

DO signal input safety relay

NPFSR-K51D.F

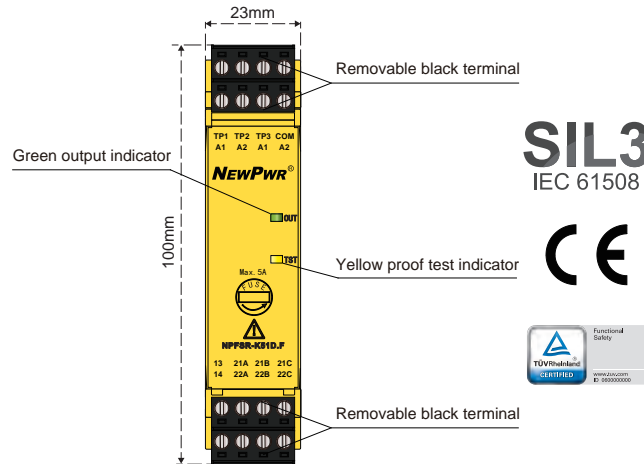
Input: DO signal
Output: 1NC+1NO

NPFSR-K51D.F is 1NC and 1NO output safety relay, receiving DO signal, realizing reliable isolation control, and the field side supports up to 250V AC load circuit. It can be used for safety related applications of SIL3 and SC3 in accordance with IEC 61508 standard, and ESD in SIS.

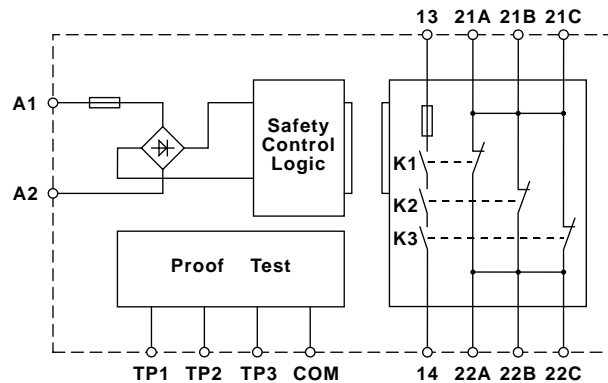
- System loop detection support
- Proof Test
- Fail-safe technique
- Triple redundancy
- Replaceable fuse

Parameters

Power supply type	Loop supply
Voltage range	18 V ~ 32 V DC, Typical 24V DC
Power dissipation	≤ 1.4W/24 V DC
Current consumption	≤ 60mA/24 V DC
Test pulse width	≤ 4ms
Cable resistance	≤ 15Ω
Input devices	Safety switch, DO signal
Number of contacts	1 NC+1 NO
Contact material	AgSnO ₂
Maximum Contact loading	5A/250V AC, 5A/24V DC
Fuse rating	Replaced fuse, ≤ 5A
Proof test	Refer to safety manual
Energized	≤ 50ms
De-energized delay	≤ 50ms
Switching frequency	≤ 10Hz
EMC	According to IEC 61298-3, IEC/EN 61000-6-2, IEC 61326-3-1
Rated insulation voltage	250V AC
Rated impulse voltage	Input to output: 6000V(1.2/50us) Output to input: 4000V(1.2/50us)
Dielectric strength	1500V AC, 1 min
Clearance and creepage	According to IEC 60664-1
Vibration	10Hz ~ 150Hz, 0.75mm
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

Proof-test interval	15 years, according to IEC 61508
DC _{avg}	60%, according to IEC 61508
SIL	SIL3, according to IEC 61508
HFT	0, according to IEC 61508
SFF	≥ 90%, according to IEC 61508
PFD _{avg} /PTI = 15 years	NC: 8.46×10 ⁻⁵ , according to IEC 61508 NO: 1.32×10 ⁻⁴ , according to IEC 61508
PFH	NC: 7.72×10 ⁻⁹ 1/h, according to IEC 61508 NO: 1.37×10 ⁻⁸ 1/h, according to IEC 61508