## Emergency-Stop Relay

## Basic Unit

According to EN 60204-1 and EN 954-1 Single or Dual Channel E-Stop Possible Rated Voltage in the E-Stop Control Circuit: 24 V DC

| SNO 2004 | EN 60204-1 | For Stop Category | 0 |
| :--- | :--- | :--- | :--- |
|  | EN 954-1 | Safety Category | 3 |

## SNO 2004-17



## Function Diagram

FD 0221-6 WI


AI Supply voltage, LED SUPPLY
A2 Supply voltage
Y2 Reset
K1, K2, LED K1/K2
13/14, 23/24
$\mathrm{t}_{\mathrm{A}}=$ Response time
$I_{R}=$ Release time for the E-Stop
${ }^{T} M=$ Minimum swith-on time

## Connection Diagram

KS 0344-I WI
SNO 2004-17


## For Example

- Protection of persons and machines
- Control of power contactors
- Use with programmable logic control systems
- Protection in assembly lines


## Function

After supply voltage $\left(\mathrm{LI} / \mathrm{L}_{+}\right)$is applied through the non-activated E -Stop switch to terminal Al and through the neutral/middle-point conductor $(\mathrm{N} / \mathrm{M})$ to terminal A2, the switch-on monitoring logic is activated with the RESET switch. The switchon monitoring logic triggers relays $K 1$ and $K 2$ which, after response time ${ }^{{ }_{A}}$, become self-locking through their own contacts. Simultaneously, the relay contacts of K1 and K2 deactivate the switch-on monitoring logic. After this switch-on phase, the two enable current paths ( $13 / 14$ and $23 / 24$ ) which are intended for the output are closed. Two LEDs provide a display and these LEDs are assigned to the safety channels. If the E-Stop switch is activated, the current supply lines for relays K1 and K2 are interrupted. The enable current paths at the output are opened.

## Notes

- To multiply the enabling current paths, expansion units or external power contactors with positively guided contacts can be used.


## Dimension Diagram



Approvals


ET 95258

## Order Example

SNO 2004-17 24 V AC/24 V DC


SNO 2004-17

Application Example
Single-Channel E-Stop Circuit


Application Example
Dual-Channel E-Stop Circuit (with cross monitoring)


The dual-channel E-Stop circuit disconnects reliably even if one of the two contacts of the E-Stop switch does not open. If a fault occurs (for example, if the E-Stop contact connected at A1 does not open), the safety circuit is activated by the second (redundant) contact at A2. Enabling current paths 13/14 and 23/24 open. In the event of a short circuit or short circuit to ground of the conductors leading to the E-Stop switch, the voltage available at Y 1 collapses. In case of a short circuit to ground of the cable leading to the RESET switch, the voltage applied at $\mathrm{Y} 1 / \mathrm{Y} 2$ is short-circuited. Relays K 1 and K 2 return immediately to the de-energized position and the electronic fuse is triggered. This example meets Stop category 0 according to EN 60204-1 and Safety category 3 according to EN 954-1.

Application Example
A 1088
External Contact Expansion


If the number of enable current paths is not sufficient, two external contactors can be used for expansion. They are driven through one of the enable current paths of the SNO 2004-17. The function of the external contactors is monitored through their own NC contacts. The NC contacts are connected in series to the RESET switch. Contactors K4 and K5 must have positively driven contacts.

## Notes

- Applies to application examples A 1087 and A 1088:

To avoid loss of control voltage $L 1 / L+$ in the event of a bridge fault in the E-Stop control circuit, a fuse can be connected in series (previous) to the E-Stop switch.

## TECHNICAL DATA

FUNCTION According to EN 60204-1
Function Display
Function Diagram

## POWER SUPPLY DATA

Rated Voltage UN
V AC/DC
Rated Consumption at 50 Hz and $U_{N}(A C)$ VA
Rated Consumption at 50 Hz and $U_{N}(\mathrm{AC})$ W
Rated Consumption at $U_{N}$ (DC)
Residual Ripple
Rated Frequency
Operating Voltage Range
CONTROL CIRCUIT only for supplying the control inputs
Control Output Y1 with respect to A2:
Line Resistance (Control Inputs)
Rated Output Voltage
Rated Current
Rated Short-Circuit Current $I_{K}$ max.
Fuse

| Response Time | (PTC) | s |
| :--- | :--- | :--- |
| Recovery Time | (PTC) | s |

Control Inputs Y2:
Rated Current Input
Response Time $t_{A}$
Y2
K1, K2
Minimum Switch-ON Time th for Y2

## OUTPUT CIRCUIT

Contact Equipment
Contact Type
Contact Material
Switching Voltage $U_{n} \quad V$ AC/DC
Maximum Rated Current $I_{n}$ per Contact
Maximum Total Current for all Contacts
Application Category According to EN 60947-5-1:1991

| Short-Circuit Protection, Max. Fuse Element Class gG |  |
| :--- | ---: |
| Permissible Switching Frequency | A |
| Switching Cycle/h |  |
| Mechanical Lifetime | Switching Cycle |

## GENERAL DATA

Creepage and Clearance Distances Bełween Circuits
According to DIN VDE 0110-1:04.97: Rated Withstand Voltage kV
Over-Voltage Category
Contamination Level
Design Voltage
Test Voltage $\mathrm{U}_{\text {eff }} 50 \mathrm{~Hz}$ acc. to DIN VDE 0110-1, Table A. 1 kV
Protection Class Housing/Terminals acc. to DIN VDE 0470 Sec. 1:11.92
Radiated Noise
Noise Immunity
Ambient Temperature, Working Range
Dimension Diagram
Connection Diagram
Weight
Accessories
Approvals

## GENERAL TECHNICAL SPECIFICATIONS

## SNO 2004-17

Emergency-Stop Relay
2 LEDs, green
FD 0221-6 W1

## 24

2,5
1,5
1,2
2,4
50 to 60
0,8 to $1,1 \times U_{N}$

## $\leq 70$

24
12
-
-

12
20
50
30

```
2 N.O. Safety Contact
Forced Contact
Ag-Alloy; Gold-Plated
230/300
4
AC-15: Ue 230 V AC, I 2 A
DC-13: Ue 24 V DC, I 2 A
4
3600
3\times106
```

