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Sitras SCD-C

Compact short-circuiting device as voltage limiter for DC traction power supply

In DC traction systems, impermissible touch voltages may occur between the return circuit and the structure earth due to operational and short-circuit currents. The persistence of these voltages must be prevented by means of a voltage-limiting device in accordance with IEC 62128-1 / EN 50122-1.

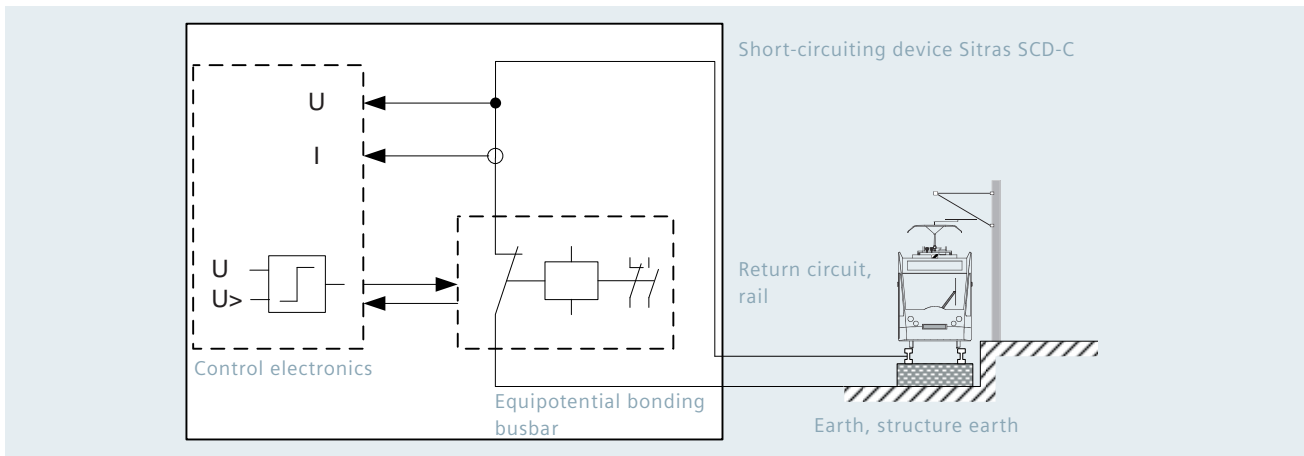
The Sitras® SCD-C reduces excessively high voltages by reliably short-circuiting the return circuit and structure earth temporarily. Furthermore, the formation of stray currents is minimized by automatic opening of the short-circuiting device.

Features

- High protection for personnel – rapid response time fulfills EN 50122-1 over the entire time range down to 20 ms
- Operational safety and reliability verified by type testing in accordance with EN 50123-6
- Economic due to demand-oriented design and very high degree of standardization
- Very small space requirement due to compact design and wall mounting
- Earthquake tested version available

Technical data

Maximum system voltage U_n	[V]	1,500
Rated current	[A]	800
Rated short-time current 250 ms ($I_{NCW} = \hat{I}_{NCW}$)	[kA]	25
Tripping voltage $U_{>}$ (default value)	[V]	120 / 95 / 85 / 70 / 60 / 35 (85)
Supply voltage	[V AC]	230
Mechanical lifespan	[switching operations]	150,000
Dimensions (H x B x T)	[mm]	1.000 x 500 x 400
Color		RAL 7047
Degree of protection		IP41
Weight	[kg]	75



Block diagram of Sitras SCD-C

Application

- Protection against personal injury: Impermissible touch voltages are prevented
- Monitoring of the potential of the return circuit: Earth faults in the contact line are detected and so clearing by feeder substations is enabled

Design / Main components

The metal cabinet for indoor wall installation contains the following main components:

- DC contactor (NC contact) with very short response time and high short-circuit making capacity
- Measuring circuits for voltage and current, with analog meters as an option
- Control electronics with extremely fast detection of overvoltages

The external cables are brought into the cabinet through cables bushings in the floor of the cabinet.

Failure of the supply voltage

Sitras SCD-C works according to the closed-circuit principle. This ensures that the return circuit and the equipotential bonding busbar are short-circuited automatically if the supply voltage fails and that the system is therefore safe for persons.

Function

“Active” mode

In its basic state, the main contact of the DC contactor is open. The voltage between the return circuit and the equipotential bonding busbar is measured and the voltage (instantaneous value) is evaluated.

If the tripping voltage set in the control electronics is exceeded, the DC contactor closes. The limit can be altered by means of plug-in jumpers in the control electronics.

Sitras SCD-C opens automatically if the current flowing through the DC contactor falls below the set maximum switching current for the set minimum closing time.

“Inactive” mode

If required, Sitras SCD-C can short-circuit both potentials without causing the contacts of the contactor to open automatically. This function can be used during maintenance work. The contacts of the contactor only open after the system has changed back to “active” mode.

Commands and messages

The short-circuiting device is intended for local operator control and monitoring as well as for link-up to a remote system.

Commands

Activate	Contactor opened
---	Contactor closed
Deactivate	Inactive (only locally)
Quit fault	Fault

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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. If not stated otherwise, we reserve the right to include modifications, especially regarding the stated values and dimensions.