

# 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 mm<sup>2</sup>).  
- Conformal coating  
- Protection rating (enclosure/terminal blocks): IP20

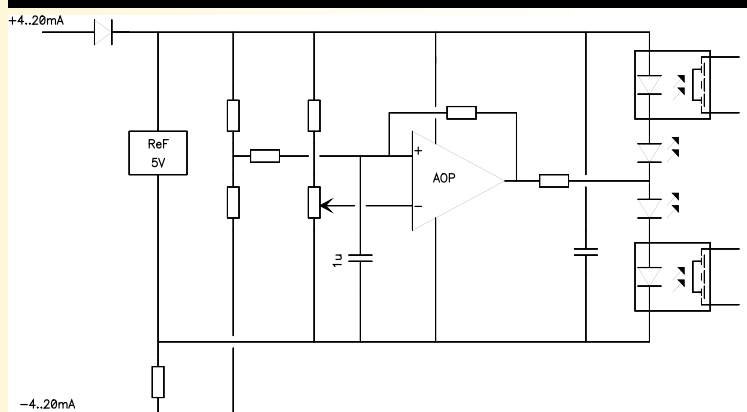
**Test and qualification**  
- Dielectric strength test, standard IEC 61180-1  
- Insulation resistance test  
- Reference functional tests, standard IEC 61298-2,  
- Damp heat, cyclical tests, standard IEC 60068-2-30  
- Thermal aging tests, standard IEC 60068-2-2  
- Sinusoidal vibrations tests, standard 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  
 $\lambda_f$  : 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

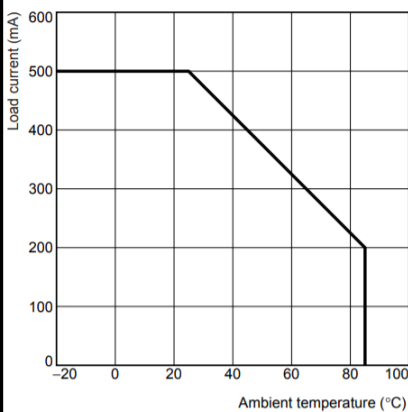
Shock IEC 60068-2-27 (operating) 15 G / 11 ms  
 Bump IEC 60068-2-29 (transportation) 40 G / 6 ms  
 Vibration IEC 60068-2-6 (operating) 1 G / 10 - 150 Hz  
 Vibration IEC 60068-2-6 (transportation) 2 G / 10 - 150 Hz

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

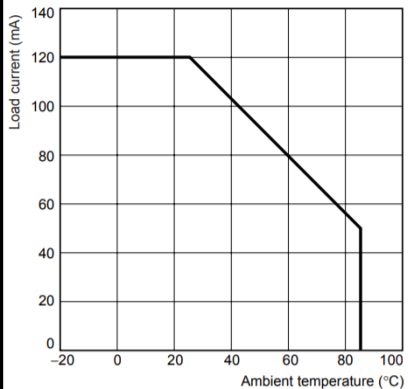
Immunity standard for industrial environments EN 61000-6-2		Emission standard for industrial environments EN 61000-6-4
EN 61000-4-2 ESD	EN 61000-4-8 AC MF	EN 55011  group 1 class A
EN 61000-4-3 RF	EN 61000-4-9 pulse MF	
EN 61000-4-4 EFT	EN 61000-4-11 AC dips	
EN 61000-4-5 CWG	EN 61000-4-12 ring wave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

