BESANTEK

BST-IT26

ANALOGUE INSULATION-CONTINUITY and VOLTAGE METER

INSTRUCTION MANUAL

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1. Safety Precautions

Electricity can cause severe injuries even with low voltages or currents.
Therefore it is extremely important that you read the following information before using your analog insulation tester.

1.1 This Instrument must only be used and operated by a competent trained person and in strict accordance with the instructions. We will not accept liability for any damage or injury caused by misuse or non compliance with instructions and safety procedures.

1.2 This instrument must not be used on live circuits. Ensure all circuits are de-energised before testing. See paragraph 1.8 for details of built-in warning features should your analog insulation tester be connected to a live system.

1.3 Never open your analog insulation tester except for battery replacement. (See battery replacement section)

1.4 Always inspect your analog insulation tester and test leads before use for any sign of abnormality or damage. If any abnormal conditions exist (broken test leads, cracked case, display faulty etc...) do not attempt to take any measurement or use the tester. Return your analog insulation tester to your nearest distributor for service.

1.5 Never replace the protective fuse with any other than the specified or approved equivalent.

1.6 Your analog insulation tester has been designed with your safety in mind. However, no design can completely protect against incorrect use. Electrical circuits can be dangerous and / or lethal when a lack of caution or poor safety practice is used. Use caution in the presence of voltage above 24V as these pose a shock hazard.

1.7 Pay attention to cautions and warnings which will inform you of potentially dangerous procedures.

1.8 Your analog insulation tester has a live circuit warning beeper. If it is connected to an AC live circuit, a beep of twice the frequency of the voltage present will be heard.

DO NOT proceed to test and immediately disconnect the instrument from the circuit. In addition, the warning light will lit if the voltage is above 100Vdc or 70Vac.
When AC voltage is present, before testing, its value is displayed on the AC scale.

2. Safety Notes

Rated environmental condition
(1) Indoor use.
(2) Installation Category III.
(3) Pollution Degree 2.
(4) Altitude up to 2000m.


Meter is protected throughout by double insulation or reinforced insulation.


Warning ! risk of electric shock.


Caution ! refer to this manual before using the meter.

3. Features

- High quality taut band movement.
- Three insulation test voltages :
  1- 250Vdc 100MΩ
  2- 500Vdc 200MΩ
  3- 1000Vdc 400MΩ
- Two continuity test on "Low Ohms" :
  1- 500Ω
  2- 3Ω
- Small and Lightweight, "all in one" case (do not need bag).
- AC voltmeter with linear scale up to 600Vac.
- 200mA continuity short circuit current.

- 1mA test current on insulation test at nominal voltage.
- Automatic discharge of capacitance and inductive circuit off charge stored in the circuit under test.
- Live Warning and display of external voltage presence.

※ Fuse, air gap, crowbar and overload protected.
On line battery monitoring shows if battery is ok.

- Manual zero ohm adjustment.
- Very low battery consumption.
- On-Load battery check (+/-205mA load for worst case).
- Operates on 8 dry batteries AA, R6P type.
- Mirror scale.
- Push and turn locking switch for long and hand free testing.
- Designed to meet international standards.
- Supplied with high quality test leads.

4. Connections

5. Specifications

INSULATION

Test Voltage	250Vdc	500Vdc	1000Vdc
	+10%-0%	+10%-0%	+10%-0%
Mirror scale	100MΩ	200MΩ	400MΩ
Mid Scale	1MΩ	2MΩ	4MΩ
Scale Multiplier	x1/2	x1	x2
Accuracy	±5%		
Output short-circuit current	≥1.0mA		
Regulated output voltage (up to 1mA current)			
	263.5V	525V	1052V

CONTINUITY

	Low Ω	0 - 3Ω	0 - 500Ω
Test leads / fuse zero W adjustment by knob			
Output short-circuit current	205mA		
Accuracy	±1.5% of scale length		

AC Voltage

Range	0 - 600Vac
Accuracy	±3% of scale length

Voltage Warning

Warning light circuit live lit from 90Vdc / 70Vac
Buzzer beep from 24Vac / dc

Battery Check

Battery check indicate good batteries from 8Vdc to 13Vdc during a load test of 205mA.
Battery OK; Battery OK Led lit from 8Vdc and is operative while testing.

6. Why Test is Necessary

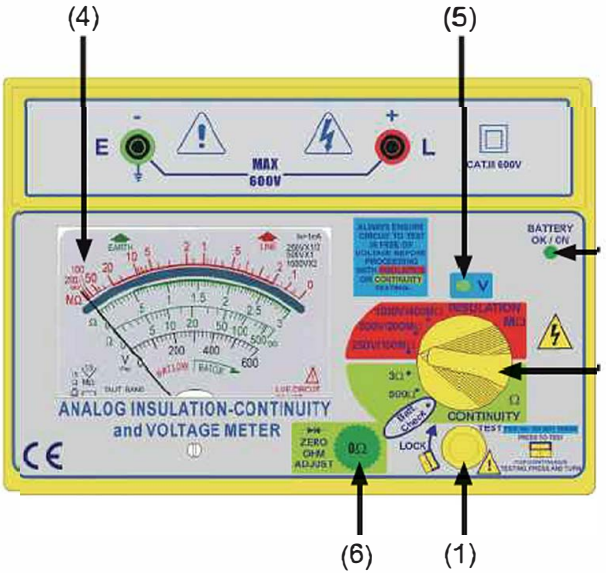
INSULATION

Every electrical apparatus and installation need to be safe for the user and for the equipment itself.
Electrical conductors of electricity need to be insulated from each other, so that they do not create electrical hazard or unnecessary consumption.
Badly insulated circuits can create leakage current which can be dangerous and trip your GFCI, RCCB or ELCB.
Each country regulate those levels at which the insulation is acceptable.
Generally, insulation resistance measurements are done between each conductor and the earth, and between each conductors.

CONTINUITY

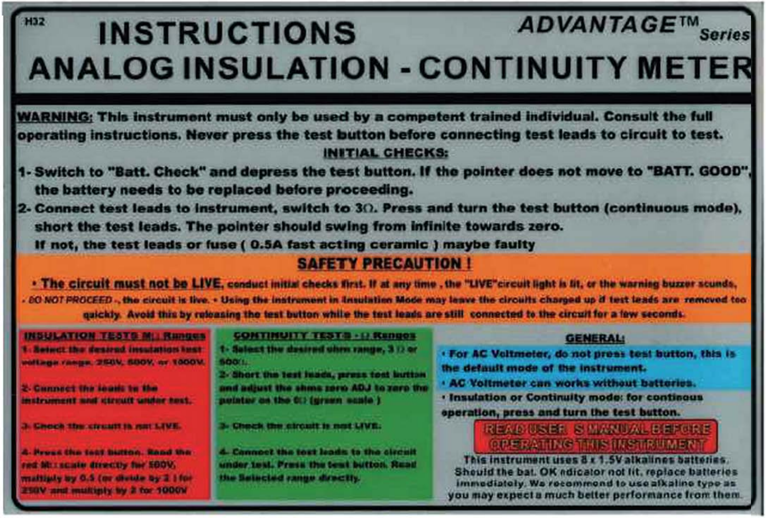
Checking the continuity of wires, complete circuits, connections, closure of contacts, circuit breakers, fuses, bounding resistance of connections, etc... Are all very important.

7. Instrument Layout



(1) Test Button Switch
(2) Function Selector
(3) Battery OK indicator
(4) Mirror Scale
(5) Live Circuit Warning Light
(6) Test Leads and Fuse Zeroing Knob

8. LID Sticker - Simplified Instructions



H32

ADVANTAGE™ Series

INSTRUCTIONS

ANALOG INSULATION - CONTINUITY METER

WARNING: This instrument must only be used by a competent trained individual. Consult the full operating instructions. Never press the test button before connecting test leads to circuit to test.

INITIAL CHECKS:

1- Switch to "Batt. Check" and depress the test button. If the pointer does not move to "BATT. GOOD", the battery needs to be replaced before proceeding.

2- Connect test leads to instrument, switch to 3Ω. Press and turn the test button (continuous mode), short the test leads. The pointer should swing from infinite towards zero.
If not, the test leads or fuse (0.5A fast acting ceramic) maybe faulty

SAFETY PRECAUTION !

• **The circuit must not be LIVE**, conduct initial checks first. If at any time , the "LIVE"circuit light is lit, or the warning buzzer scunds, - *DO NOT PROCEED* -, the circuit is live. • Using the instrument in Insulation Mode may leave the circuits charged up if test leads are removed too quickly. Avoid this by releasing the test button while the test leads are still connected to the circuit for a few seconds.

INSULATION TESTS MΩ Ranges

1- Select the desired insulation test voltage range. 250V, 500V, or 1000V.

2- Connect the leads to the instrument and circuit under test.

3- Check the circuit is not LIVE.

4- Press the test button. Read the red MΩ scale directly for 500V, multiply by 0.5 (or divide by 2) for 250V and multiply by 2 for 1000V

CONTINUITY TESTS - Ω Ranges

1- Select the desired ohm range, 3 Ω or 500Ω.

2- Short the test leads, press test button and adjust the ohms zero ADJ to zero the pointer on the 0Ω (green scale)

3- Check the circuit is not LIVE.

4- Connect the test leads to the circuit under test. Press the test button. Read the Selected range directly.

GENERAL:

• For AC Voltmeter, do not press test button, this is the default mode of the instrument.

• AC Voltmeter can works without batteries.

• Insulation or Continuity mode: for continous operation, press and turn the test button.

READ USER S MANUAL BEFORE OPERATING THIS INSTRUMENT

This instrument uses 8 x 1.5V alkalines batteries. Should the bat. OK ndicator not lit, replace batteries immediately. We recommend to use alkaline type as you may expect a much better performance from them.

9. Preparation for Measurement

Before testing Always check the following.

At Power "ON", check that Bat. OK led lit. and check that there is no visual damage to the Instrument or test leads.

Check the test Leads continuity :

(1) Connect the leads to the Instrument.

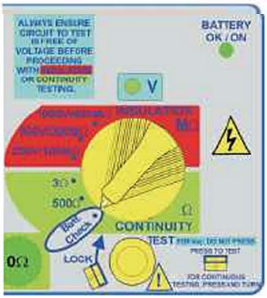
(2) Zero the test leads while on the 3 ohm range.

(3) This will indicate you that continuity of the test leads is ok.

(4) Verify that the test leads insulation is in good condition.

10.Functions

10.1 Battery Check



Turn the function selector to Batt. Check. This function has a load which draw about 205mA when test is performed, and therefore it is doing a worst case battery test.

Then, press the test button, the pointer should be in the Bat. Good area. During the test, the bat. OK led (on line battery check) must lit if the pointer is in the Bat. Good area.

10.2 DC Warning

The DC warning buzzer will beep continuously when DC voltage is higher than 30Vdc on the test probes and the test button is Not pressed.

The neon light "circuit live" will lit when the voltage on the test probes is higher than 90Vdc and the test button is not pressed.

10.3 AC Warning

The AC warning buzzer will beep continuously when AC voltage is higher than 20Vac on the test probes and the test button is Not pressed.

The neon light "circuit live" will lit when the voltage on the test probes is higher than 65Vdc and the test button is not pressed.

10.4 AC Measurement

The AC measurement is automatic on this instrument. As soon as AC voltage is present on the test leads, the instrument will display the AC voltage from 20 to 600Vac on the linear scale.

10.5 Low Ohms Measurement 0 - 500Ω

Always check for voltage before testing and measuring on a circuit. This instrument is intended for measuring Low Ω and Insulation resistance on un-energized circuits only.
Use the procedure explained at points 7.2, 7.3, 7.4.

The first procedure to follow, is to zero the test leads and the fuse resistance.
The instrument is equipped with a Zero Ω Knob.
First, short circuit the test leads by connecting them together, then, press the test button and adjust the zero Ω knob until the pointer is precisely on the "0" of the 500Ω scale.
Use the mirror scale to be precise with the pointer.
Connect the test leads to the circuit to be measured.
For short test, press button and keep pressed.
For long test or hand free measurements, press and turn the test button.

10.6 Low Ohms Measurement 0 - 3Ω

Always check for voltage before testing and measuring on a circuit. This instrument is intended for measuring Low Ω and Insulation resistance on un-energized circuits only. Use the procedure explained at points 7.2, 7.3, 7.4.

The first procedure to follow, is to zero the test leads and the fuse resistance. The instrument is equipped with a Zero Ω Knob. First, short circuit the test leads by connecting them together, then, press the test button and adjust the zero Ω knob until the pointer is precisely on the "0" of the 3Ω scale.
Use the mirror scale to be precise with the pointer.
Connect the test leads to the circuit to be measured.
For short test, press button and keep pressed.
For long test or hand free Measurements, press and turn the test button.

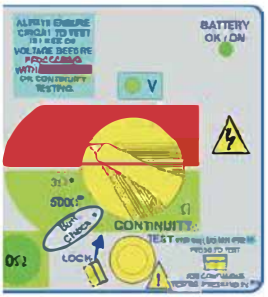
10.7 Insulation Resistance Measurement @ 250Vdc

Always check for voltage before testing and measuring on a circuit. This instrument is intended for measuring Low Ω and Insulation resistance on un-energized circuits only. Use the procedure explained at points 7.2, 7.3, 7.4.

Check the test leads and fuse resistance by zeroing the test leads and fuse as per the 7.6 procedure.
Connect the test leads to the circuit to be measured and wait for a few seconds. The instrument will automatically discharge any remaining energy which could be present on the circuit, and will check for voltage at the same time.

Once you are sure that the circuit to be tested is not energized, then press the button for a short test duration or press and turn the button for a long test. Once you end the test, allow a few seconds for the Instrument to automatically discharge the circuit.

10.8 Insulation Resistance Measurement @ 500Vdc

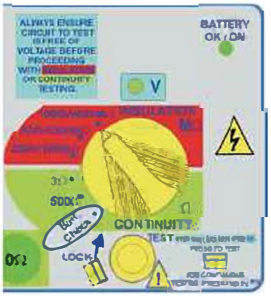


Always check for voltage before testing and measuring on a circuit. This instrument is intended for measuring Low Ω and Insulation resistance on un-energized circuits only. Use the procedure explained at points 7.2, 7.3, 7.4.

Check the test leads and fuse resistance by zeroing the test leads and fuse as per the 7.6 procedure.
Connect the test leads to the circuit to be measured and wait for a few seconds. The instrument will automatically discharge any remaining energy which could be present on the circuit, and will check for voltage at the same time.

Once you are sure that the circuit to be tested is not energized, then press the button for a short test duration or press and turn the button for a long test. Once you end the test, allow a few seconds for the instrument to automatically discharge the circuit.

10.9 Insulation Resistance Measurement @ 1000Vdc



Always check for voltage before testing and measuring on a circuit. This instrument is intended for measuring Low Ω and Insulation resistance on un-energized circuits only. Use the procedure explained at points 7.2, 7.3, 7.4.

Check the test leads and fuse resistance by zeroing the test leads and fuse as per the 7.6 procedure.
Connect the test leads to the circuit to be measured and wait for a few seconds. The instrument will automatically discharge any remaining energy which could be present on the circuit, and will check for voltage at the same time.

Once you are sure that the circuit to be tested is not energized, then press the button for a short test duration or press and turn the button for a long test. Once you end the test, allow a few seconds for the instrument to automatically discharge the circuit.

11. Battery & Fuse Replacement

11.1 Battery Replacement

Your Analog insulation tester's battery is situated under the tester. The Bat. OK will not lit when battery need to be replaced.

Disconnect the test leads from the Instrument, remove the battery cover and the batteries.

Replace with eight 1.5V R6 or L6 batteries, taking care to observe the correct polarity.

Replace battery and the battery cover.

11.2 Fuse replacement

The fuse is located next to the batteries. To replace fuse, proceed as per battery replacement to open the battery cover, then remove and replace the fuse located under the battery holder. Only replace with same specification fuse.(0.5A/250V. 5X20mm)

12. Calibration & Servicing

Contact your nearest distributor about calibration certificate and servicing.

Before returning the instrument, ensure that :

- The leads have been checked for continuity and signs of damage.
- The batteries are in good condition.

CAT IV - Is for measurements performed at the source of the low-voltage installation.

CAT III - Is for measurements performed in the building Installation.

CAT II - Is for measurements performed on circuits directly connected to the low-voltage installation.

CAT I - Is for measurements performed on circuits not directly connected to mains.

Due to our policy of constant improvement and development, we reserve the right to change specifications without notice.