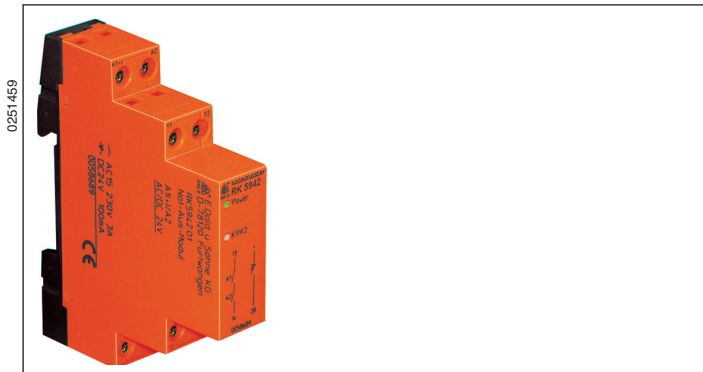
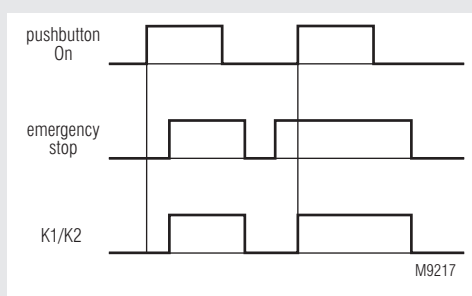


SAFEMASTER Emergency Stop Module, Extremely Small RK 5942

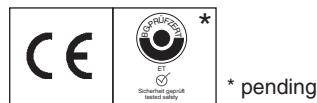


- According to
 - Performance Level (PL) d and category 3 to EN ISO 13849-1: 2008
 - SIL Claimed Level (SIL CL) 2 to IEC/EN 62061
 - Safety Integrity Level (SIL 2) to IEC/EN 61508
 - Category 3 to EN 954-1
- Single channel operation
- Output: 1 NO contact and 1 monitoring logic output
- LED-indicator for relay 1 / 2 and supply voltage
- Wire connection: max. cross section for connection each 1 x 6 mm² solid, each 1 x 4 mm² stranded ferruled, each 2 x 2.5 mm² wire with twin ferrule; min. cross section for connection: each 1 x 1 mm² stranded ferruled or 1 x 1.5 mm² solid
- Width 17.5 mm and 64 mm depth

Function Diagramm



Approvals and Marking



Applications

- Protection of people and machines
- Emergency stop circuits on machines

Indicators

LED Power: on, when supply connected
LED K1/K2: on, when relay K1 and K2 energized

Note

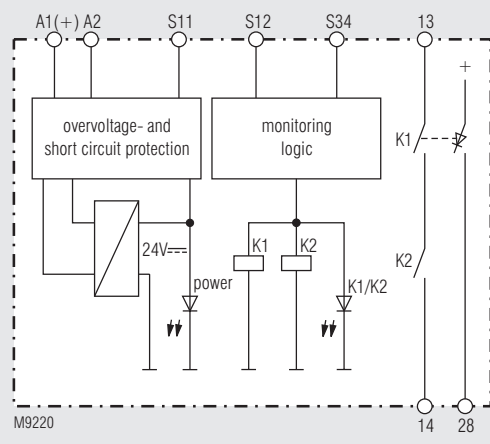
ATTENTION - AUTOMATIC START!



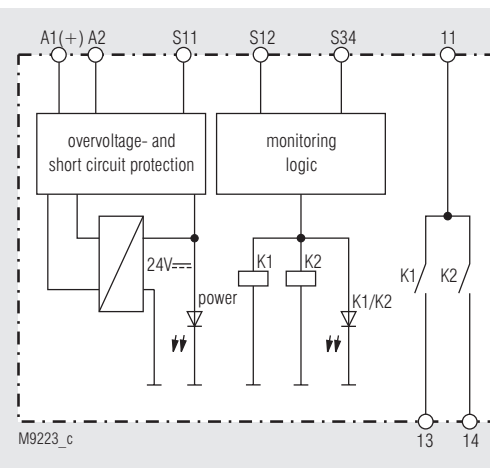
According to IEC/EN 60 204-1 part 9.2.5.4.2 and 10.8.3 it is not allowed to restart automatically after emergency stop. Therefore the machine control has to disable the automatic start after emergency stop.

For removing the pluggable terminals blocks, the unit must be switched off. The terminals blocks A1+ / A2, 13 / 14 and S28+ / S28 can only be plugged on the assigned position.

Block Diagrams

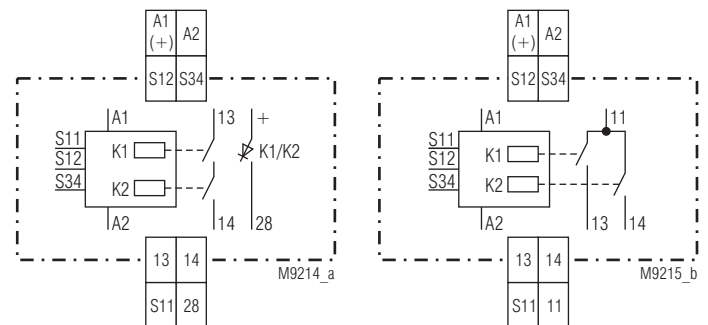


RK 5942.02



RK 5942.03

Circuit Diagrams



RK 5942.02

RK 5942.03

Technical Data

Input

Nominal voltage U_N:	DC 24 V
Nominal frequency:	50 / 60 Hz
Voltage range:	
at 10 % residual ripple:	DC 0.9 ... 1.1 U_N
Nominal consumption	
DC 24 V:	DC 2.2 W
Control voltage on S11	
DC 24 V:	typ. DC 22.5 V
Control current	
DC 24 V:	typ. DC 95 mA
Recovery time:	0.5 s

Output

Contacts	1 NO contact, 1 semiconductor contact The NO contacts are safety contacts. ATTENTION ! The relay with semiconductor output is available as DC
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device only.

The semiconductor output can only be used for monitoring.

Operate delay

DC 24 V:	typ. DC 80 ms
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Release delay

DC 24 V:	typ. DC 70 ms
----------	---------------

Contact type:

	forcibly guided
Thermal current I_{th}:	max. 5 A (see continuous current limit curve)

Nominal output voltage:	AC 250 V
--------------------------------	----------

Switching capacity

to AC 15:		
NO contacts:	3 A / AC 230 V	IEC/EN 60 947-5-1
to DC 13:		
NO contacts:	4 A / 24 V	IEC/EN 60 947-5-1

Electrical life

at 5 A, AC 230 V $\cos \varphi = 1$: according to DC 13 semiconductor output:	> 10^5 switching cycles
Output voltage at 100 mA:	DC 24 V, 100 mA, short circuit strong
	21.5 V

Permissible operating frequency:

	600 switching cycles / h
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Short circuit strength

max. fuse rating:	6 A gL	IEC/EN 60 947-5-1
line circuit breaker:	B 6	

Mechanical life:

	10 x 10^6 switching cycles
--	------------------------------

General Data

Operating mode:	Continuous operation
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Temperature range

operation:	- 15 ... + 55 °C
storage :	- 25 ... + 85 °C
altitude:	< 2.000 m

Clearance and creepage distances

rated impuls voltage / pollution degree:	4 kV / 2 (basis insulation)	IEC 60 664-1
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EMC

Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF-irradiation:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4
HF-wire guided:	10 V	IEC/EN 61 000-4-6
Interference suppression:	Limit value class B	EN 55 011

Degree of protection

Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529

Housing:

	Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz, IEC/EN 60 068-2-6

Climate resistance:	15 / 055 / 04	IEC/EN 60 068-1
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Terminal designation:	EN 50 005
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Technical Data

Wire connection

max. cross section:	each 1 x 6 mm ² solid, each 1 x 4 mm ² stranded ferruled, each 2 x 2.5 mm ² wire with twin ferrule	
min. cross section:	each 1 x 1 mm ² stranded ferruled or 1 x 1.5 mm ² solid	
Wire fixing:	Plus-minus terminal screws M 3.5 box terminals	
Mounting:	DIN rail	IEC/EN 60 715
Weight:	110 g	

Dimensions

Width x height x depth:	17.5 x 90 x 71 mm
Mounting depth:	64 mm

Safety Related Data

Values according to EN ISO 13849-1:

Category:	3	
PL:	d	
MTTF _d :	> 100	a
DC _{avg} :	99.0	%
d _{op} :	365	d/a (days/year)
h _{op} :	24	h/d (hours/day)
t _{Zyklus} :	2.60E+06	s/Zyklus
	= 1	/mth (month)

Values according to IEC/EN 62061 / IEC/EN 61508:

SIL CL:	2	IEC/EN 62061
SIL	2	IEC/EN 61508
HFT ¹⁾ :	1	
DC _{avg} :	99.0	%
SFF	99.7	%
PFH _D :	4.49E-11	h ⁻¹

¹⁾ HFT = Hardware-Failure Tolerance



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

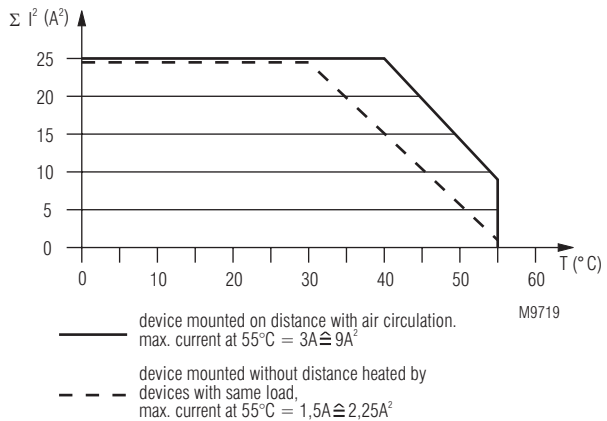
The safety relevant data of the complete system has to be determined by the manufacturer of the system.

Standard types

RK 5942.02 DC 24 V

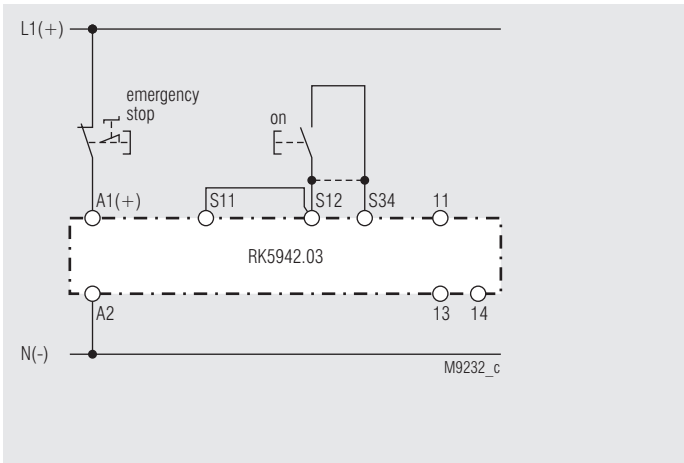
Article number:	0058690
• Output:	1 NO contact, 1 semiconductor output
• Nominal voltage U_N :	DC 24 V
• Width:	17.5 mm

Characteristics



Continuous current limit curve

Application Examples



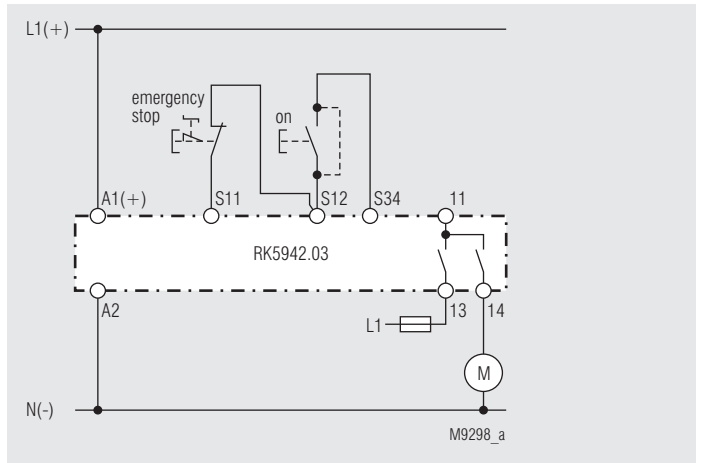
Single channel emergency-stop circuit without feed back loop, with or without automatic restart.

For automatic restart terminals S12 - S34 must be linked.

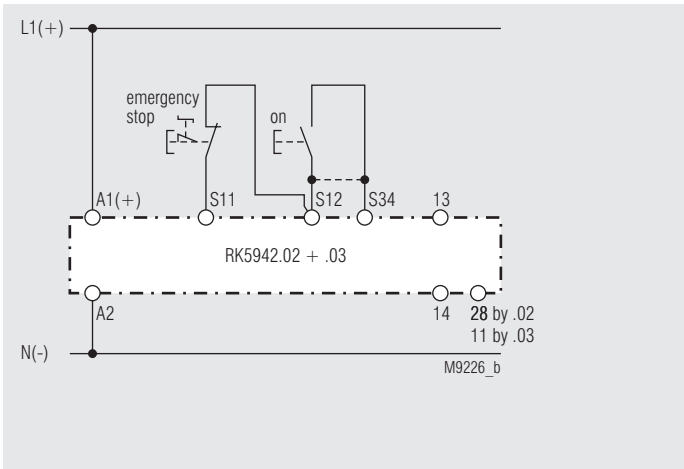
No ON-pushbutton necessary.

ATTENTION ! This application can only be used for RK 5942.03.

Application Examples



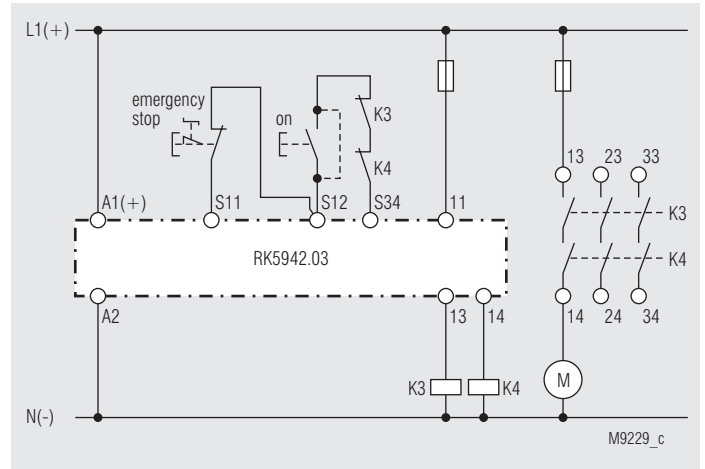
ATTENTION ! For applications of safety stops the load must be connected to the contacts in series with 2 NO contacts.



Single channel emergency-stop circuit without feed back loop, with or without automatic restart.

For automatic restart terminals S12 - S34 must be linked.

No ON-pushbutton necessary.



Contact reinforcement by external contactors.

At a thermal current $I_{th} > 5$ A the output contacts can be reinforced by external contactors with forcibly guided contacts.

Functioning of the external contactors is monitored by looping the NC contacts into the start circuit (S12 - S34).

ATTENTION ! For applications of safety stops the load must be connected to the contacts in series with 2 NO contacts.

