SNV 4063KL – Monitoring of emergency stop, safety gates and light barriers, OFF-delayed





Liverband Free Coll COL US

Function

With the supply voltage applied to terminals A1/A2 and the emergency set right and left margins in-line button. This controls relays K1 to K4, which become self-locking (when starting via reset button monitoring after the response time). After this switch-on phase the 3 enabling current paths are closed (terminals 13/14, 23/24 and 37/38). Three LEDs display the state of relays K1/K2, K3/K4 and the supply voltage.

If the emergency stop button is activated, the current supplies for relays K1 to K4 are interrupted. The undelayed enabling current paths (terminals 13/14, 23/24) are opened with release time tR₁ while the off-delayed enabling current path (terminals 37/38) is opened after the pre-set OFF-delay time t_{R2}. The OFF-delay time can be adjusted infinitely in the range 0.15 to 3 s or 1.5 to 30 s.

Circuit diagram



Applications

- Protection of people and machinery
- Monitoring of emergency stop applications
- Monitoring of safety gates
- Monitoring of light barriers
- Termination of braking operations through OFF-delay time
- Control of solenoid-actuated interlocks
- Up to PL e/Category 4 (EN ISO 13849-1) for undelayed contacts
- Up to PLd/Category 3 (EN ISO 13849-1) for delayed contacts
- Up to SILCL 3 (EN 62061)

Features

- Stop category 0/1 according to EN 60204-1
- Single-channel or two-channel control
- Manual or automatic start
- OFF-delay time adjustable in the range 0.15 to 3s or 1.5 to 30s
- Reset button monitoring, cross monitoring, monitoring of synchronous time
- 3 enabling current paths (2 undelayed, 1 OFF-delayed)

With a two-channel control and cross-monitoring wiring of the sensor circuit, additional errors such as short-circuit or ground fault can be detected. An electronic fuse protects the device against damage. After the cause of the malfunction has been removed, the device is operational again after approx. 3 s.

- **Reset button monitoring** The device can be started either with the falling edge or with the rising edge (terminals S34 or S35). For emergency stop applications with manual start the button must be connected to terminals S33/S34. The device is enabled only with the falling edge of the reset signal. For starting, the reset button must be pressed and released. For safety gate applications in which an automatic start is performed it is necessary to bridge terminals S33/ S35. The device will react at the rising edge of input S12 which is internally connected to S33.
- Monitoring of synchronous time The use of safety limit switches for single-channel or two-channel circuits in safety gate applications depends on the required safety level. The device provides a monitoring of the synchronous time of two connected safety switches. A synchronous time $t_{\rm S}\approx 0.5$ s requires limit switches positioned in such a way that channel 1, terminals S11/S12, closes before channel 2, terminals S21/S22. If channel 2 closes before channel 1, the synchronous time is $t_{\rm S}=\infty.$

Overview of devices | part numbers

Туре	Time range	Rated voltage	Terminals	Part no.	Std. pack
SNV 4063KL-A	3 s	24 V DC	Screw terminals, pluggable	R1.188.0620.0	1
	30 s	24 V DC	Screw terminals, pluggable	R1.188.0640.0	1
	150 s	24 V DC	Screw terminals, pluggable	R1.188.4100.0	1
SNV 4063KL-C	3 s	24 V DC	Push-in terminals, pluggable	R1.188.2010.0	1
	30 s	24 V DC	Push-in terminals, pluggable	R1.188.3900.0	1

Technical data

Function		Emergency stop relay for controlled stop	
Function display		3 LEDs, green	
		Time / stepless	
Function mode / adjustment			
Adjustment range		0.15 - 3 s / 1.5 - 30 s / 7.5 - 150 s	
Power supply circuit	41.40		
Rated voltage U _N	A1, A2	24 V DC	
Rated consumption	24 V DC	2.6 W	
Operating voltage range U _B		0.85 - 1.1 x U _N	
Electrical isolation supply circuit - control of	sircuit	no	
Control circuit			
Rated output voltage	S11, S33/S21	22 V DC	
Input current / peak current	S12, S31/S22	25 mA / 100 mA	
	S34, S35	40 mA / 50 mA	
Response time t_{A1} / t_{A2}		30 ms / 700 ms	
Minimum ON time t _M		200 ms	
Recovery time t _w		500 ms	
Release time t _R		25 ms	
Release time t_{R} , delayed contacts (tolerand	e)	0.15 - 3 s / 1.5 - 30 s (±16 %)	
Synchronous time ts		500 ms	
Permissable test pulse time t_{TP}		< 1 ms	
Max. resistivity, per channel ¹⁾		\leq (5 + (1.176 x U _B / U _N - 1) x 100) Ω	
Output circuit			
Enabling paths	13/14, 23/24	normally open contact	
	37/38	normally open contact, OFF-delayed	
Contact assignment		forcebly guided	
Contact type		Ag-alloy, gold-plated	
Rated switching voltage	enabling path	230 V AC	
Max. thermal current I _{th}	enabling path	6 A	
Max. total current l ² of all current path	(Tu = 55 °C)	5 A ²	
Application category (NO)	AC-15	U _e 230 V, I _e 3 A	
	DC-13	U _e 24 V, I _e 2 A	
Short-circuit protection (NO), lead fuse / ci		6 A Class gG / melting integral < 100 A ² s	
Mechanical life		10 ⁷ switching cycles	
General data			
Creepage distances and clearances betwe	en the circuits	EN 60664-1	
Protection degree according to EN 60529		IP40 / IP20	
	-	-25 °C - +55 °C / -25 °C - + 75 °C	
Ambient temperature / storage temperatur	fine-stranded / solid	$1 \times 0.2 \text{ mm}^2 - 2.5 \text{ cm}^2 / 2 \times 0.2 \text{ mm}^2 - 1.0 \text{ mm}^2$	
Wire ranges screw terminals,	fine-stranded with ferrules	$1 \times 0.2 \text{ mm}^2 - 2.5 \text{ mm}^2 / 2 \times 0.2 \text{ mm}^2 - 1.0 \text{ mm}^2$ $1 \times 0.25 \text{ mm}^2 - 2.5 \text{ mm}^2 / 2 \times 0.25 \text{ mm}^2 - 1.0 \text{ mm}^2$	
Permissible torque	me-suanueu with terrules	0.5 - 0.6 Nm	
Wire ranges push-in terminals		1 x 0.25 mm ² – 1.5 mm ²	
Weight		0.20 kg	
Standards		EN ISO 13849-1, EN 62061, EN 50156-1	
Approvals		TÜV, GL, cULus, CCC	

¹⁾ If two-channel devices are installed as single channel, the value is halved.