

# Contact expansion relay – SNE 4004K / SNE 4004KV



### Applications

- Expansion of a basic device's enabling current paths
- Contact expansion in safety equipment
- Up to PL d/Category 3 (EN ISO 13849-1)\*
- Up to SIL<sub>CL</sub> 2 (EN 62061)\*

### Features

- Stop Category 0 and 1 according to EN 60204-1 (see "Function")
- Single-channel or two-channel control
- SNE 4004K: 4 enabling current paths, undelayed (NO contact)  
3 signaling current paths, undelayed (NC contact)
- SNE 4004KV: 4 enabling current paths, OFF-delayed (NO contact)  
3 signaling current paths, OFF-delayed (NC contact),  
Time buffering

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

### Function

#### SNE 4004K

Supply voltage to the SNE devices is routed via an enabling current path of a basic device. When the supply voltage is applied relays K1 and K2 switch into the ON position. After this switch-on phase the four enabling current paths 13/14, 23/24, 33/34, 43/44 (of the SNE 4004K) or 17/18, 27/28, 37/38, 47/48 (of the SNE 4004KV) are closed and the feedback current path Y1/Y2 is open. This is displayed through two LEDs that are assigned to relays K1 and K2.

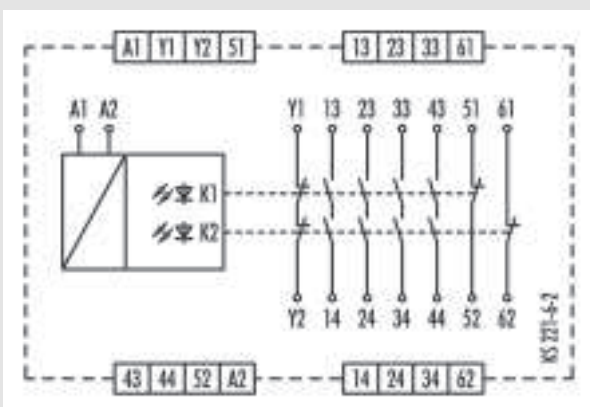
When the enabling current paths of the basic device are opened through the operation of the emergency stop button, relays K1 and K2 on the SNE 4004K switch back into the OFF-position. The enabling current paths open and the feedback current path closes. Feedback current path Y1/Y2 prevents the basic device from switching on again before K1 or K2 releases.

#### SNE 4004KV

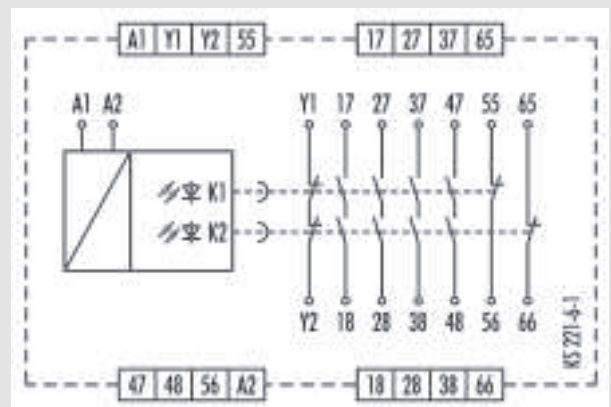
The functions of this device correspond to those of the SNE 4004K. The SNE 4004KV is available with the following four OFF-delay times  $t_{r1}$ : 0.5 s; 1 s; 2 s and 3 s. The device has an OFF-delay time that is enabled through capacitors. This causes the OFF-delay time  $t_{r1}$  to elapse completely even in case of failure of the power supply (A1/A2). It cannot be reset before it has elapsed. Once the delay time has elapsed, relays K1 and K2 switch into the OFF- position. OFF-delay times of > 0 s correspond to stop category 1.

### Circuit diagrams

SNE 4004K



SNE 4004KV




# Contact expansion relay – SNE 4004K / SNE 4004KV

## Overview of devices | part numbers

Type	Time range	Rated voltage	Terminals	Part no.	Std. Pack
SNE 4004K	–	24 V AC/DC	Screw terminals, fixed	R1.188.0520.0	1
SNE 4004K-A	–	24 V AC/DC	Screw terminals, pluggable	R1.188.0590.0	1
SNE 4004K-C	–	24 V AC/DC	Cage clamp, pluggable	R1.188.1980.0	1
SNE 4004KV	0.5 s	24 V DC	Screw terminals, fixed	R1.188.0550.0	1
	1 s	24 V DC	Screw terminals, fixed	R1.188.0560.0	1
	2 s	24 V DC	Screw terminals, fixed	R1.188.0570.0	1
	3 s	24 V DC	Screw terminals, fixed	R1.188.0580.0	1
SNE 4004KV-A	0.5 s	24 V DC	Screw terminals, pluggable	R1.188.0460.0	1
	1 s	24 V DC	Screw terminals, pluggable	R1.188.0470.0	1
	2 s	24 V DC	Screw terminals, pluggable	R1.188.0480.0	1
	3 s	24 V DC	Screw terminals, pluggable	R1.188.0490.0	1
SNE 4004KV-C	0.5 s	24 V DC	Cage clamp, pluggable	R1.188.2410.0	1
	1 s	24 V DC	Cage clamp, pluggable	R1.188.2420.0	1
	2 s	24 V DC	Cage clamp, pluggable	R1.188.2430.0	1
	3 s	24 V DC	Cage clamp, pluggable	R1.188.2440.0	1

## Technical data

<b>Function</b>	Emergency stop expansion relay	
Function display	2 LEDs, green	
Function mode / adjustment	Time, fixed	
Adjustment range	0,5 s / 1 s / 2 s / 3 s	
<b>Power supply circuit</b>		
Rated voltage $U_N$	A1, A2	24 V DC / 24 V AC/DC
Rated consumption	24 V DC   24 V AC/DC	1.2 W   1.7 W / 3.1 VA
Rated frequency	50 - 60 Hz	
Operating voltage range $U_B$	0.85 - 1.1 x $U_N$	
Electrical isolation supply circuit - control circuit	non	
<b>Control circuit</b>		
Input current / peak current	A1, A2	65 mA / 1800 mA
Response time $t_{A1}$ / $t_{A2}$	20 ms	
Minimum ON time $t_M$	0,15 x $t_R$	
Recovery time $t_w$	≤ 200 ms	
Release time $t_R$	40 ms	
Release time $t_R$ , delayed contacts (tolerance)	0.5 s / 1 s / 2 s / 3 s (± 35 %)	
Max. resistivity, per channel <sup>1)</sup>	≤ (2.5 + (1.176 x $U_B$ / $U_N$ - 1) x 50) Ω	
<b>Output circuit</b>		
Enabling paths	13/14, 23/24, 33/34, 43/44 17/17, 27/28, 37/38, 47/48	normally open contact normally open contact, time delayed
Signaling paths	51/52, 61/62 55/56, 65/66	normally closed contact normally closed contact, time delayed
Contact assignment	forcebly guided	
Contact type	Ag-alloy, gold-plated	
Rated switching voltage	enabling / signaling path Y1/Y2	230 V AC 230 V AC
Max. thermal current $I_{th}$	enabling / signaling path Y1/Y2	6 A / 2 A 2 A
Max. total current $I^2$ of all current path ( $T_u = 55$ °C)	9 A <sup>2</sup>	
Application category (NO)	AC-15   DC-13	$U_o$ 230 V, $I_o$ 5 A   $U_o$ 24 V, $I_o$ 5 A
Short-circuit protection (NO), lead fuse / circuit breaker	6 A class gG / melting integral < 100 A <sup>2</sup> s	
Mechanical life	10 <sup>7</sup> switching cycles	
<b>General data</b>		
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 <sup>2</sup> – 2.5 mm <sup>2</sup> / 2 x 0.14 mm <sup>2</sup> – 0.75 mm <sup>2</sup>
	fine-stranded with ferrules	1 x 0.25 mm <sup>2</sup> – 2.5 mm <sup>2</sup> / 2 x 0.25 mm <sup>2</sup> – 0.5 mm <sup>2</sup>
Permissible torque	0,5 - 0,6 Nm	
Wire ranges cage clamp terminals	1 x 0.25 mm <sup>2</sup> – 1.5 mm <sup>2</sup>	
Weight	0.20 kg	
Standards	EN ISO 13849-1, EN 62061	
Approvals		

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