IRT 1557

Operating Instructions

SEAWARD

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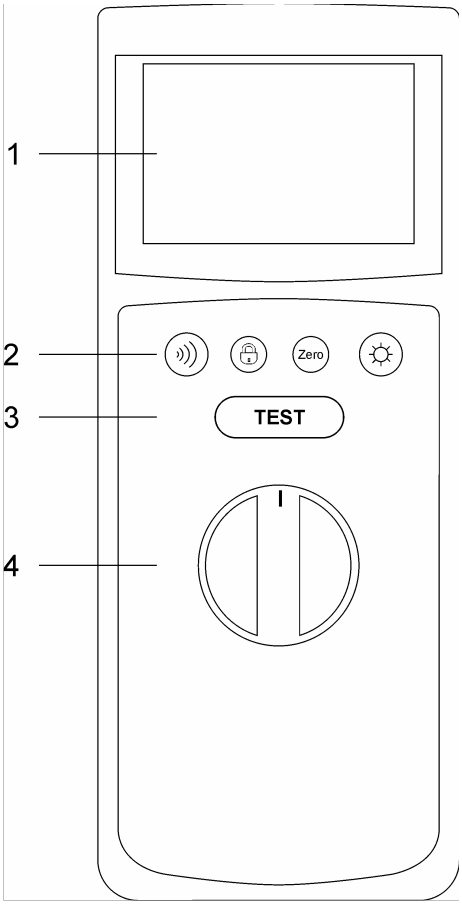

Figure 1 IRT 1557 front view

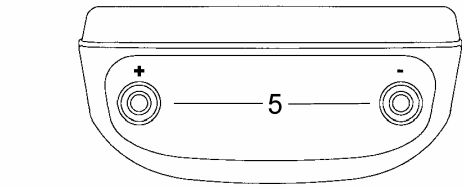

Figure 2 IRT 1557 end view

Limited Warranty & Limitation of Liability

SEAWARD Electronic Limited guarantees this product to be free from defects in material and workmanship under normal use and service for a period of 1 year. The period of warranty will be effective at the day of delivery.

Due to a policy of continuous development SEAWARD Electronic Limited reserves the right to alter the equipment specification and description outlined in this publication without prior notice and no part of this publication shall be deemed to be part of any contract for the equipment unless specifically referred to as an inclusion within such contract.

Disposal of Old Product

This product has been designed and manufactured with high quality materials and components that can be recycled and reused.

When the crossed out wheelie bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC.

Please familiarise yourself with the appropriate local separate collection system for electrical and electronic products.

Please dispose of this product according to local regulations. Do not dispose of this product along with normal waste material. The correct disposal of this product will help prevent potential negative consequences for the environment and human health.

Contents

CERTIFICATE OF CONFORMITY

As the manufacturer of the apparatus listed, Seaward declare under our sole responsibility that the product:

IRT 1557

To which this declaration relates are in conformity with the relevant clauses of the following standard:

EN 61010-1
Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements.

EN 61557-1, 2, 4, 10
Electrical safety in low voltage distribution systems up to 1000V a.c. and 1500V d.c. – Equipment for testing, measuring and monitoring of protective measures

BS EN 61326
Electrical equipment for measurement, control and laboratory user-EMC Requirements

Performance: The instrument operates within specification when used under the conditions in the above standards EMC and Safety Standards.

The product identified above conforms to the requirements of Council Directive 89/336/EEC and 73/23 EEC.

Seaward Electronic Ltd is registered under BS EN ISO9001:2000 Certificate No: Q05356.

Introduction

The IRT 1557 is a fully featured insulation resistance and continuity tester, housed in a rugged enclosure, and supplied complete with all necessary test leads. The instrument will perform tests in accordance with the requirements of EN 61557.

1 User Notes

This instrument and its operating instructions are intended for use by adequately trained personnel.

The following symbols are used in these operating instructions and on the IRT 1557.

Warning of electrical danger!
Indicates instructions must be followed to avoid danger to persons.

Important, follow the documentation! This symbol indicates that the operating instructions must be adhered to in order to avoid danger.

2 Safety Notes

This IRT 1557 is fully compliant with the requirements of:

EN 61010-1: 2001.
EN 61557 parts 1, 2, 4 and 10.

In order to ensure safe operation of this instrument, all notes and warnings in these instructions must be observed at all times.

The IRT 1557 has been designed to make measurements in a dry environment.

The IRT 1557 may be used to test circuits with a maximum overvoltage (with reference to earth)
Cat II, 1000V AC/DC.
Cat III, 600V AC/DC.
Cat IV, 300V AC/DC.

The IRT 1557 and all associated cables and leads must be checked for signs of damage before equipment is operated.

Where safe operation of the IRT 1557 is no longer possible it should be immediately shut down and secured to prevent accidental operation.

It must be assumed that safe operation is no longer possible:

- if the instrument or leads show visible signs of damage or
- the instrument does not function or
- after long periods of storage under adverse environmental conditions.

If the IRT 1557 is used in a manner not specified by this document then the protection provided by the equipment may be impaired.

3 Accessories

3.1 Standard Accessories

The IRT 1557 is supplied with the following items:

1 x IRT 1557 unit
1 x 1.5 m black test lead
1 x 1.5 m red test lead
1 x black crocodile clip
1 x red crocodile clip
1 x carry case
1 x Operating Instruction Manual

 Do not open unit no serviceable parts

4 Unit Description

The IRT 1557 is a hand held, insulation resistance and continuity tester. Tests are selected using the rotary switch.

4.1 Identifying parts of the unit

The numbering below refers to fig. 1 and fig. 2.

1. LCD Display
2. Function keys
3. TEST key
4. Rotary Switch
5. Test lead inputs

4.2 Keypad operation

Key	Function
	Buzzer ON/OFF
	LOCK function
Zero	Test lead resistance null
	Backlight ON/OFF
TEST	Start measurement

5 Using the IRT 1557

5.1 Power On

To turn the IRT 1557 on simply rotate the rotary switch to the required test type.

5.2 Battery Health Check

The battery condition should be checked before any test using the battery test function..

Note: When the battery test function displays 0%, the batteries should be replaced as described in section 8.3.

5.3 Measuring Insulation Resistance

Always ensure that the circuit under test is isolated before attempting to make an insulation measurement.

5.3.1 Rotate the rotary switch until the required test voltage is selected.

5.3.2 Connect the test probes to the circuit to be measured.

If a voltage greater than 30V is present at the test probes the buzzer will sound, the warning icon is displayed and the measured voltage is displayed. Insulation measurement is inhibited until the voltage is removed.

5.3.3 Press and hold the TEST button. The secondary display shows the actual test voltage applied to the circuit under test. The primary display shows the measured resistance. The measured resistance may fluctuate due to capacitance on the circuit under test. The IRT 1557 will emit a beep to indicate a stable reading has been obtained.

5.3.4 Release the TEST button but keep the test probes connected to allow the IRT 1557 to

discharge any capacitance on the circuit under test.

5.3.5 The primary display indicates the decreasing voltage. Keep the probes connected until the circuit is completely discharged (primary display shows - - - -).

5.4 Measuring continuity

Always ensure that the circuit under test is isolated before attempting to make a continuity measurement.

Measurements can be adversely affected by impedances of additional operating circuits connected in parallel or by transient currents.

5.4.1 Rotate the rotary switch until the continuity test is selected.

5.4.2 The resistance of the test leads can introduce significant errors when measuring low resistance values.

5.4.3 To null the test lead resistance, connect the probes tips together. Press and hold the zero key until the meter beeps. The primary display will indicate 0.00 and the zero icon will be displayed.

5.4.4 Connect the test probes to the circuit to be measured.

If a voltage greater than 30V is present at the test probes the buzzer will sound, the warning icon is displayed and the measured voltage is displayed. Continuity measurement is inhibited until the voltage is removed.

5.4.5 Press and hold the TEST button. A single beep indicates a stable reading. The primary display shows the measured resistance. If the measured resistance is greater than 20 Ω, **>20** Ω is displayed.

5.4.6 After releasing the TEST button, reverse the connections of Red (+) and the Black (-) probes to reverse the polarity of the test current and repeat the measurement.

5.4.7 The measured value should be the same as the previous value. This test is useful to detect corroded connections, which can cause different readings for both polarities.

5.5 Measuring resistance

Always ensure that the circuit under test is isolated before attempting to make a resistance measurement.

5.5.1 Rotate the rotary switch until the resistance test is selected.

5.5.2 Connect the test probes to the circuit to be measured.

If a voltage greater than 30V is present at the test probes the buzzer will sound, the warning icon is displayed and the measured voltage is displayed. Resistance measurement is inhibited until the voltage is removed.

5.5.3 Press and hold the TEST button. The primary display shows the measured resistance. If the measured value is less than 30 ohms the continuity buzzer will sound. If the measured resistance is greater than 2000 Ω, **>2000** Ω is displayed.

5.6 Measuring voltage

5.5.1 Rotate the rotary switch until the voltage test is selected.

5.5.2 Connect the test probes to the circuit to be measured.

If the voltage measured contains both ac and dc components, the value of the largest component is displayed.

5.6 Test 'Lock' function

5.6.1 When continuous insulation or continuity resistance measurement is required, the TEST key can be locked in the ON position to avoid the need to press and hold the key.

5.6.2 To operate the LOCK function, press the TEST key, then press the LOCK key, then release both keys simultaneously.

5.6.3 When the LOCK function is active the lock icon is shown on the display.

6 Specifications

Safety Specifications	
Electrical Safety	EN61010-1: 2001and EN61557: 1997
Maximum Operating Voltage	1000V AC or DC between any terminal and earth ground
Protection Levels	CAT IV, 300V, and CAT III, 600V, and CAT IIII, 1000V Pollution Degree 2 per EN61010-1
Electromagnetic Compatibility (EMC)	
Immunity	EN 61326-1
Emissions	EN 61326-1
Electrical Specifications	
Battery	AA Size 1.5V Alkaline, IEC-LR14 (6 pieces)
Fuse	6 mm x 32 mm (0.25 x 1.25 inch), 0.5 A 1000V, Fast Acting, 30 kA Minimum Interrupt rating
Voltage Measurement	
Range	1000V AC/DC to 400 Hz
Resolution	1V
Accuracy	2% + 5 counts
Analog Bar Graph	0 to 1000V
Bar Graph Accuracy	10%
Visible Warning	≥ 30V AC / DC at Inputs
Insulation Resistance Measurement	
Auto Ranges	2.00 MΩ, 20.0 MΩ, 200. MΩ, 2000 MΩ
Resolution	0.01 MΩ on 2.00 MΩ range, maximum
Accuracy	2% + 2 digits, 2MΩ, 20MΩ, 200MΩ Ranges 6% + 2 digits on 2000 MΩ Range
Analog Bar Graph	0 to 1GΩ and infinity .
Bar Graph accuracy	10%
Test Voltages	250V, 500V, 1000V
Accuracy	+20%, -0%

Nominal Current	1 mA
Number of Measurements per EN615577-2	3000 using 2000mA/Hr Alkaline Batteries
Input Protection	1000V
Circuitry Protection	test inhibited if ≥ 30V AC or DC at inputs
Lo Ω	
Range	20.00 Ω
Accuracy	2% + 2 digits
Resolution	0.01 Ω
Analog Bar Graph	0 to 100 Ω and infinity
Open Circuit Voltage	4V dc nominal
Short Circuit Current	>200 mA 0–2Ω
Test Leads Zero	Zero up to 10 Ω
Number of Measurements per EN61557-4	5000 using 2000mA/Hr Alkaline Batteries
Input Protection	1000V
Circuitry Protection	test inhibited if ≥ 30V AC or DC at inputs
Resistance Measurement	
Range	2000 Ω
Accuracy	5% + 2 digits
Resolution	1 Ω
Analog Bar Graph	0 to 10 kΩ and infinity
Bar Graph Accuracy	10%
Beeper	On at ≈30 Ω or less
Test Current	25µA nominal

7 Environmental Conditions

7.1 The IRT 1557 has been designed to perform tests and measurements in a dry environment.

7.2 Operating Altitude 0 to 2000 metres

7.3 Overvoltage category IEC 60664/IEC 61010,
300V Category IV,
600V Category III.
1000V Category II.

7.4 Pollution degree 2 according to IEC 61010-1.

7.5 Protective system IP40 according to IEC 60529.

7.6 Electromagnetic compatibility (EMC). Interference immunity and emitted interference conforming to IEC 61326-1.

7.7 Operating temperature range of 0℃ to 40℃, without moisture condensation.

7.8 The IRT 1557 can be stored at any temperature in the range -25℃ to +65℃ (relative humidity up to 90%). The batteries should be taken out of the instrument for storage.

8 Maintenance

8.1 Securing the IRT 1557

Under certain conditions safe operation of the IRT 1557 can no longer be assumed:

8.1.1 Visible damage of the instrument case.

8.1.2 Incorrect measurement results.

8.1.3 Recognisable abuse to the instrument due to prolonged storage under improper conditions.

8.1.4 Recognisable abuse to the instrument due to extraordinary transportation stress.

8.1.5 Check the battery compartment for signs of battery electrolyte leakage.

8.1.6 In these cases, the IRT 1557 should be immediately switched off, disconnected from any test or measurement function and secured to prevent any further use.

8.2 Cleaning

8.2.1 Clean the external case of the IRT 1557 with a clean dry cloth.

8.2.1 Avoid using solvents and abrasive scouring agents to clean the external case of the IRT 1557.

8.2.3 Check the battery contacts and compartment are free of electrolytic contamination.

8.2.4 Any contamination of the battery contacts or compartment should be cleaned with a dry cloth.

8.3 Battery Replacement

Before opening the IRT1557 ensure that it is disconnected from all voltages! Electric shock danger!

8.3.1 Power the unit off by selecting the Off position on the rotary switch.

8.3.2 Disconnect all the test leads from the unit

8.3.3 Position the IRT 1557 face down and release the captive screw in the battery compartment cover.

8.3.4 Remove the battery compartment cover.

8.3.5 Remove the discharged batteries from the compartment.

8.3.6 Fit a new set of alkaline batteries.

8.3.7 Relocate the battery cover over the battery compartment and fasten in position with the battery cover captive screw.

8.4 Replacing the fuse

Before opening the IRT1557 ensure that it is disconnected from all voltages! Electric shock danger!

8.4.1 Power the unit off by selecting the Off position on the rotary switch.

8.4.2 Disconnect all the test leads from the unit

8.4.3 Position the IRT 1557 face down and release the captive screw in the battery compartment cover.

8.4.4 Remove the battery compartment cover.

8.4.5 Remove the fuse.

8.4.6 Fit a new fuse.

8.4.7 Relocate the battery cover over the battery compartment and fasten in position with the battery cover captive screw.

8.5 Spare Parts

	Part No.
Test lead set	44B090
Fuse	27B098
Carrying Case	71G082