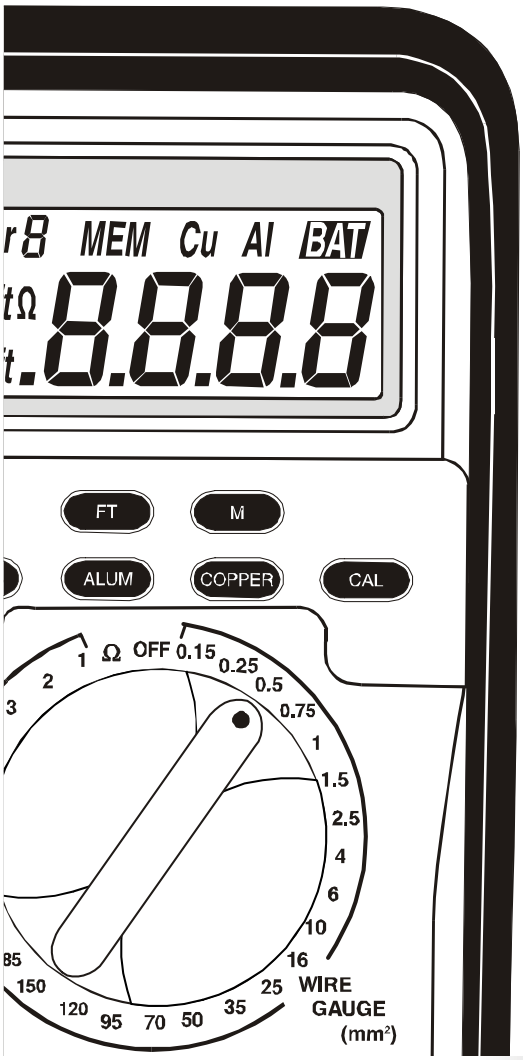
British Standard Tester

MODEL BS33
Cable Length Meter



User's Manual

REV2.1/MAR.11

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1. INTRODUCTION

BS33 can quickly measure length of any reeled wire up to 30,000m (100,000ft) and with the gauges from 0.15mm² to 240mm² (Standard mode). Within seconds, cable of Copper or Aluminum length up to 30,000m can be measured and digitally displayed without the cumbersome unrolling of cable reels. The BS33 can also be used as a precision milliohm meter.

In User Select mode, BS33 allows users to save the resistance of an unknown gauges wires (wire gauges from 0.15mm² to 6.0mm² range); hence to provide reading of the cable length.

BS33 is very useful for electrical contractors, utilities and distributors to control inventories of wire.

2. FEATURES

- 4 digits display with enunciators
- Measures in FEET (ft) or METERS (m).
- Direct readout for both COPPER (Cu) or ALUMINUM (Al) wire.
- User Select Mode with 8 memory locations, (Optimised for wire gauge up to 6mm)
- Standard Mode, wire gauge range from 0.15mm² to 240mm²
- Resistance range for milliohm measurements.
- Automatic temperature compensation for changes in ambient temperature (Standard Mode).
- User calibration mode, Calibration standard included.
- Sleep mode
- Easy-to-use
- Low battery indicator.
- High precision Kelvin Clip test lead set included

WARNING: MAKE SURE WIRE UNDER TEST IS NOT ENERGIZED. NEVER APPLY VOLTAGE TO INPUTS.

NOTE: Temperature affects accuracy of readings. Please see accuracy specifications. For best results, allow the BS33 to attain the same ambient temperature as the wire under test. The length of time this will take depends on the ambient temperature. Typically it will take 10 to 15 minutes for the BS33 to attain equal ambient temperature.

3. SPECIFICATIONS

Length limit: 0.1 to 30.00km
Standard gauge mode cross section limit: 0.15mm^2 to 240 mm^2
User select mode cross section limit: 0.15mm^2 to 6.0 mm^2

Due to the minimum and maximum resistance limits, specific wires will have a range specific to that wire. Please refer to the following table to determine the minimum and maximum length that can be measured for specific gauge wires.

GAUGE (mm^2)	Min. (M)	Max. (M)	Min. (Ft)	Max. (Ft)
240	29.5	30.00k	97.0	100.0k
185	26.1	30.00k	86.0	100.0k
150	24.1	30.00k	79.0	100.0k
120	20.0	30.00k	67.0	100.0k
95	16.0	30.00k	52.5	100.0k
70	12.2	30.00k	40.0	100.0k
50	8.5	30.00k	28.0	100.0k
35	6.1	30.00k	20.0	100.0k
25	4.2	30.00k	14.0	100.0k
16	2.7	30.00k	9.0	100.0k
10	1.7	30.00k	5.5	100.0k
6	1.0	30.00k	3.0	100.0k
4	0.7	22.73k	2.0	74.56k
2.5	0.4	14.06k	1.5	46.12k
1.5	0.3	8417	1.0	27.61k
1	0.2	5906	0.5	19.38k
0.75	0.1	4210	0.5	13.81k
0.5	0.1	2801	0.5	9191
0.25	0.1	1404	0.5	4607
0.15	0.1	842.0	0.5	2763

Resolution: 0.1m or 0.5 feet（Length） 1mΩ (Resistance)

Accuracy:
±（1% of reading +1m or 3ft）< 100m or 300ft at 18℃ to 23℃
±（1% of reading）> 100m or 300ft at 18℃ to 23℃
±（2% of reading +1m or 3ft）< 100m or 300ft below 18℃ and above 23℃
±（2% of reading）> 100m or 300ft below 18℃ and above 23℃
※ Use the User Select mode for better measurement accuracies.

Resistance:
0 to 10Ω： ±（0.5% of reading + 3 LSD）
10 to 99.9Ω： ±（0.5% of reading +10 LSD）
LSD = Least Significant Digit

Operation Temperature: 0℃ to 40℃
Operating Humidity: 20% to 80% RH
Sleep mode: Approx.15 minutes
Battery Life: Typically 60 hours (180 hours in Sleep mode).

Dimension: 100(w)x203(h)x47(d)mm (including rubber holster)
Weight: approx.587g((including rubber holster)

4. CALIBRATION PROCEDURE

(Perform this function before testing)

1. Turn the rotary selector from off to any position to turn the meter on.
2. Set the rotary selector to “Ω” on the dial.
3. Insert the black test leads into one pair of input jacks and the red test leads into the other pair of input jacks. This is very important to ensure that the meter works correctly. If black and red test leads are mixed the meter will give false readings (See figure1)
4.

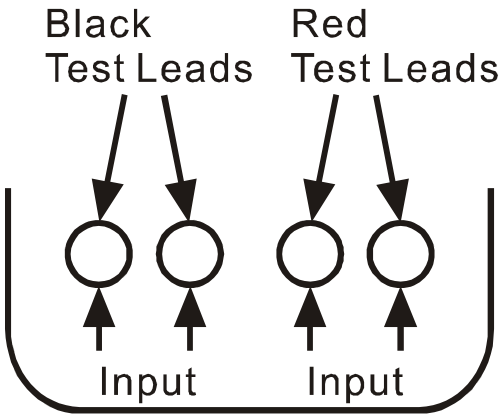

Figure1

3. Connect the Kelvin clips to the calibration standard. Make sure the clips are as close together as possible. (See figure2)
   NOTE: Make sure the calibration standard bar is clean. The Kelvin clips must be connected across the diameter of the standard.

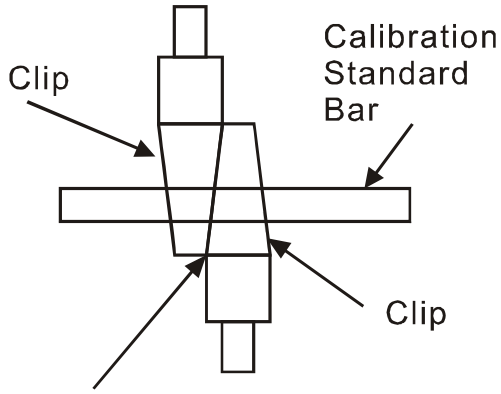

Figure2

5. Press and hold the “CAL” button until all segments in the display illuminate. Complete calibration procedure can ensure all measurements accuracy.
6. Disconnect the leads from the calibration standard bar.

5. MEASURING LENGTH OF WIRE

1. Turn on the meter and perform the calibration procedure first.
2. Allow the meter to attain the same temperature as the wire under test.
   NOTE: Temperature can affects accuracy of the measurement. Please see accuracy specifications above. For best results, allow the meter to attain the same ambient temperature with the wire under measurement.

WARNING: MAKE SURE WIRE UNDER TEST IS NOT ENERGIZED. NEVER APPLY VOLTAGE TO INPUTS.

3. Strip the insulation on each end of the wire being tested.
   NOTE: Make sure both ends of the wire under test are clean and the conductor is fully exposed. The insulation must be stripped away so the Kelvin clips can be good connected across the diameter of the wire.
4. Using the selector on the BS33, turn to the size of wire under test.
5. Press the “COPPER” button if copper wire is being tested. The “***Cu***” enunciator will illuminate in the top of the display.
6. Press the “ALUM” button if copper wire is being tested. The “**Al**” enunciator will illuminate in the top of the display.
7. Press the “FT” button if you require readings to be in feet. The “***ft***” enunciator will illuminate in the display.
8. Press the “M” button if you require readings to be in meter. The ”**M**” enunciator will illuminate in the display.
9. Connect a Kevin clip to one of the wire and the other Kelvin clip to the next end of the wire.
10. Read the length of wire directly from the display. Please note that the “**k**” enunciator illuminates if measurements are at or above 10000 meters / feets.
    For example, when measuring the wire is 15000m long, the meter will display as “15 k m” or the wire is 10000ft long, the meter will display as “10 k ft”
11. Disconnect the test leads from the meter after measurement.

6. USER SELECT MODE

This mode allows you to save the resistance of a user wire (See NOTE below) for additional measurements of unknown lengths of the same gauge wire. In addition, it enables you to accurately measure the length of standard gauge wires. In this mode, you can measure the length of any metal wire, the resistance of which can be measured, as well as Copper or Aluminum wires.

NOTE: The sample length of user wires must be 5m in METER or 20ft in FEET mode.

How to save the resistance of a user wire

Note: You will need a 5M (or 20ft in feet mode) sample length of the wire you are programming into the meter. This will measure the resistance of that wire and store a value to correctly measure longer lengths.

1. Turn on the meter and perform the calibration procedure first.
2. Allow the meter to attain the same temperature as the user wire.

⚠ **WARNING: MAKE SURE WIRE UNDER TEST IS NOT ENERGIZED. NEVER APPLY VOLTAGE TO INPUTS.**

3. Strip the insulation on each end of the user wire.
   NOTE: Make sure both ends of the wire under test are clean and the conductor is fully exposed. The insulation must be stripped away so the Kelvin clips can be good connected across the diameter of the wire.
4. Using the selector on the mete, turn to the decided memory location in the User Select range. The meter has 8 internal memory locations from 1 to 8, and the selected memory location number will illuminate at the top left corner of the display. For example, “user 1” on the display means memory location 1 is being selected
   If the selected memory location is occupied, the display shows “0000”.
   If the selected memory location is empty, the display shows “no”.
5. Press the “FT” or “M” button to select the measurement unit.
6. Connect a Kelvin clip to one end of the user wire and the other Kelvin clip to the next end of the wire.
7. Press “MEM” button to enter the Memory function mode. The “**MEM**” enunciator will illuminate at the top of the display.
8. Press “CAL” button to store the resistance of the user wire to the selected memory location.
9. If there have any stored resistance value in the selected memory location, the meter will display “ SurE”. In this case, press “CAL” button again to store the new resistance value.
10. Press “MEM” button or turn the selector to any position will exit Memory function mode.
11. Disconnect the test leads from the meter after saving the resistance value.

Tips: User can write down the user wire data at the bottom of the rubber holster. There have a Listing label for user to keep memory location record.

Measuring Length of Wire in the User Select Mode

1. Turn on the meter and perform the calibration procedure first.
2. Allow the meter to attain the same temperature as the wire under test.

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3. Strip the insulation on each end of the wire being tested.
   NOTE: Make sure both ends of the wire under test are clean and the conductor is fully exposed. The insulation must be stripped away so the Kelvin clips can be good connected across the diameter of the wire.
4. Use the selector to select the decided memory location.
5. Press the “FT” or “M” button to select the measurement unit.
6. Connect a Kelvin clip to one of the wire under test and the other Kelvin clip to the next end of the wire.
7. Read the length of wire directly from the display.
8. Disconnect the test leads from the meter after measurement.

Tips: User can recall the user wire record from Listing Label locating on the holster, and then select the suitable memory location.

Clearing Memory

1. Disconnect the test leads from the meter.
2. Use the selector to select the decided memory location which is being cleared in the User Select range.
3. Press “MEM” button to enter the Memory function mode. The “**MEM**” enunciator will illuminate at the top of the display.
4. Press “CAL” button. The meter will display “SurE”.
5. Press “CAL” button again to clear the stored data.
6. Press “MEM” button or turn the selector to any position to exit Clearing memory function mode.

7. LOW BATTERY INDICATION

If the battery voltage is low, the "**BAT** " enunciator will illuminate at the top right corner of the display. The battery should be changed immediately to ensure function and accuracy is according to the specification. Only alkaline 9volt battery should be used.

8. MEASURING RESISTANCE

1. If measuring wire resistance, follow steps 1 through 3 under Chapter 5 "Measuring Length of Wire" to connect wire. If a discrete resistor is being measured, perform the calibration procedure in the "Ω" position.
2. Read the resistance value directly from the display.

9. OPERATIONAL HINTS

- Never apply voltage to the inputs.
- Temperature affects readings. Allow the meter to attain the ambient temperature as the wire under test.
- The sample length of user wires for the User Select Mode must be 5m in METER or 20ft in FEET mode.
- The Listing label on the bottom of the holster enables users to make a short memo of each user wire for the User Select Mode.
- Use a 9volt alkaline battery only.
- If the meter wad turned on and inactivate for approximately 15 minutes, the meter will automatically enter into Sleep mode and displays "----". Reactivate the meter by turning the selector to any position or pressing any button.
- Use the test leads that come with the meter only. Other test leads may not work.
- Ensure that the test leads are clean and in good working order.
- Ensure the wire under test is clean and free of oxidation.
- Ensure that the alligator clips are connected across the diameter of the wire under test.

10. SERVICE

Warranty Conditions

This meter is guaranteed against any material fault or manufacturer's defect, in accordance with the general conditions of sale. During the warranty period (one year), faulty parts may be replaced, with the manufacturer reserving the right to decide either to repair or replace the product.

In the event of returning the meter to the after-sales service or to a regional branch, the outward transport is payable by the customer. The delivery must be agreed in advance with consignee.

For delivery indicate, by means of an enclosed note, as clear as possible, the reasons for returning it. Use only the original packing.

Any damage caused by shipment using NOT the original packaging will be charged in any case to the consignor.

The manufacturer will not be responsible for any damage to persons or things.

The warranty does not apply to the following cases:

- Accessories and battery are not included in warranty.
- Repairs following unsuitable use of the meter or by combining the latter with incompatible meter or accessories.
- Repairs resulting from incorrect shipping.
- Repairs resulting from servicing carried out by a person not approved by the company.
- Modifications to the meter without explicit authorisation from our technical department.
- Adaptation to a particular application not provided for by the definition of the meter or by the instruction manual.

The contents of this manual may not be reproduced in any form whatsoever without the manufacturer's authorisation.

Our products are patented. The logotypes are registered. We reserve the right to modify specifications and prices as part of technological developments which might be necessary.

Service

If the meter should not work properly, before contacting the DEALER OR THE SERVICE CENTRE, check the battery condition, the test leads, etc., Change them if necessary.
If the meter still does not work, check if your operating procedure agrees with the description in this manual.

In the event of returning the meter, it must be re-sent to the after-sales service (at address or to a regional branch), the outward transport is payable by the customer. The delivery must be agreed in advance with consignee.

For delivery indicate the reasons for returning it. (By means of an enclosed note, as clear as possible) Use only the original packing.

Any damage caused by delivery with NO original packaging will be charged in any case to the consignor.

End of life

Caution:
This symbol indicates that equipment and its accessories shall be subject to a separate collection and correct disposal

For Technical Assistance, please contact:

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