

Circuit-breaker detects all types of fault currents

May 11 2005

The new universal-current-sensitive Type B residual-current circuit-breaker (r.c.c.b.) from Siemens Automation and Drives (A&D) can detect pulsating and smooth DC fault currents as well as sinusoidal AC fault currents. These new circuit-breakers are designed for rated currents of 25 to 80 A. Thanks to its tripping range, the r.c.c.b. is also suitable for applications in which medical protection must be guaranteed against dangerous ventricular fibrillation. Typical areas of application for the universal-current-sensitive Type B residual-current circuit-breaker include medical equipment, machine tools, charging stations, test systems, and laboratory equipment.

With the Type B residual-current circuit-breaker (r.c.c.b.), Siemens A&D offers a "universal-current-sensitive" circuit breaker. This circuit-breaker is suitable for plants in which smooth DC fault currents can occur as well as AC fault currents and pulsating fault currents. In this, it goes beyond the performance range of its predecessor, the Type A r.c.c.b.

Smooth DC fault currents occur, for example, when operating frequency converters in cranes, machine controllers, elevator systems, and also in medical equipment such as computer tomographs. Tripping conditions up to 2 kHz are stipulated for these applications. For the rated fault current of 30 mA, the tripping range of the universal-current-sensitive r.c.c.b. is significantly under the limit curve for protection against dangerous ventricular fibrillation.

In detection, analysis and shutdown, the universal-current-sensitive r.c.c.b. works independently of a line voltage in accordance with VDE 0664 Part 100 and the requirements for Type A. A voltage supply is only required for detecting smooth DC fault currents. The function is fulfilled in all mains cables from a value of 50 V. This also provides maximum safety for the voltage-dependent section. Even if only one of the conductors is live and a fault current occurs, protection is established through the line-voltage-independent tripping function of the pulsating-current-sensitive device section.

Thanks to grading of the r.c.c.b. according to the rated fault currents 30 mA, 300 mA and 500 mA, there is a suitable device available for every protection level. In extensive plants, it is also possible to connect the circuit-breakers in series.

Citation: Circuit-breaker detects all types of fault currents (2005, May 11) retrieved 27 April 2024 from <https://phys.org/news/2005-05-circuit-breaker-fault-currents.html>

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