

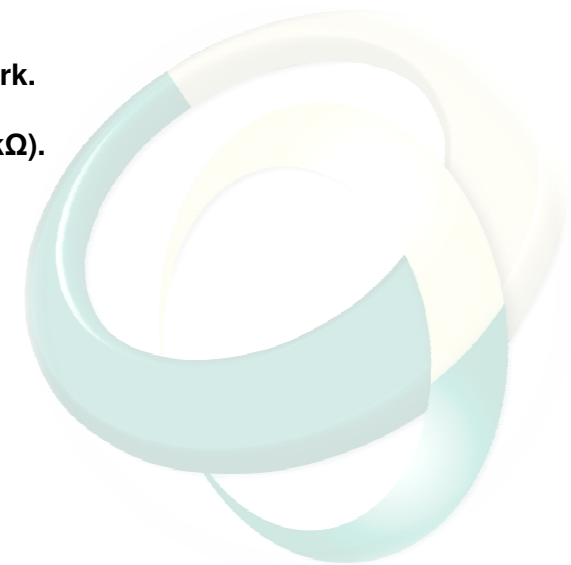
Insulation monitoring relay for unearthed cable networks



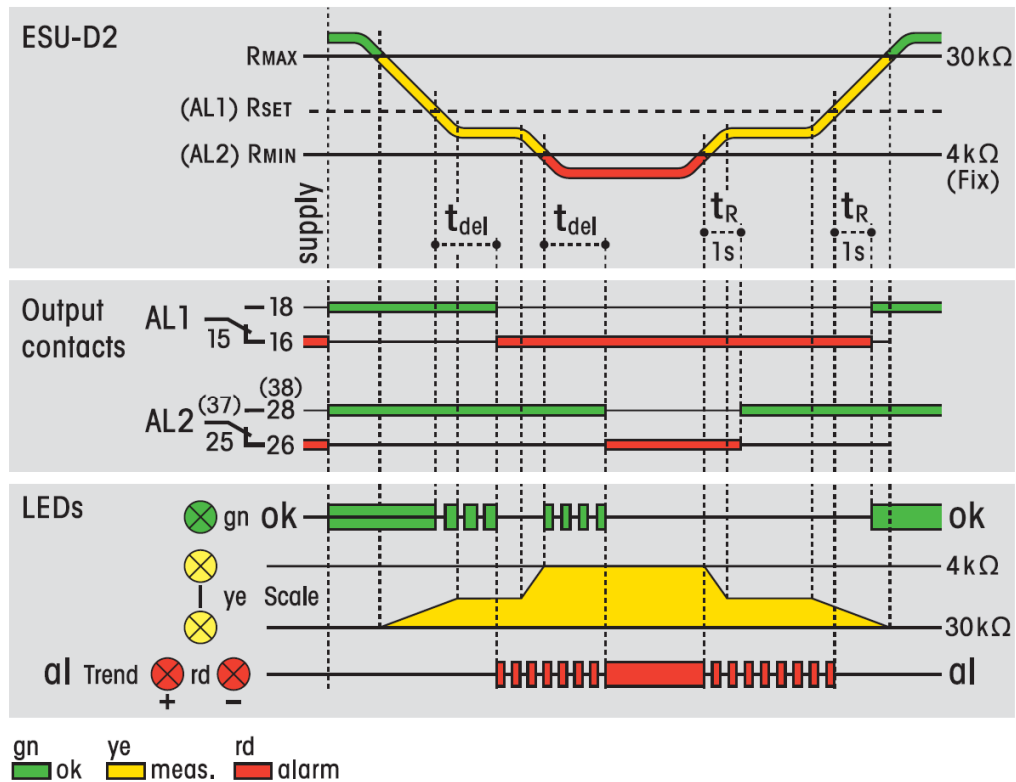


MONITORING INSULATION BREAKDOWN

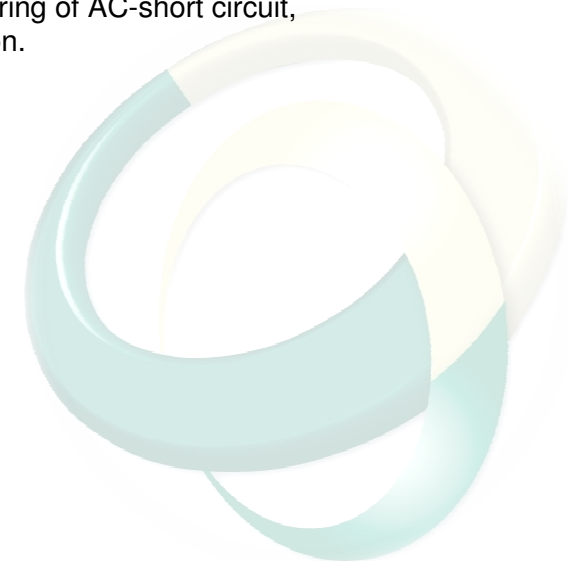
- Pre alarm 1 CO and main alarm 1 NO + 1 CO contact outputs 5 A / 250 V
- Monitoring of earth interruption on the device.
- Measures single or combined resistances occurring against + or – pole of the network.
- Analogue output terminals 5 V for external display of the earthing resistance (0,1 V/k Ω).
- Adjustable alarm delay.
- Proved reliability in rolling stock applications.



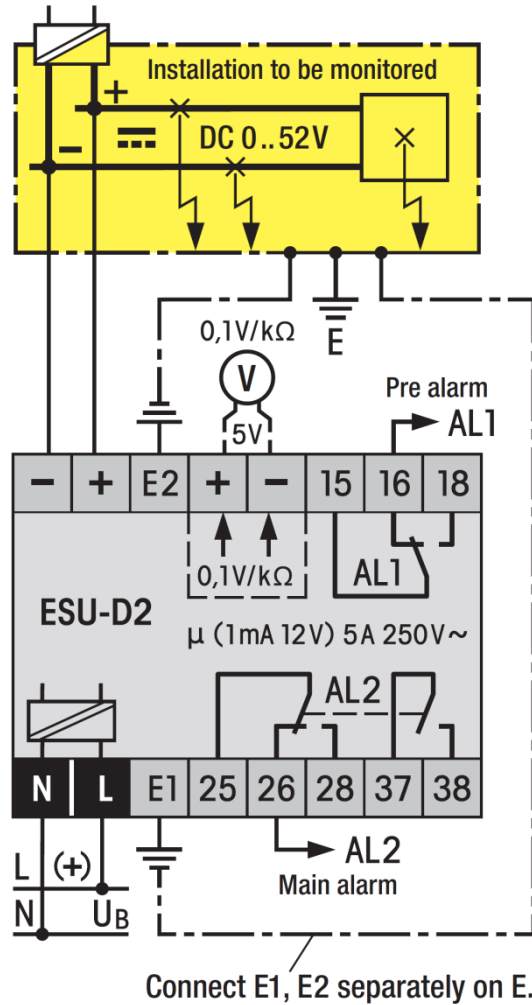
MONITORING FUNCTION



- The ESU-D2 monitors the isolation resistance in nongrounded DC-networks (24 – 48 V).
- Two alarm steps (prealarm AL1 and main alarm AL2) are indicated via separate output contacts.
- Displays: bargraph-display of the measured earthing resistance (green = ok). Two red LEDs show the ground tendency towards plus (+) or minus (-).
- Output terminals 5 V for the external display of the earthing resistance (0,1 V/k Ω).
- Test functions: Periodic automatic check, also with key "Test".
- Environmental failures: monitoring of AC-short circuit, overvoltage, ground interruption.



MEASURING CIRCUIT DATA



Measuring circuit data

Measuring / setting range for pre alarm

1 ... 50 kΩ / 4 ... 30 kΩ

Constant value for main alarm

4 kΩ

Tolerance

≤ 10 %

Overvoltage alarm level of DC network

60 V

Input current + → -

≤ 5 mA

Sampling current pulses +/- → earth

0.2 mA

Overvoltage safety from earth to +/- poles

AC 250 V

Max. capacity +/- → earth

1.5 μF¹⁾

¹⁾ Types for capacitances until 60 μF on request



Only one ESU-D2
per DC network!



SPECIFICATIONS

Time data

Alarm delay time adjustment range	0.1 ... 10 s
Fault detection time	600 ms
Auto reset time, fail to OK	1 s

Contacts

Type / Material	2 CO, 1 NO micro disconnection / AgNi
Rated operational current / min. contact load	5 A / 1 mA 12 V
Max. switching voltage (Fig. 1)	250 V

Power supply

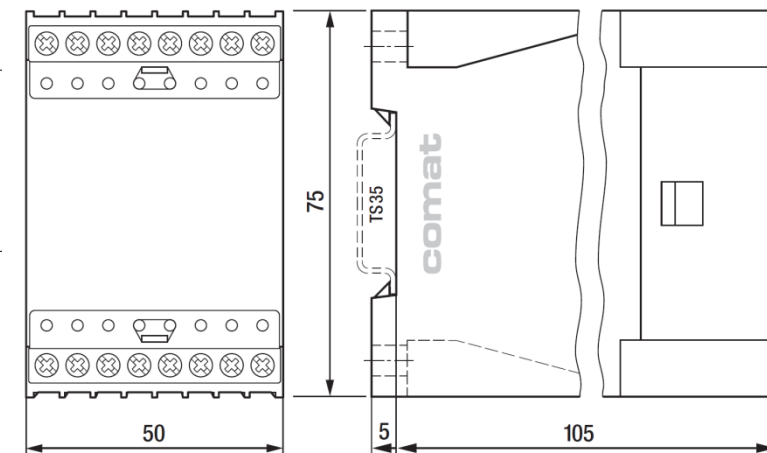
Nominal voltage	UC 24-48 V
Operation voltage range	16.8 ... 60 V
Power consumption	2 W
Voltage failure buffering	≥ 50 ms

Insulation

Test voltage contacts to other circuits	2 kVrms 1 minute
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General specifications

Ambient temperature storage /operation	-40 ... +85 °C / -40 ... +70 °C
Ingress protection rating	Housing: IP 40, terminals: IP 20
Max. screw torque	0.5 Nm
Weight	250 g



APPROVALS



Type	EN 50155					Protective coating PCB	EN 61373 Shock & vibrations test	NF F 16-101/102	
	Temperature rating	Power supply						Smoke gas index F	Inflammability I
		S1	S2	C1	C2				
ESU-D2R	TX	YES	YES	YES	YES	YES	Category 1, Class B	F2	I3



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