

3.5 Isolation Monitoring



Application	Types	Monitoring	Monitoring ratings	Output contacts	Design
Isolation monitoring. DC networks	ESU-D2	$\frac{\overline{\Omega}}{\pm}$	1 50 kΩ	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

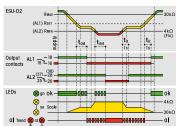
UC 24 ... 48 V, UC 110 ... 240 V operating voltages, monitoring of

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/kO).

Test functions: Periodic automatic check, also with key

Environmental failures: monitoring of AC-short circuit, overvoltage, ground interruption.

Measuring circuit data

Measuring / setting range for pre alarm 1 ... 50 kΩ / 4 ... 30 kΩ Constant value for main alarm 4 kO Tolerance ≤ 10 % Overvoltage alarm level of DC network 60 V Input current $+ \rightarrow \leq 5 \text{ mA}$ Sampling current pulses $+/- \rightarrow$ earth 0.2 mA AC 250 V Overvoltage safety from earth to +/- poles Max. capacity +/- → earth 1.5 µF 1)

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 250 V

Power supply

Max. switching voltage (Fig. 1)

UC 24-48 V UC 110 - 240 V Nominal voltage 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

General specifications

Ambient temperature storage /operation -40 ... 85 °C / -10 ... 60 °C Housing: IP 40, terminals: IP 20 Ingress protection degree Max. screw torque 0.5 Nm Weight 250 g

Standard types

UC 110-240 UC24-48

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

Connection diagram

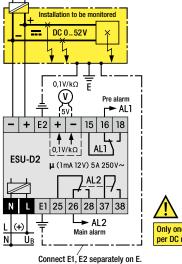
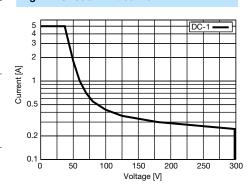
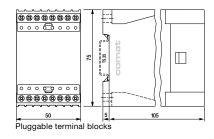




Fig. 1 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947





¹⁾ Types for capacitances until 60 µF on request