

- **Current input**
4...20 mA
- **1 adjustable threshold with multi-turn potentiometer**
And input loop break detection
- **Positive security**
Relays activated below the threshold
- **2 electromechanical changeover contact outputs**
Independent relays
- **Safety Integrity Level conform to IEC 61508**



The threshold detector DSL1-35mA-SIL is specially suited for security applications, its analog design ensures a high reliability and a perfect mastering of failure modes. It naturally finds its place in safety applications.

Description:

Input

- 4...20 mA passive current, supports from 0 to 25 mA.
(without sensor power)

Front face

- one 10-turn potentiometer to adjust the detection threshold
- 1 green LED indicating the relay status
(LED on = relay energized)

Operation:

- The two output relays are activated when the measure (4 ... 20 mA signal) is below the threshold set in front of the device.
- The relays fall when the threshold is exceeded or by loss of the input signal (current loop break detection).
- 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.
- Connection on screw-terminal blocks
(section of the wires up to 2.5 mm²).
- Conformal coating
- Protection rating (enclosure/terminal blocks): IP20

Test and qualification

- Accelerated oven aging (burn-in)
- Full traceability of the tests.
- Long-term stability better than 0.5% / year.

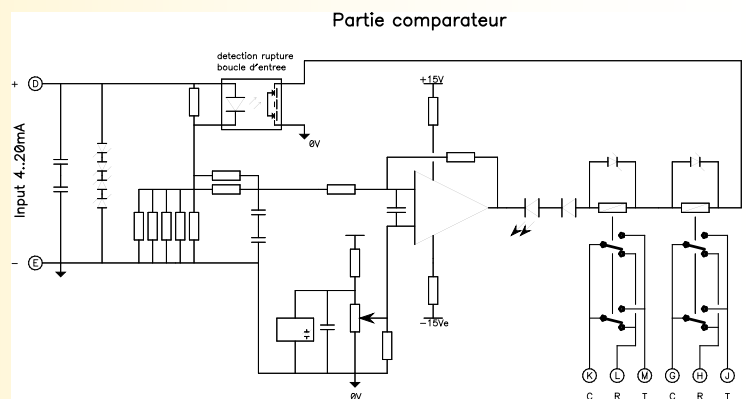
Recommendations

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

Operational safety data:

Type A components, HFT = 0
 λf : 231 fit (1/MTBF)
 DC : 92.6 % (Diagnostic Coverage)
 PFH : 17.1 fit (Probability of Failure per Hour)
 SFF : 94.1 % (Safe Failure Fraction)

Synoptic:



Version and order code:

- **DSL1-35mA-SIL:** 1 threshold / 2 changeover relays
loop break detection
SIL2 / SIL3 conform to IEC 61508

INPUT

Current mA	4....20 mA
Permissible continuous overload	25 mA
Equivalent input impedance	175 Ohms @ 20 mA
Input drop out voltage	3.5 Vdc typical @ 20mA

THRESHOLD

Typical adjusting range	0 to 25 mA
Accuracy of adjustment	< +/- 0.2% (10 turns pot.)
Tripping repeatability	< +/- 0.1 %
Hysteresis	1% (~ 0.2mA)
Response time	< 20 ms
Long term stability	< 0.5% / year
Loop break detection	Input current = 0 mA

RELAY

free potential changeover contact	
Maximum voltage switching	220 Vdc, 250 Vac
Maximum current switching	2 A
Maximum power switching	60 W, 62.5 VA
Minimum voltage switching	100 µV
Initial contact resistance	< 50 mΩ @ 10 mA/20 mV
Thermoelectric potential	10 µV
Input withstand voltage (1.2 / 50 µs)	
- Between coil and contacts	3000 Vrms
- Between open contacts	2500 Vrms
Minimum lifetime on resistive load	1 x 10 ⁵ operations

POWER SUPPLY

24 Vdc nominal voltage (19 to 29 Vdc power supply range)
consumption < 1 Watt , Protection against reverse polarity

ENVIRONMENT

Operating Temperature	-25 to 60 °C
Storage Temperature	-40 to 85 °C
Influence	< 0.02 % / °C (% of full scale)
Humidity	85 % (not condensed)
Insulation resistance	> 1 Gohms @ 500Vdc
Dielectric strength (power supply/input/contact)	1500 Vrms continuous
Protection rating	IP20
Weight	~92 g
MTBF (MIL HDBK 217F)	> 2 000 000 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 CEI 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 61000-6-2Emission standard for industrial environments
EN 61000-6-4

EN 61000-4-2 ESD	EN 61000-4-8 AC MF	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	

EN 55011



WIRING AND OUTLINE DIMENSIONS:

