## NPFSR-K642D

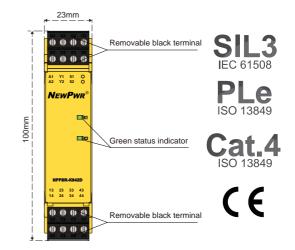
Input: Safety contact Output: 4NO+2NC

The K series contact expansion can expand a group of safety contact signal into multiple safety contact signals, and widely used in machining and other industries.

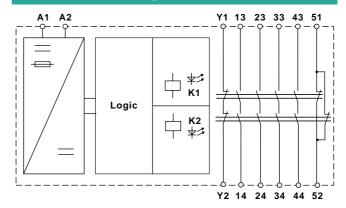
- Single channel
- With feedback loop
- The safety function remains effective in the case of a component failure

## Parameters

Voltage tolerance0.85 ~ 1.1Power dissipation≤ 2W/24V DCCurrent consumption≤ 80mA/24V DCTest pulse width≤ 4msCable resistance≤ 150Input devicesSafety contactSignal type4NO+2NCContact typeForced guidedContact naterialAgSnO <sub>2</sub> +0.2µmAuContact fuse protection10A gL/gG(NO), 6A gL/gG(NC)Switch-on≤ 30msRelease≤ 20msRecovery time≤ 100msRated insulation voltage6000V(1.2/50us)Dielectric strength150V ACOilectric strength10Hz ~ 55Hz, 0.35mmVibrationIP20Pollution degree2.0°C ~ +60°CStorage temperature4.0°C ~ +80°COperating altitude5.200mMechanical life10x10° cycles	Voltage range	24V DC
Current consumption≤ 80mA/24V DCTest pulse width≤ 4msCable resistance≤ 15ΩInput devicesSafety contactSignal type4NO+2NCContact typeForced guidedContact materialAgSnO₂+0.2µmAuContact loadingAC-15: 5A/230V, DC-13: 5A/24VContact fuse protection10A gL/gG(NO), 6A gL/gG(NC)Switch-on≤ 30msRelease≤ 20msRecovery time≤ 100msEMCAccording to IEC/EN 60947, IEC 61326-31, IEC/EN 61000-6-2, IEC/EN 61000-6-4Rated insulation voltage6000V(1.2/50us)Dielectric strength150V AC, 1 minOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature40°C ~ +80°COperating altitude5200m	Voltage tolerance	0.85 ~ 1.1
Test pulse width≤ 4msCable resistance≤ 15ΩInput devicesSafety contactSignal type4NO+2NCContact typeForced guidedContact materialAgSnO₂+0.2µmAuContact fuse protection10A gL/gG(NO), 6A gL/gG(NC)Switch-on≤ 30msRelease≤ 20msRecovery time≤ 100msEMCAccording to IEC/EN 60947, IEC 61326-3-1, IEC/EN 61000-6-2, IEC/EN 61000-6-4Rated insulation voltage500V(1.2/50us)Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmPollution degree2Pollution temperature-20°C ~ +60°CAmbient temperature-40°C ~ +80°COrgerating altitude5200m	Power dissipation	≤ 2W/24V DC
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Contact typeForced guidedContact materialAgSnO₂+0.2µmAuContact loadingAC-15: 5A/230V, DC-13: 5A/24VContact fuse protection10A gL/gG(NO), 6A gL/gG(NC)Switch-on≤ 30msRelease≤ 20msRecovery time≤ 100msEMCAccording to IEC/EN 60947, IEC 61326-3-1, IEC/EN 61000-6-2, IEC/EN 61000-6-4Rated insulation voltage6000V(1.2/50us)Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-40°C ~ +80°COperating altitude≤200m	Input devices	Safety contact
Contact materialAgSnO2+0.2µmAuContact loadingAC-15: 5A/230V, DC-13: 5A/24VContact fuse protection10A gL/gG(NO), 6A gL/gG(NC)Switch-on≤ 30msRelease≤ 20msRecovery time≤ 100msEMCAccording to IEC/EN 60947, IEC 61326-3-1, IEC/EN 61000-6-2, IEC/EN 61000-6-4Rated insulation voltage6000V(1.2/50us)Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature-40°C ~ +80°COperating altitude5200m	Signal type	4NO+2NC
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Contact fuse protection10A gL/gG(NO), 6A gL/gG(NC)Switch-on≤ 30msRelease≤ 20msRecovery time≤ 100msEMCAccording to IEC/EN 60947, IEC 61326-3-1, IEC/EN 61000-6-2, IEC/EN 61000-6-4Rated insulation voltage250V ACRated impulse voltage6000V(1.2/50us)Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Ambient temperature-20°C ~ +60°CStorage temperature-40°C ~ +80°COperating altitude52000m	Contact material	AgSnO <sub>2</sub> +0.2µmAu
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Release≤ 20msRecovery time≤ 100msEMCAccording to IEC/EN 60947, IEC 61326-3-1, IEC/EN 61000-6-2, IEC/EN 61000-6-4Rated insulation voltage250V ACRated impulse voltage6000V(1.2/50us)Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIPollution degree2Pollution typeIP20Ambient temperature-40°C ~ +80°COperating altitude52000m	Contact fuse protection	10A gL/gG(NO), 6A gL/gG(NC)
Recovery time   ≤ 100ms     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     Ambient temperature   -20°C ~ +60°C     Storage temperature   -40°C ~ +80°C	Switch-on	≤ 30ms
EMCAccording to IEC/EN 60947, IEC 61326-3-1, IEC/EN 61000-6-2, IEC/EN 61000-6-4Rated insulation voltage250V ACRated impulse voltage6000V(1.2/50us)Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature<2000m	Release	≤ 20ms
IntermediationIntermediation (Intermediation (Interm	Recovery time	≤ 100ms
Rated insulation voltage250V ACRated impulse voltage6000V(1.2/50us)Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature-40°C ~ +80°COperating altitude≤2000m	EMC	According to IEC/EN 60947, IEC 61326-3-1,
Rated impulse voltage6000V(1.2/50us)Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature-40°C ~ +80°COperating altitude≤2000m		IEC/EN 61000-6-2, IEC/EN 61000-6-4
Dielectric strength1500V AC, 1 minClearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature-40°C ~ +80°COperating altitude≤2000m	Rated insulation voltage	250V AC
Clearance and creepageAccording to IEC 60947-1Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature-40°C ~ +80°COperating altitude≤2000m	Rated impulse voltage	6000V(1.2/50us)
Vibration10Hz ~ 55Hz, 0.35mmOvervoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature-40°C ~ +80°COperating altitude≤2000m	Dielectric strength	1500V AC, 1 min
Overvoltage categoryIIIPollution degree2Protection typeIP20Ambient temperature-20°C ~ +60°CStorage temperature-40°C ~ +80°COperating altitude≤2000m	Clearance and creepage	According to IEC 60947-1
Pollution degree 2   Protection type IP20   Ambient temperature -20°C ~ +60°C   Storage temperature -40°C ~ +80°C   Operating altitude ≤2000m	Vibration	10Hz ~ 55Hz, 0.35mm
Protection type IP20   Ambient temperature -20°C ~ +60°C   Storage temperature -40°C ~ +80°C   Operating altitude ≤2000m	Overvoltage category	III
Ambient temperature -20°C ~ +60°C   Storage temperature -40°C ~ +80°C   Operating altitude ≤2000m	Pollution degree	2
Storage temperature-40°C ~ +80°COperating altitude≤2000m	Protection type	IP20
Operating altitude ≤2000m	Ambient temperature	-20°C ~ +60°C
	Storage temperature	-40°C ~ +80°C
Mechanical life 10×10 <sup>6</sup> cycles	Operating altitude	≤2000m
	Mechanical life	10×10 <sup>6</sup> cycles



## **Functional Block Diagram**



## Safety Values

Performance level	PLe, according to ISO 13849
Category	Cat.4, according to ISO 13849
РТІ (Т <sub>м</sub> )	20 years, according to ISO 13849
DC <sub>avg</sub>	99%, according to ISO 13849
MTTF <sub>D</sub>	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 <sub>avg</sub> /PTI = 20 years	2.03×10 <sup>-6</sup> , according to IEC 62061
PFH	2.31×10 <sup>-9</sup> 1/h, according to IEC 62061
Stop Category	0, according to IEC 60204