RC750
RCD TESTING UNIT

181A555

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READ INSTRUCTIONS BEFORE USE

Due to the potential hazards associated with any electrical circuit it is important that a user is fully familiar with instructions covering the capabilities, applications and operations of the instruments.

The user should ensure that all reasonable safety procedures are followed and if any doubt exists should seek advice before proceeding.

INSTRUCTIONS FOR THE RC750

Introduction

The Seaward RC750 Tester has been designed to provide a simple safe means of checking the operation of any RCD and of measuring its speed of operation over a wide range of test currents.

The instrument includes a number of useful features:

Comprehensive diagnosis.
Accurate 3½ digit LCD display of time, 0-2000mS.
Test currents from 5-500mA.
Polarity of the AC cycle, during which the test current is initiated, will be indicated on the display by a positive (+) or a negative (−) sign. The instrument will automatically alternate between commencement cycles with consecutive tests.

The unit requires no battery.

A non user replaceable 1A 250V slow blow fuse is incorporated within the instrument.

Features of the RC750 make it ideal for establishing the compliance of an RCD with the trip time regulations of BS4293 and for checking the operation of the RCDs as required by the 16th Edition of the IEE Wiring Regulations.

The unit is suitable for use on both single phase three wire systems (phase, neutral and earth) and three phase four wire systems where the voltage between any phase and earth does not exceed the rating of the instrument.

Note

The RC750 is designed to comply with the 16th Edition Wiring Regulations by applying a current test pulse of either 2s, 500ms or 50ms.

IMPORTANT

IN ORDER TO AVOID THE REMOTE POSSIBILITY OF A POTENTIALLY DANGEROUS VOLTAGE APPEARING BETWEEN EXPOSED AND EXTRANEOUS CONDUCTIVE PARTS DURING PERFORMANCE OF THE TEST, IT MUST FIRST BE ENSURED THAT THE CIRCUIT PROTECTIVE CONDUCTOR IS NOT OF A HIGH IMPEDANCE, IE GREATER THAN 100 OHMS.

TEST PROCEDURES - PLEASE READ CAREFULLY

CONNECTIONS

(a) Connections to a Single Phase System.

The Test Unit can be used to test an RCD on a single phase circuit, either via a socket outlet supplied through the RCD or directly at the RCD terminals.

If the RCD is to be tested via a socket outlet, the Test Unit is plugged directly into the socket outlet.

If the RCD is to be tested directly at its terminals, then suitable test leads must be used. The earth lead should be connected to a suitable earth. The neutral lead is connected to the outgoing neutral terminal of the RCD. The phase lead is connected to the outgoing phase terminal of the RCD.

(b) Connection to a three Phase (4 Wire) System

Suitable test leads must be used when testing an RCD on a three phase (4 Wire) system.

The earth lead should be connected to a suitable earth. The neutral lead is connected to the outgoing neutral terminal of the RCD. The phase lead is connected to one of the outgoing phase terminals of the RCD.

Important

(1) Under no circumstances should the neutral lead be connected to a phase terminal.
(2) All loads normally supplied through the breaker are disconnected during the test.

(3) Never exceed the voltage rating of the instrument.

PERFORMING THE TEST

Step 1. With the Test Unit connected and the supply switched on, the symbol 'WAIT' will appear at the top right hand side of the display. The symbol will disappear after approximately 6 seconds when the unit is ready to perform a test and sets the display to zero. The annunicator provides a visual display of the mains wiring condition, as shown below.

"PE" volts between phase (live) and earth
"PN" volts between phase (live) and neutral
"NE" volts between neutral and earth

If the NE annunicator is present then testing will be inhibited.

If a wiring fault is indicated, the Test Unit should immediately be disconnected from the supply and the fault rectified before any tests are carried out.

For correct mains wiring the PE and PN annunicator should be present.

The test procedure may now be continued.

Step 2. Select the desired test current with the rotary switch.

Step 3. Select the required test time (defaults to 2s).

Step 4. Press and release the test annunicators.

Note:

Once each test time has been selected then the test polarity returns to default setting

If the RCD trips, the annunicators will be extinguished and the isolation speed recorded on the display. The trip time will be displayed for approximately 6 seconds.

If the RCD fails to trip, the annunicators will remain illuminated and the time displayed will be the maximum test time, either 2s, 500ms or 50ms

Repeat the test with the breaker reset and the RC750 will automatically commence the test at the start of the alternate half cycle.

Note:

If the first test is conducted at 180° ie at the start of the negative cycle (the negative sign will be displayed on the display), the second test will automatically commence at 0° ie at the start of the positive cycle (the positive sign will appear on the display).

Note

1) It is recommended that each breaker is tested at least twice to ensure that tests are simulated at the beginning of both the positive and negative cycle.

2) Certain types of RCD will operate faster when the test current is initiated on one half cycle than when initiated at the start of the other. The Polarity sign of the display indicates the polarity of the first cycle of the AC wave form ie positive; 0° negative; 180°.

3) After each test has been performed and the RCD re-energised the symbol "WAIT" will appear. The symbol will disappear after approximately 6 seconds and the display will be set to zero, the unit is again ready to perform a test.

4) The RC750 is not designed for sustained connection or permanent installation in a system and should be unplugged when not in use.

5) Allow a cooling time after prolonged testing sequences.

Tripping Requirements of an RCD

IEE Wiring Regulations - 16th Edition

OPERATION OF RESIDUAL CURRENT OPERATED DEVICES (REGULATION 713-12-01)

The Regulation requires where protection against indirect contact is provided by a residual current device its effectiveness shall be verified by a test simulating an appropriate fault condition and shall be independent of any test facility incorporated in the device.

The test shall be made on the load side of the RCD at or near as practical to the point of utilization between the phase conductor of the circuit protected and the associated circuit protective conductor, so that a suitable residual current flows. Where nesessary all loads normally supplied through the RCD are disconnected during the test.

The effectiveness of the test button or other test facility integral with the RCD is also to be tested, after application of the externally applied tests described above.

Note 1: Regulation 412-06-02 states that where a residual currant device, has a rated operating current not greater than 30mA has been installed for protection agains indirect contact it is recognised as reducing the risk associated with direct contact provided a residual current of 150mA should cause the device to open within 40ms.

Note 2: Regulation 471-16-01 requires a socket outlet rated at 32 A or less which may resonably be expected to supply portable equipment for use outdoors shall be provided with supply protection by means of a residual current device having charateristics specified in Regulation 412-06-02

BS4293 : 1983

Test Current

0.5 I△N RCD must not trip
I△N RCD must trip in 200ms
5 I△N RCD must trip within 40ms

Where I△N = Rated residual tripping current of RCD

Maintenance

In the event of the Test Unit requiring maintenance it should be returned to Seaward (address below) for repair. Unless the instrument is covered by the guarantee (See Section below) a charge will be made for this service. Details are available on request.

Before use ensure the instrument is clean and dry. Check the condition of the mains cable and instrument case.

Avoid storage in damp conditions and excessive temperature variations.

Accessories

3 phase (4 wire) test load set Seaward number

WARRANTY AND REPAIR

Should this instrument require repair or calibration within the UK it should be returned to:

Seaward Electronic Limited
Bracken Hill
South West Industrial Estate
Peterlee, Co. Durham
SR8 2SW. England
Tel: (0191) 586 3511 Fax: (0191) 586 0227
www.seaward.co.uk
sales@seaward..co.uk
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Overseas

If the instrument owner resides outside the UK, he may either return the instrument directly to Seaward at Peterlee, or to his local sales agent, a list of whom can be obtained from Seaward. It is important that a copy of the invoice and packing note are sent by airmail to clear the product through customs.

Estimated repair charges (where appropriate) and freight charges will be advised to the owner before work is commences.

Specification

Voltage 220/250V

Test current 5mA to 500mA
±10%

Test time 0 to 25
±2% ±2 digits

Dimensions 200 x 95 x 50

Weight 330g