



**Cambridge Instruments
& Engg. Co.**

EST. 1963 · HOWRAH, INDIA

TECHNICAL CATALOGUE · HAND-DRIVEN · WOODEN BODY

CIE/666

Hand-driven insulation tester in seasoned wood

Direct-reading insulation resistance testing

A compact, portable instrument for direct reading of insulation resistance on electrical operating machines, rotating plant equipment, stationary apparatus, insulation control and switching equipment, distribution networks, communication cables, insulators, transformers, industrial installations, cables, electrical components, wiring and other devices capable of carrying the rated voltage. It is a versatile instrument for locating intermittent shorts, defective electrical connections, insulation failure and conductor failure, and for preventing costly repairs and breakdowns.



CIE/666 · ILLUSTRATIVE IMAGE

01 HIGHLIGHTS

- | | |
|--|---|
| ✓ Seasoned wooden body with sunmica finish, detachable lid, carrying handle and lock | ✓ Silent generator |
| ✓ Centrifugal clutch (governor) for constant output voltage | ✓ Collapsible driven handle, folds back flush into the casing |
| ✓ Chuck nut locking arrangement prevents anti-clockwise rotation | ✓ Wide anti-parallax mirror scale (not provided on triple-range and above) |
| ✓ Highly sensitive cross-coil indicator | ✓ Long life and strength against vibration and impact |
| ✓ Accurate and quick response: 3 seconds | ✓ Guard terminal and externally accessible infinity adjuster on ranges of 1000 MΩ and above |
| ✓ Conforms to IS 2992:1987 | |

02 TYPICAL APPLICATIONS

- Motors, generators, and other rotating machinery
- Insulation control and switching equipment checks
- Distribution network and communication cable insulation testing
- HV switchgear and transformer insulation testing up to 10,000 V
- Locating intermittent shorts, defective connections, and developing insulation failures

03 PRINCIPLE AND CONSTRUCTION

PRINCIPLE

A hand-driven clutch-type A.C. generator and a highly sensitive cross-coil indicator. The generated A.C. voltage is converted to D.C. voltage by silicon diodes.

CONSTRUCTION

Housed in a sturdy, elegant seasoned wooden body with sunmica finish, complete with detachable lid, carrying handle and lock. The instrument is dust-free: rubber shoes hold the surface and give it stability.

04 SALIENT FEATURES

Silent generator

The A.C. generator runs extremely silently and smoothly because of the excellent dynamic balance of its rotating parts, and is free from mechanical noise.

Centrifugal governor

A high-grade centrifugal governor holds the voltage constant for accurate measurement. Variation in crank speed does not affect the reading, as a cut-off clutch disengages the drive beyond the rated speed.

Collapsible handle

The generator driven handle folds back flush into the casing when the tester is not in use.

Quick response

The response time is 3 seconds, when a resistance equal to the central scale mark is suddenly inserted between the measurement terminals, as per IS 2992:1987.

05 PERFORMANCE AND TEST SPECIFICATION

Standard	IS 2992:1987
Indicator	High-sensitivity cross-coil movement; wide anti-parallax mirror scale (not provided on triple-range and above instruments)
Scale length	100 mm (approx.)
Accuracy	Conforms to IS 2992:1987
Generator speed	160 r.p.m. or more; the centrifugal governor holds the output voltage constant
Response time	3 seconds
High voltage test	Withstands minimum 2000 V or (rated voltage + 1000) V A.C. (rms) between the electrical circuit and the handle for one minute
Insulation resistance of the instrument	Better than 50 MΩ at 500 V between the electrical circuit and the containing case

06 CONSTRUCTION AND PHYSICAL SPECIFICATION

Guard terminal and infinity adjuster	Provided on instruments with an insulation range of 1000 MΩ and above
Body	Seasoned wooden body with sunmica finish, detachable lid, carrying handle and lock
Weight	4.1 kg (approx.)
Dimensions	265 × 165 × 185 mm (approx.)

07 RANGE OPTIONS BY RATED VOLTAGE

Each instrument is built for **one rated voltage** and **one insulation range**. Choose a rated voltage, then **one** range from its row. Ranges are not combined in one instrument unless one of the dual voltage or dual insulation range options below is selected.

RATED VOLTAGE	INSULATION RESISTANCE RANGE (MΩ): ANY ONE OF									
100 v	0—20	OR	0—50	OR	0—100					
250 v	0—50	OR	0—100	OR	0—250					
500 v	0—100	OR	0—200	OR	0—500	OR	0—1000	OR	0—2000	
1000 v	0—100	OR	0—200	OR	0—500	OR	0—1000	OR	0—2000	
2500 v	0—1000	OR	0—2000	OR	0—2500	OR	0—5000	OR	0—10,000	OR
	0—20,000	OR	50—50,000							
5000 v	0—5000	OR	0—10,000	OR	0—20,000	OR	50—50,000	OR		
	100—100,000									
10,000 v	0—10,000	OR	0—20,000	OR	50—50,000	OR	100—100,000			

Any other range can be manufactured against specific requirements.

08 DUAL VOLTAGE AND DUAL INSULATION RANGE OPTIONS

Dual voltage and dual insulation range

One instrument with two rated voltages, each with its own insulation range, selected by a switch. The selected range must be within the rated resistance listed for that voltage (voltage to measurable insulation range ratio up to 1:2 only; for any other ratio, please check with us). Not available for the 10,000 V instrument.

Single voltage but dual insulation range

One rated voltage with two insulation ranges. The selected ranges must be within the rated resistance listed for that voltage. Not available for the 10,000 V instrument.

Continuity range (in 500 V and 1000 V only)

Available as an extra on single-voltage, single-range instruments, or on dual-voltage, dual-range instruments.

09 MULTIRANGE INSULATION TESTER (HAND-DRIVEN): CIE/666/MR

SERIES	RATED VOLTAGE / INSULATION RANGE (MΩ)	CONTINUITY	SERIES	RATED VOLTAGE / INSULATION RANGE (MΩ)	CONTINUITY
MR-1	1000 V / 0–2000 500 V / 0–1000 250 V / 0–500	0–20 kΩ	MR-5	2500 V / 0–5000 1000 V / 0–2000 500 V / 0–1000	0–20 kΩ
MR-2	1000 V / 0–200 500 V / 0–100 250 V / 0–50	0–1 kΩ	MR-6	2500 V / 0–1000 1000 V / 0–200 500 V / 0–100	0–1 kΩ
MR-3	500 V / 0–1000 250 V / 0–500 100 V / 0–200	0–5 kΩ	MR-7	5000 V / 0–20,000 2500 V / 0–10,000	0–20 kΩ
MR-4	500 V / 0–100 250 V / 0–50 100 V / 0–20	0–1 kΩ	MR-8	5000 V / 0–5000 2500 V / 0–2500	0–5 kΩ

Multirange instruments are provided with a range selector switch, so one instrument covers every voltage and range listed in its series. Anti-parallax mirror scale is not provided on triple-range and above instruments. Any other range can be manufactured against specific requirements.

10 OPTIONAL ACCESSORIES (AT EXTRA COST)

- Carrying case
- Testing leads, 1 m or 2 m (up to 1000 V)
- H.V. testing leads, 2 m (general / special)

11 HOW TO ORDER

To order, quote the **model**, the **rated voltage** and the **insulation range**, for example **CIE/666, 500 V / 0–2000 MΩ**. Any range not listed can be manufactured against specific requirements.