

Analog threshold relay, self powered, 4...20mA input SIL2 and SIL3 DSL35mA-A



• Current input

4...20 mA

• Powered by the current loop

Without auxiliary power supply

• 1 adjustable threshold with multi-turn potentiometer

Open loop default detection

• 2 outputs, complementary close contacts

1 contact closed under the threshold

1 contact closed over the threshold

The 2 contacts open when open loop detected

• Safety Operational Level: SIL2 / SIL3

conform to IEC 61508



The threshold detector DSL35mA-A is specially suited for security applications, its analog design ensures a high reliability and a perfect mastering of failure modes.

Removing the need of main power supply increase the reliability of product.

Input:

4...20 mA passive current, supports from 0 to 25 mA.

Front face:

One 10 turn potentiometer to adjust the detection threshold,
2 green LED indicating the relays status
(LED on = relay energized)

Operating:

The two output relays works in opposite way. When one relay is close, the other is open, so allowing to have a relay activated on over condition and a relay activated on under detection.

In all cases:

- The two relays fall by loss of the input signal (current loop break detection and so loss of power supply).
- A fixed hysteresis of 1% permits to eliminate a possible beat phenomenon close to the threshold.

Feature:

- 35 mm width plastic enclosure with ventilation slots.
- Symmetrical and asymmetrical DIN rail mounting.
- Wiring on screw-terminal blocks (up to 2.5 mm²).
- Conformal coating
- Protection rating (enclosure/terminal blocks): IP20

Test and qualification

- Dielectric strength test, standard IEC 61180-1
- Insulation resistance test
- Reference functional tests, standard IEC 61298-2,
- Damp heat, cyclical tests, standard IEC 60068-2-30
- Thermal aging tests, standard IEC 60068-2-2
- Sinusoidal vibrations tests, standard IEC 60068-2-6 and IEC 60068-2-27
- Accelerated aging in production (96 Hrs burn-in period)

Recommendations

- Heating time: none
- Horizontal or vertical mounting (no spacing required)

Operational safety data:

Type A components, HFT = 0

λ_f : 211 fit (1/MTBF)

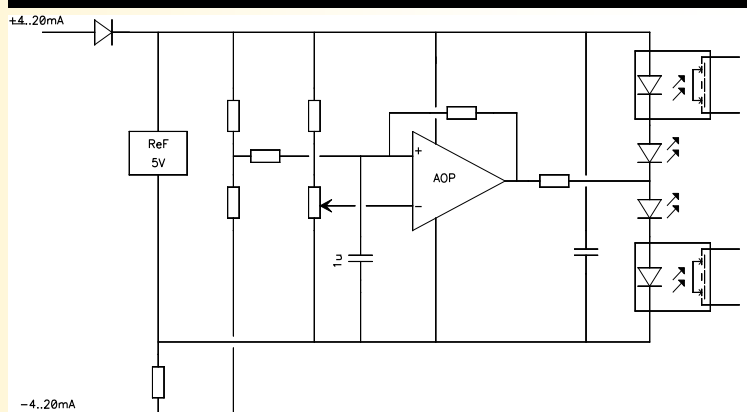
DC : 96.6 % (Diagnostic Coverage)

PFH : 12.2 fit (Probability of Failure per Hour)

SFF : 94.1 % (Safe Failure Fraction)



Synoptic (comparator part):



Version and order code:

[Request a quote](#)

- **DSL1-35mA-A:** 1 threshold / 2 static relays 60Vdc/ac 0.5A
2 N.O complementary contacts
Open current loop detection
powered by the 4..20mA current loop
- **Option /Hv:** with high voltage relay 300Vac-dc / 0.1A

INPUT

Current mA 4...20 mA
 Permissible continuous overload 25 mA
 Equivalent input impedance 350 Ohms @ 20 mA
 Input drop out voltage 7 Vdc typical @ 20mA

THRESHOLD

Typical adjusting range 4...20 mA
 Accuracy of adjustment <+/- 0.2% (10 turns pot.)
 Tripping repeatability < +/- 0.1 %
 Hysteresis 1% (~ 0.2mA)
 Response time < 20 ms
 Long term stability < 0.05% / year
 Loop break detection Input current = 0 mA

RELAY

Static relay, free potential N.O contact

Standard model (Low voltage)
 Maximum voltage switching 60 Vdc, 60 Vac
 Maximum current switching 0.5 A
 Initial contact resistance < 2 Ohms
 Leakage current (opened contact) < 2uA

HV model (High voltage)
 Maximum voltage switching 300 Vdc, 300 Vac
 Maximum current switching 0.1 A
 Initial contact resistance < 50 Ohms
 Leakage current (opened contact) < 2uA

POWER SUPPLY

Without auxiliary power supply, self powered by 4..20mA current loop

ENVIRONMENT

Operating Temperature -25 to 60 °C
 Storage Temperature -40 to 85 °C
 Influence < 0.02 % / °C (% of full scale)
 Humidity 85 % (not condensed)
 Dielectric strength (input/contact) 1500 Vrms (IEC 61180-1)
 Insulation resistance > 1 GOhms @ 500Vdc
 Protection rating IP20
 Weight ~92 g

MTBF (IEC 62380) > 4 500 000 Hrs @ 25°C
 Life time > 150 000 Hrs @ 30°C

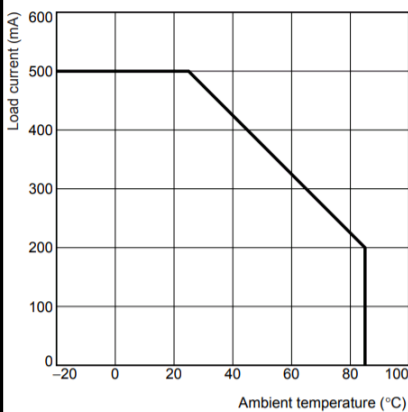
Shock IEC 60068-2-27 (operating) 15 G / 11 ms
 Bump IEC 60068-2-29 (transportation) 40 G / 6 ms
 Vibration IEC 60068-2-6 (operating) 1 G / 10 - 150 Hz
 Vibration IEC 60068-2-6 (transportation) 2 G / 10 - 150 Hz

Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE

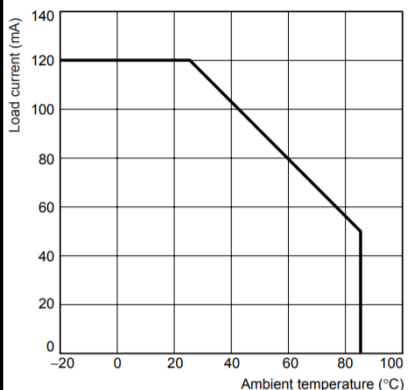
Immunity standard for industrial environments EN 61000-6-2		Emission standard for industrial environments EN 61000-6-4
EN 61000-4-2 ESD	EN 61000-4-8 AC MF	EN 55011 group 1 class A
EN 61000-4-3 RF	EN 61000-4-9 pulse MF	
EN 61000-4-4 EFT	EN 61000-4-11 AC dips	
EN 61000-4-5 CWG	EN 61000-4-12 ring wave	
EN 61000-4-6 RF	EN 61000-4-29 DC dips	



Switching power vs. temperature
60V / 500mA version



Switching power vs. temperature
300V / 100mA version



WIRING AND OUTLINE DIMENSIONS:

