4...20 mA Analog threshold relay High safety level operation SIL2 - SIL3

- Active or passive current input 4...20 mA with or without sensor supply
- 1 adjustable threshold with multi-turn potentiometer And input loop breaking detection
- Relay security selection by dip switches Relays activated over or below the threshold
- 2 electromechanical changeover contact outputs Independent relays
- Traceability of internal components provided with the List of Manufacturing Operation and Individual control sheet (Nuclear application)
- Operational Safety level : SIL2 / SIL3 according to IEC 61508



The threshold detector DSL1-35mA-NUC 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.

Input: 4...20 mA current, supports from 0 to 25 mA. (with or without sensor supply) Front face: One 10-turn potentiometer to adjust the tripping threshold, one green LED indicating the relay status

(LED on = coil relay energized)

Operation:

- The two output relays may be activated when the measurement (4 ... 20 mA signal) is below or over the threshold. (selection with internal dip switches)

Ensure that the threshold sense (high or low threshold) is in adequation with the operational safety of installation. In all cases:

- The relays fall when the input signal is lost (current loop break detection) and on power supply loss.

- 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 (2.5 mm² section).
- Conformal coating
- Protection rating (enclosure/terminal blocks): IP20

Test and qualification

- Dielectric tests, IEC 61180-1 standard, RCCE 2016 guidelines (chapter VII 4230)
- Insulation resistance tests, RCCE 2016 guidelines (chapter VII 4240)
- Tests procedures for evaluating performance, standard IEC 61298-2, RCCE 2016 guidelines (chapter V 3230)
- Cyclic damp heat tests, according IEC 60068-2-30
- Dry heat tests, according to IEC 60068-2-2
- Sinusoidal vibration tests, according to IEC 60068-2-6 and IEC 60068-2-27, RCCE 2016 guidelines (chapter V4250)
- Accelerated oven aging (96 hrs burn-in)
- Full traceability of the tests and major components.

Recommendations

- warm-up time: none

- Horizontal or vertical mounting orientation (no spacing required)

Operational safety data: Component type A, 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: (comparator part)



Version and order code:

DSL1-35mA-HV-NUC:

1 threshold / 2 changeover relays Threshold sense selectable and loop breaking detection power supply 85...265Vac/dc 1 threshold / 2 changeover relays

DSL1-35mA-LV-NUC:

Threshold sense selectable and loop breaking detection power supply 20...85Vac/dc

Provided with the List of Manufacturing Operation and Individual control sheet (Nuclear application) Included the traceability of internal components

• DSL1-35mA-NUC: (COMEX version)

1 threshold / 2 changeover relays Loop breaking detection 24Vdc power supply

- The 2 relays are activated when the input measurement (4..20mA) is below to the threshold setting in front face.

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User handbook -> E 1/2

DSL1-35mA-NUC LOREME

INPUT		POWER SUPPLY	
Current mA Permissible continuous overload Equivalent input impedance	420 mA 25 mA 175 Ohms @ 20 mA	DSL1-35mA-LV-NUC 2085 Vac/dc power supply range consumption < 2 Watt, no polarity	
Input drop out voltage Sensor power supply	3.5 Vdc typical @ 20mA 24Vdc +/- 15% 25mA maxi	DSL1-35mA-HV-NUC 85265 Vac/dc power supply range consumption < 2 Watt, no polarity	
THRESHOLD		ENVIRONMENT	
Typical adjusting range Accuracy of adjustment Tripping repeatability Hysteresis Response time Long term stability Loop break detection	0 25 mA <+/-0.2% (10 turns pot.) < +/- 0.1 % 1% (~ 0.2mA) < 20 ms < 0.5% / year Input current = 0 mA	Storage Temperature - Influence - Humidity - Dielectric strength (supply/input/contact) - Insulation resistance - Protection rating -	25 to 60 °C 40 to 85 °C : 0.02 % / °C (% of full scale) 55 % (not condensed) 500 Vrms (IEC 61180-1) • 1 Gohms @ 500Vdc P20 92 q
RELAY		MTBF (CEI 62380)	4 000 000 Hrs @ 25°C 150 000 Hrs @ 30°C
Potential free changeover contact Maximum voltage switching Maximum current switching Maximum power switching Minimum voltage switching Initial contact resistance	220 Vdc, 250 Vac 2 A 60 W, 62.5 VA 100 μV <50 mΩ @ 10 mA/20 mV	Shock IEC 60068-2-27 (operating) Bump IEC 60068-2-29 (transportation) Vibration IEC 60068-2-6 (operating) Vibration CEI 60068-2-6 (transportation)	15 G / 11 ms 40 G / 6 ms 1 G / 10 - 150 Hz
Thermoelectric potential	10 μV	Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE	
Impulse withstand voltage (1.2 / 50 µs) - between coil and contacts - between open contacts	2500 V 1500 V	Immunity standard for industrial environments EN 61000-6-2	Emission standard for industrial environments EN 61000-6-4
Minimum lifetime on resistive load	1×10^5 operations	EN 61000-4-2 ESD EN 61000-4-8 AC MF EN 61000-4-3 RF EN 61000-4-9 pulse M	EN 55011
		EN 61000-4-4 EFT EN 61000-4-11 AC dip EN 61000-4-5 CWG EN 61000-4-12 ring w EN 61000-4-6 RF EN 61000-4-29 DC dip	s group 1 ave class A

WIRING AND OUTLINE DIMENSIONS:



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On account of the constant technologies and standards evolution, LOREME keeps the possibility to modify the specifications of the included products without notice.