

3.5 Isolation Monitoring



Application	Types	Monitoring	Monitoring ratings	Output contacts	Design
Isolation monitoring, DC networks	ESU-D2		1 ... 50 k Ω	1 CO / 1 CO+NO	50 mm

ESU-D2

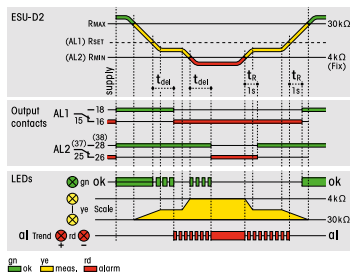
Insulation monitoring relay for unearthed DC-networks DIN Rail mounting according to DIN 43 880



Type: ESU-D2/... V

Earth insulation resistance monitoring relay
Pre alarm 1 CO and main alarm 1 NO + 1 CO contact outputs 5 A / 250 V
UC 24 ... 48 V, UC 110 ... 240 V operating voltages, monitoring of
DC 12 ... 48 V power supply networks. Monitoring of earth interruption on the device.
The device measures single or combined resistances occurring against + or - pole of the
DC network. Adjustable alarm delay. Proved reliability in rolling stock applications.

Monitoring function



The ESU-D2 monitors the isolation resistance in non-grounded 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/kΩ).
Test functions: Periodic automatic check, also with key "Test".
Environmental failures: monitoring of AC-short circuit, over-voltage, ground interruption.

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 μF ¹⁾

¹⁾ Types for capacitances until 60 μF on request

Time data

Alarm delay time adjustment range	0.1 ... 10 s
Fault detection time	800 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

	UC 24-48 V	UC 110 – 240 V
Nominal voltage	18 ... 60 V	88 ... 265 V
Operation voltage range	18 ... 60 V	88 ... 265 V
Power consumption	2 W	2 W
Voltage failure buffering	≥ 50 ms	≥ 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 / -10 ... 60 °C
Ingress protection degree	Housing: IP 40, terminals: IP 20
Max. screw torque	0.5 Nm
Weight	250 g

Standard types

UC 110-240	ESU-D2/UC110-240V
UC24-48	ESU-D2/UC24-48V



Connection diagram

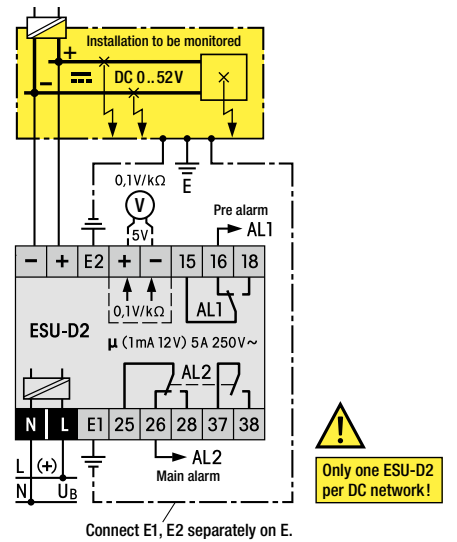
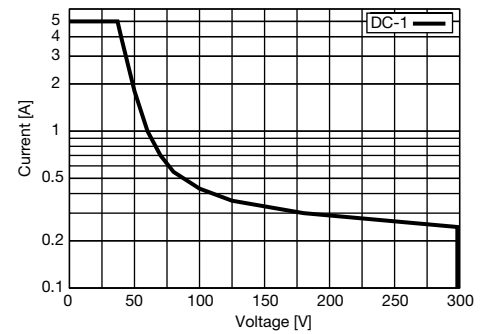
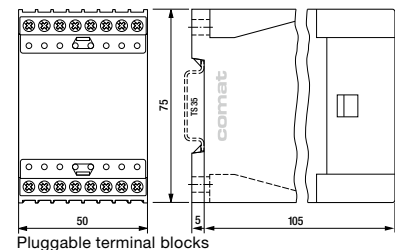


Fig. 1 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947

