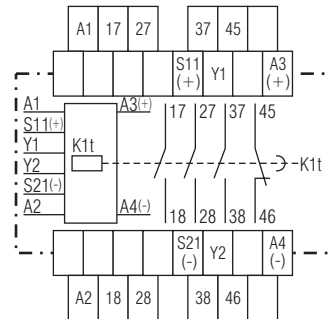


BG 7925.96/002, BG 7925.96/003
2 timing circuits

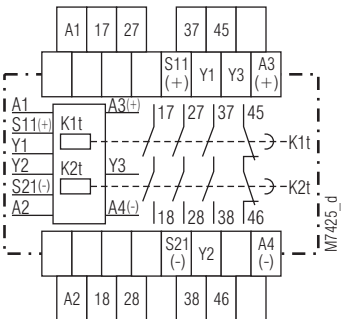


BH 7925.21/_00, BH 7925.21/_01
1 timing circuit

BH 7925.21/_02, BH 7925.21/_03
2 timing circuits



BH 7925.96/_00, BH 7925.96/_01
1 timing circuit



BH 7925.96/_02, BH 7925.96/_03
2 timing circuits

On units with 1 timing circuit and no auxiliary supply the terminals S11, S21, Y1 and Y2 do not exist.

Technical Data

Time circuit

Time ranges:	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: DC 0.9 ... 1.1 U_N
with 48 % residual ripple: DC 0.8 ... 1.1 U_N

Nominal frequency:

50 / 60 Hz
typically DC 2.0 W
typically AC 4.2 VA

Technical Data

Control voltage U_s at Y1, Y2, Y3:

typically DC 24 V
typically 6.5 mA

current in Y1, Y3:

Output

Contacts

BG 7925.21, BH 7925.21:
BG 7925.96, BH 7925.96:

1 NO contact, 1 NC contact
3 NO contacts, 1 NC contact

Contact type:

Relay, positively-driven

Nominal output voltage:

AC 10 ... 250 V
DC 10 ... 110 V

Thermal current I_{th} :

max. 5 A

Switching capacity

to AC 15:

IEC/EN 60 947-5-1

BG/BH 7925.21:
BG/BH 7925.96:

3 A / AC 230 V for the NO contact
1 A / AC 230 V for the NC contact

to DC 13:

2 A / AC 230 V for the NC contact

BG 7925.21/40_:

IEC/EN 60 947-5-1

to AC 15 at 3 A, AC 230 V:

2 A / DC 24 V for the NO contact
2 A / DC 24 V for the NC contact

Permissible operating frequency:

IEC/EN 60 947-5-1

Electrical life

≥ 2.5 x 10⁶ switching cycles

Short circuit strength

max. 2000 switching cycles / h

max. fuse rating:

please note minimum closing time

Mechanical life:

6 A gL IEC/EN 60 947-5-1

Short circuit strength

10 x 10⁶ switching cycles

max. fuse rating:

Mechanical life:

Technical Data

General Data

Operating mode:	Continuous operation	
Temperature range:	- 15 ... + 55°C	
Clearance and creepage distances		
rated impuls voltage / pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
Fast transients:	2 kV	IEC/EN 61 000-4-4
Surge voltages between		
wires for voltage supply:	1 kV	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
HF irradiation:	10 V	IEC/EN 61 000-4-6
Interference suppression:	limit value class B	EN 55011
Degree of protection		
Housing:	IP 40	IEC/EN 60 529
Terminal plate:	IP 20	IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm, IEC/EN 60 068-2-6 frequency 10 ... 55 Hz	
Climate resistance:	15 / 055 / 04 IEC/EN 60 068-1	
Wire connection:	1 x 4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² stranded ferruled DIN 46 228-1/-2/-3	
Wire fixing:	Terminal screws M 3.5 Box terminal with wire protection DIN rail	
Mounting:		IEC/EN 60 715
Weight:	210 g	

Dimensions

Width x height x depth	
BG 7925:	22,5 x 84 x 121 mm
BH 7925:	45 x 84 x 121 mm

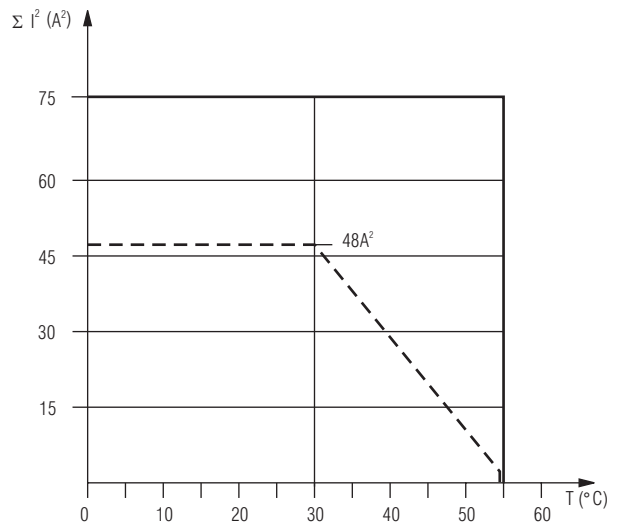
Safety related data

Probability of dangerous Failure per Hour (PFH_D):	1.91 · 10 ⁻⁷ 1/h
Safe Failure Fraction (SFF):	80.6 % (AC/DC 24 V) 80.5 % (DC 24 V)
Proof Test Intervall (T1):	20 Years



The values stated above are valid for the standard type. Safety data for other variants are available on request

Characteristics



M7601_a

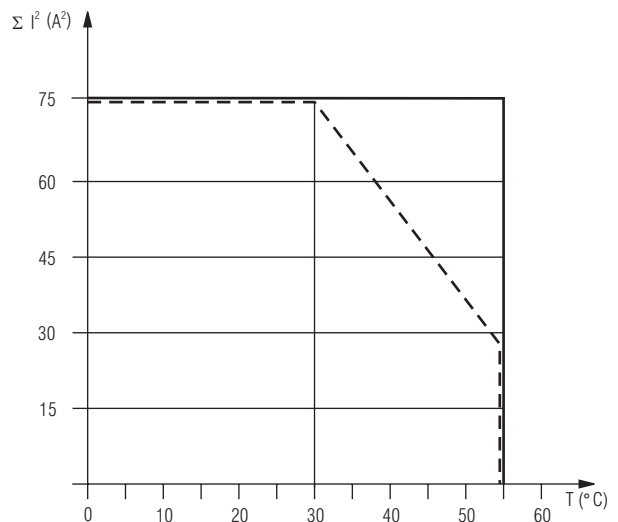
— device mounted on distance with air circulation.
max. current at 55°C over
3 contactrows = 5A ≙ 3x5²A²=75A²

- - - device mounted without distance heated by
devices with same load,
max current at 55°C over
3 contactrows = 1A ≙ 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 BG 7925



M9940

— device mounted on distance with air circulation.
max. current at 55°C over
3 contactrows = 5A ≙ 3x5²A²=75A²

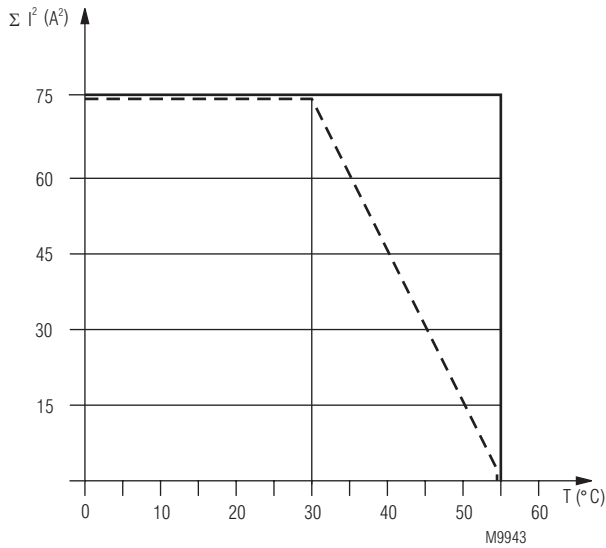
- - - device mounted without distance heated by
devices with same load,
max current at 55°C over
3 contactrows = 3A ≙ 3x3²A²=27A²

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

I_1, I_2, I_3 - current in contactrows

Total current limit curve BH 7925 AC/DC 24 V

Characteristics



— 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 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:

- 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

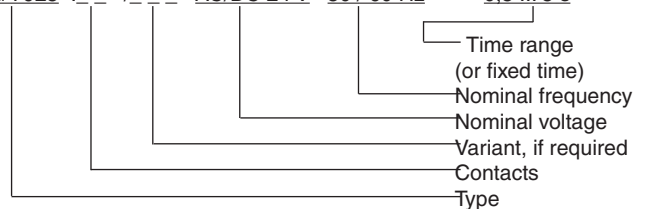
	Gold plated contacts 5 µm Au	Without auxiliary supply	With auxiliary supply	AC/DC 24 V	AC/DC 24 V + AC 230 V	1 timing circuit		2 timing circuits	
						adjustable	fixed	adjustable	fixed
BG 7925.21			X	X		X			
BG 7925.21/001			X	X			X		
BG 7925.21/002			X	X				X	
BG 7925.21/003			X	X					X
BG 7925.21/400	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.

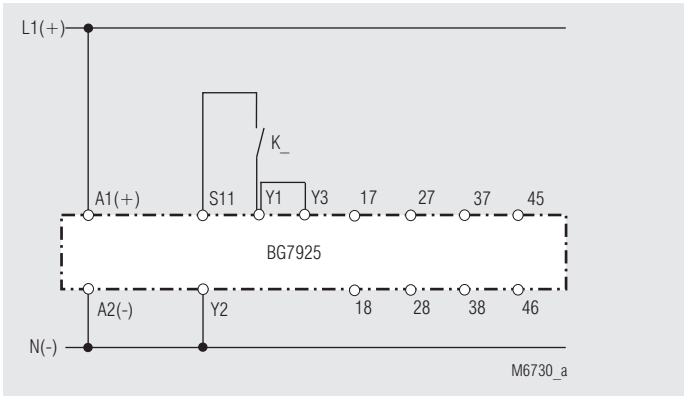
The devices with gold plated contacts are suitable for switching small loads.

Ordering example for Variants

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

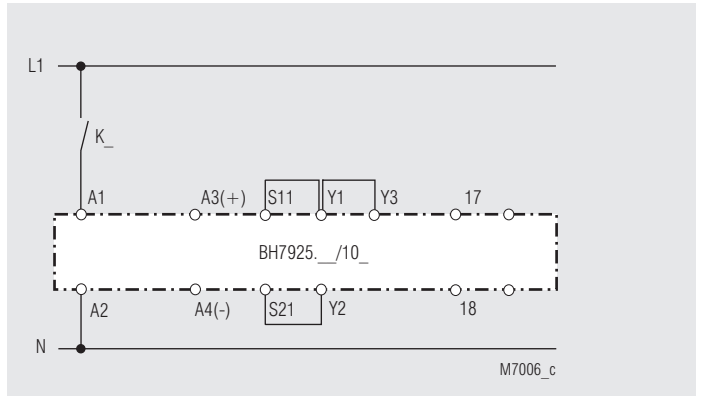


Application examples

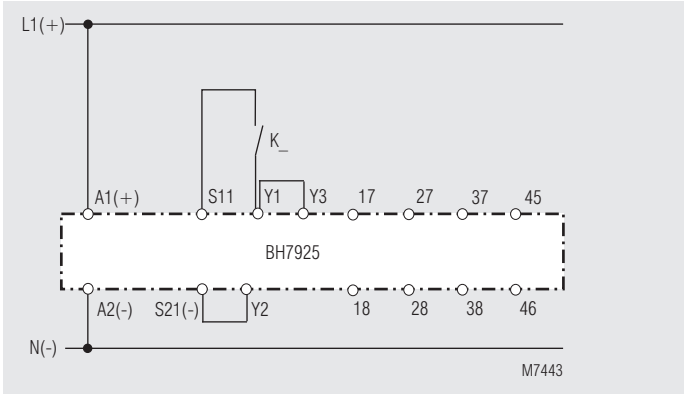


Versions with auxiliary voltage.
Time control with internal voltage S11(+)

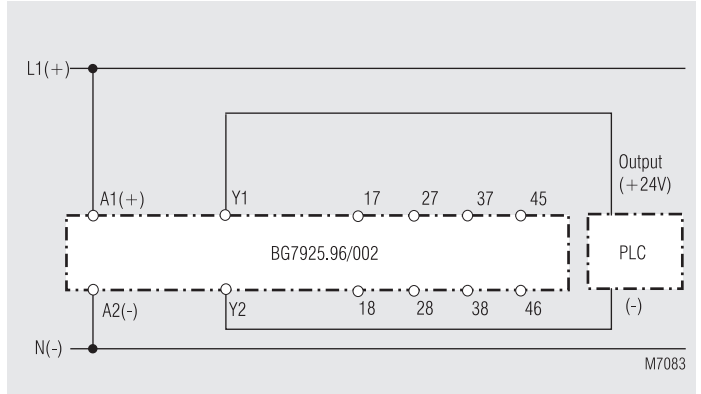
Application examples



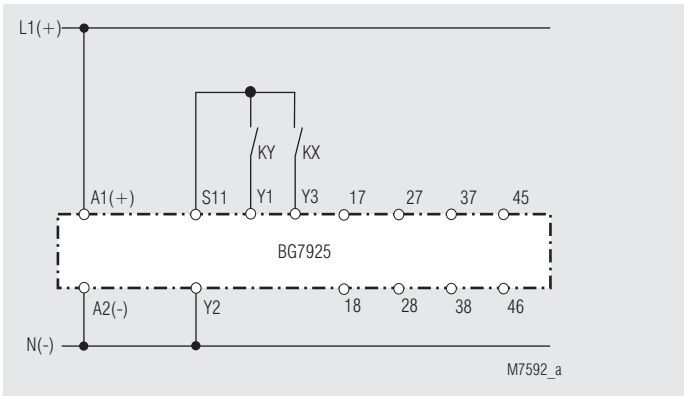
Versions without auxiliary voltage.
Control of timing circuits over K1.



Versions with auxiliary voltage.
Time control with internal voltage S11(+), S21(-)



Time control with external voltage (e.g. PLC)
If voltage peaks ≥ 500 V are expected, they have to be limited by suitable means.



Versions with auxiliary voltage.
Separate control of 2 timing circuits with internal voltage S11 (+).

