

E-STOP, Safety gate, Safety light curtain input safety relay

E-STOP, safety gate, safety light curtain

NPFSR-K122YAMD

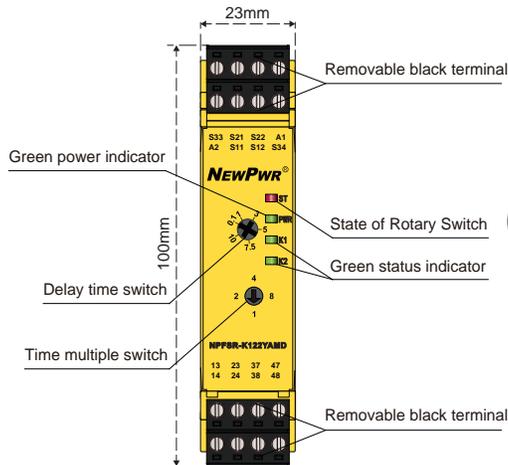
Input: E-STOP, Safety gate
Output: 2NO, non-delay + 2NO, d-delay

The inputs of K series E-STOP, safety gate input safety relays are normally closed contact signals, which are used for emergency braking or the protection of people entering dangerous areas, and widely used in machining and other industries.

- 1oo2 architecture
- With detection of shorts across contacts
- With auto reset and manual reset function
- The safety function remains effective in the case of a component failure
- The correct opening and closing of the safety function relays is tested automatically in each on-off cycle

Parameters

| | |
|-----------------------------|------------------------------------------------------------------------------|
| Voltage range | 24V DC |
| Voltage tolerance | 0.85 ~ 1.1 |
| Power dissipation | ≤ 3.8W/24V DC |
| Current consumption | ≤ 50mA/24V DC |
| Cable resistance | ≤ 15Ω |
| Input devices | E-STOP button, Safety gate |
| Signal type | 2NO, non-delay + 2NO, d-delay |
| Contact type | Forced guided |
| Contact material | AgSnO ₂ |
| Contact loading | AC-15: 3A/230V, DC-13: 3A/24V |
| Contact fuse protection | 10A gL/gG(NO) |
| Delay time T _{set} | 0.1~80s, default 10s |
| Delay time accuracy | ±15% |
| Switch-on | Auto: ≤ 300ms, Manual: ≤ 150ms |
| Release | E-stop: ≤ 30ms; Power failure: ≤ 100ms |
| Recovery time | E-stop: ≤ 30ms+T _{set} , Power failure: ≤ 100ms |
| Supply short interruption | 20ms |
| 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 |
| Overtoltage 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 |



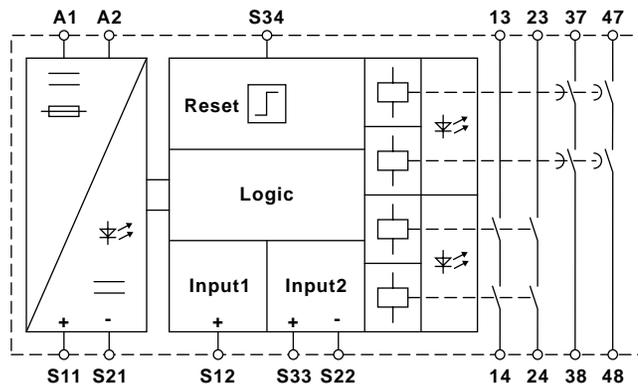
SIL3
IEC 61508

PLe
ISO 13849

Cat.4
ISO 13849



Functional Block Diagram



Safety Values

| | |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Performance level | PLe, according to ISO 13849 ¹⁾ PLd, according to ISO 13849 ²⁾ |
| Category | Cat.4, according to ISO 13849 ¹⁾ Cat.3, according to ISO 13849 ²⁾ |
| PTI (T _M) | 20 years, according to ISO 13849 |
| DC _{avg} | 99%, according to ISO 13849 ¹⁾ 90%, according to ISO 13849 ²⁾ |
| MTTF _D | 164 years, according to ISO 13849 ¹⁾ 161 years, according to ISO 13849 ²⁾ |
| 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 | 1.53×10 ⁻⁵ , according to IEC 62061 ¹⁾ 1.59×10 ⁻⁵ , according to IEC 62061 ²⁾ |
| PFH | 1.77×10 ⁻¹⁰ 1/h, according to IEC 62061 ¹⁾ 1.85×10 ⁻¹⁰ 1/h, according to IEC 62061 ²⁾ |
| Stop Category | 0, according to IEC 60204 ¹⁾ 1, according to 60204 ²⁾ |

NOTE: ¹⁾For non-delay contacts: 13/14 , 23/24

²⁾For de-delay contacts: 37/38 , 47/48