Residual Current Circuit Breaker Test Guidance Sheet

Overview

Blakley Electrics produces a range of Core Balance Earth Leakage Sensors that are widely used within our various ranges of standard and purpose made distribution and protection assemblies. The sensors are available in four models: the ELS with fixed sensitivity and VELS, VRCD and VELR all with adjustable sensitivity and time delay. The sensors work in conjunction with MCBs to BS EN 60898-1 or BS EN 60947-2 or MCCBs to BS EN 60947-2, fitted with either a shunt trip or under voltage release. These combinations provide protection in accordance with BS 4293. The combined Residual Current Circuit Breaker arrangement provides protection similar to that of an RCBO and is classified as an AC type device.

ELS Series Sensor

The ELS series sensor is a fixed sensitivity device with an integral CT.
Standard sensitivities 5, 10, 20, 30, 100, 300 or 500mA.
Standard Voltages: 110, 230 or 400V ac, 50 or 60Hz.

ELS

VELS Series Sensor

The VELS series sensor is a variable sensitivity and time delay device with an integral CT.
Sensitivities 100mA to 1A.
Time Delay: 0 to 1 second.
Standard Voltages: 110, 230 or 400V ac, 50 or 60Hz.

VELS

VRCD Series Sensor

The VRCD series sensor is a variable sensitivity and time delay device with external matched CT.
Sensitivities 100mA to 2A.
Time Delay: 0 to 3.5 Seconds.
CT internal diameter: 45, 65, 100, 150 or 200mm
Standard Voltages: 110, 230 or 400V ac, 50 or 60Hz.

VRCD

VELR Series Sensor

The VELR series sensor is a variable sensitivity and time delay device with external unmatched CT.
Sensitivities 30, 100, 300, 500mA or 1A (dependent on CT ID)
Time Delay: 0.02, 0.2 0.5, 1 or 5 Seconds.
CT internal diameter: 35, 60, 80, 110, 160 or 210mm
Voltages: 110V, 230V and 400V ac, 50 or 60Hz (selected by terminals)

VELR

Testing

The following ½, 1 and 5 times tests should be performed as part of the initial verification and periodic testing required by BS 7671:2008 Amendment 3:2015. For further information please refer to BS7671:2008 Amendment 3, Guidance Note 3 'Inspection & Testing' section 2.6.19 'Operation and functional testing of RCDs'.

½ Times Test – All Blakley earth leakage assemblies should NOT operate / open when tested at 50% of the devices rated tripping current (IΔn).

1 Times Test (Operational Test) – All Blakley Electrics earth leakage assemblies MUST operate when tested at 100% of the devices rated tripping current (IΔn) within a time period of no greater than 200mS (with zero time delay selected)

5 Times Test (Additional Protection, ELS and VELR series only) – Blakley Electrics earth leakage assemblies being used to provide Additional Protection in accordance with BS7671:2008 Amendment 3:2015 section 411.3.3. MUST not have a rated tripping current (IΔn) exceeding 30mA and when tested at 5 times rated tripping current (IΔn) they MUST operate within a time period of no greater than 40mS.

Time Delay Test – The time delay characteristic of Blakley Electrics variable earth leakage assemblies is in accordance with the requirements of BS4293. Assemblies with time delay MUST operate when tested at 100% of the devices rated tripping current (IΔn) within a time period of not less than 50% of the set time delay and not greater than the set time delay + 200mS. In order to verify the time delay period an RCD test set with a 'selective' RCD test facility will be required. The maximum time period 'selective' RCD test sets can measure varies from model to model. The Megger RCDT320 test set can measure up to 1 second, which should be sufficient in most cases. If there is a requirement to measure longer time periods, specialist equipment maybe required.

Safe Supply Units - These are specialist Blakley products that combine a 1:1 ratio transformer with extra high sensitivity RCD protection. They are generally installed in school laboratories and other areas where there is a high risk of electric shock. Please see Tech Data Sheet TDS9 for guidance on the installation and testing of these products.