

Contact expansion relay – SNE 4003K



Applications

- Duplication of the enabling current paths of a basic device
- Contact expansion in safety-oriented systems
- Contact expansion for light curtains
- Up to PL e/Category 4 (EN ISO 13849-1)*
- Up to SIL_{CL} 3 (EN 62061)*

Features

- Safe isolation according to EN 50178
- Single-channel or two-channel operation
- 3 enabling current paths (NO contact)
- 2 signaling current paths (NC contact)
- Wide input voltage range from 15 V DC to 30 V DC
- Suitable for semiconductor outputs

* Depends on the category of the basic device or the safety analysis.

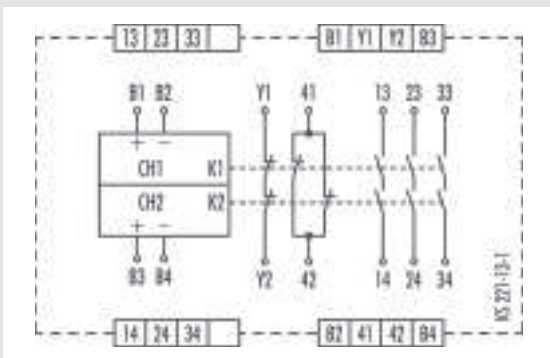
Function

The SNE 4003K is an expansion device for basic devices (such as safety switching devices, light curtains, laser scanners) that are part of the machine's safety equipment and are used for protecting people, materials and machines. The device is designed with two channels and redundancy. The enabling current paths are separated from the control circuits and signaling circuits with creep-age distances and clearances > 5.5 mm (safe isolation). There is basic insulation to separate the enabling current paths from one another and the control circuits from the signaling current paths. The broad input voltage range of 15 V DC to 30 V DC makes the SNE 4003K ideal for single-channel or two-channel control by semiconductors.

Input voltage to the SNE 4003K is connected via one or two enabling current paths of a basic device. When the input voltage is applied relays K1 and K2 switch into the ON position. After this switch-on phase, enabling current paths 13/14, 23/24, 33/34 are closed and feedback current path Y1/Y2 and signaling current path 41/42 are opened. This is displayed through two LEDs, K1 and K2, which are assigned to relays K1 and K2. If the enabling current paths of the basic device are opened when the emergency stop button is pressed, relays K1 and K2 on the SNE 4003K switch back into the OFF-position. The enabling current paths open and the feedback current path closes. Feedback current path Y1/Y2 prevents the basic device from switching on again before K1 or K2 releases.

Circuit diagram

SNE 4003K




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Overview of devices | Part numbers

Type	Rated voltage	Terminals	Part no.	Std. Pack
SNE 4003K	24 V DC	Screw terminals, fixed	R1.188.1330.0	1
SNE 4003K-A	24 V DC	Screw terminals, pluggable	R1.188.1340.0	1

Technical data

Function	Emergency stop expansion relay	
Function display	2 LEDs, green	
Power supply circuit		
Rated voltage U_N	B1/B2, B3/B4	24 V DC
Rated consumption	24 V DC	1.2 W
Operating voltage range U_B	0.63 - 1.25 x U_N	
Electrical isolation supply circuit - control circuit	no	
Control circuit		
Input current / peak current	B1/B2, B3/B4	50 mA / 500 mA
Response time t_{A1} / t_{A2}	< 40 ms	
Recovery time t_w	≤ 40 ms	
Release time t_R	< 20 ms	
Permissible test pulse time t_{TP}	< 1 ms	
Max. resistivity, per channel ¹⁾	≤ (5 + (1.6 x U_B / U_N - 1) x 100) Ω	
Output circuit		
Enabling paths	13/14, 23/24, 33/34	normally open contact
Signaling paths	41/42	normally closed contact
Contact assignment	forcebly guided	
Contact type	Ag-alloy, gold-plated	
Rated switching voltage	enabling- / signaling path	230 V AC
	Y1/Y2	230 V AC
Max. thermal current I_{th}	enabling- / signaling path	6 A / 2 A
	Y1/Y2	2 A
Max. total current I^2 of all current path ($T_u = 55$ °C)	9 A ²	
Application category (NO)	AC-15	U_o 230 V, I_o 3 A
	DC-13	U_o 24 V, I_o 2,5 A
Short-circuit protection (NO), lead fuse / circuit breaker	6 A class gG / melting integral < 100 A ² s	
Mechanical life	10 ⁷ switching cycles	
General data		
Creepage distances and clearances between the circuits	EN 60664-1	
Protection degree according to DIN EN 60529 (housing / terminals)	IP40 / IP20	
Ambient temperature / storage temperature	-25 °C - +55 °C / -25 °C - + 75 °C	
Wire ranges screw terminals,	fine-stranded / solid	1 x 0.14 mm ² – 2.5 mm ² / 2 x 0.14 mm ² – 0.75 mm ²
	fine-stranded with ferrules	1 x 0.25 mm ² – 2.5 mm ² / 2 x 0.25 mm ² – 0.5 mm ²
Permissible torque	0.5 - 0.6 Nm	
Wire ranges cage clamp terminals	1 x 0.25 mm ² – 1.5 mm ²	
Weight	0,21 kg	
Standards	EN ISO 13849-1, EN 62061	
Approvals		

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