

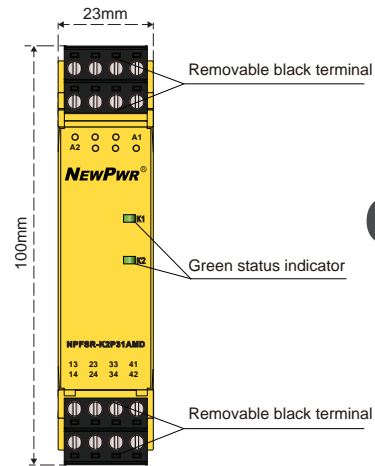
DO signal input safety relay

NPFSR-K2P31AMD

Input: DO signal
Output: 3NO+1NC

K series DO signal input safety relay applies mechanical interlock conforming to EN 50205 standard to realize multiple safety outputs. Up to 5A functional current and reliable diagnosis. It can be used for safety related applications of SIL3 and SC3 in accordance with IEC 61508 standard, and ESD in SIS.

- 1oo2 architecture
- Relay contact output for de-energized to safe function
- System loop detection support
- Built-in test pulse filter function
- The correct opening and closing of the safety function relays is tested automatically in each on-off cycle



SIL3
IEC 61508

PLe
ISO 13849

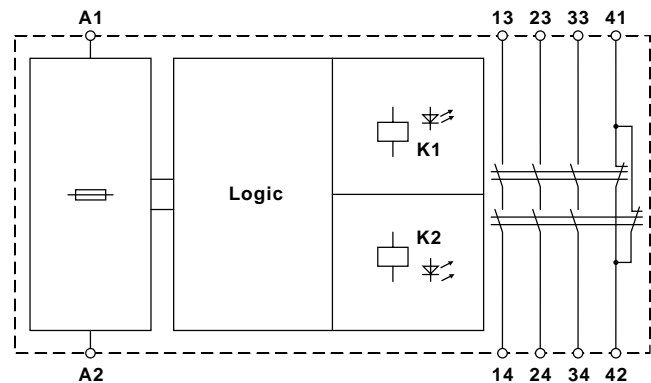
Cat.4
ISO 13849



Parameters

Power supply type	Loop supply
Voltage range	20 ~ 32V DC(Typ.24V)
Power dissipation	≤ 2.2W/24V DC
Current consumption	≤ 90mA
Test pulse width	≤ 3ms
Cable resistance	≤ 15Ω
Input devices	Safety switch, DO signal
Signal type	3NO+1NC
Contact type	Forced guided
Contact material	AgSnO ₂ +0.2μmAu
Contact loading	AC-15: 5A/230V, DC-13: 5A/24V
Contact fuse protection	10A gL/gG(NO), 6A gL/gG(NC)
Energized	≤ 200ms
De-energized delay	≤ 50ms
Switching frequency	≤ 4Hz
EMC	According to IEC/EN 60947, IEC 61326-3-1, IEC/EN 61000-6-2, IEC/EN 61000-6-4
Rated insulation voltage	250V AC
Rated impulse voltage	6000V(1.2/50us)
Dielectric strength	1500V AC, 1 min
Clearance and creepage	According to IEC 60947-1
Vibration	10Hz ~ 55Hz, 0.35mm
Overvoltage category	III
Pollution degree	2
Protection type	IP20
Ambient temperature	-20°C ~ +60°C
Storage temperature	-40°C ~ +80°C
Operating altitude	≤2000m
Mechanical life	10×10 ⁶ cycles

Functional Block Diagram



Safety Values

Performance level	PLe, according to ISO 13849
Category	Cat.4, according to ISO 13849
PTI (T _m)	20 years, according to ISO 13849
DC _{avg}	99%, according to ISO 13849
MTTF _D	164 years, according to ISO 13849
CCF	68, according to ISO 13849
SIL	SIL3, according to IEC 61508
SIL CL	SIL CL3, according to IEC 62061
HFT	1, according to IEC 62061
SFF	≥ 99%, according to IEC 62061
PFD _{avg} /PTI = 20 years	1.29×10 ⁻⁵ , according to IEC 62061
PFH	1.49×10 ⁻¹⁰ 1/h, according to IEC 62061
Stop Category	0, according to IEC 60204