



Cambridge Instruments
& Engg. Co.

EST. 1963 · HOWRAH, INDIA

TEST REPORT FORM

AC Hi-Pot Withstand Test

Dielectric strength test at power frequency · voltage, hold time, leakage current and insulation before and after

01 Job and equipment details

Customer / site	Equipment ID / serial no.	Test date
Equipment description	Rated voltage (V)	Test voltage required (V)
Basis for test voltage ☐ Equipment standard ☐ Manufacturer ☐ Site spec ☐ Re-test (% of factory)		Frequency (Hz)
Test set, serial no.	Trip current set (mA)	Calibration due

02 Withstand test

raise the voltage smoothly, hold, then reduce to zero before disconnecting

Test live terminal to ...	IR before MΩ at 500 V / 1 kV	Test voltage V AC	Hold time s	Leakage at hold mA	Trip or flashover	IR after MΩ	Result
					☐ No ☐ Yes		☐ Pass ☐ Fail
					☐ No ☐ Yes		☐ Pass ☐ Fail
					☐ No ☐ Yes		☐ Pass ☐ Fail
					☐ No ☐ Yes		☐ Pass ☐ Fail
					☐ No ☐ Yes		☐ Pass ☐ Fail
					☐ No ☐ Yes		☐ Pass ☐ Fail
					☐ No ☐ Yes		☐ Pass ☐ Fail
					☐ No ☐ Yes		☐ Pass ☐ Fail

IR before and after should be similar. A clear drop after the test suggests the insulation was damaged by it. Take the test voltage from the standard or manufacturer, not from the table on page 2, which is a guide only.

03 Capacitive current check

leakage is mostly capacitive on long cables and large windings

Load capacitance C (nF) _____	Expected current $I = 2\pi f C V$ _____	Test set rating (mA) _____	Within test set rating ☐ Yes ☐ No
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04 Result and sign-off

Overall result ☐ WITHSTOOD ☐ FAILED	Discharged and earthed after test ☐ Yes
Remarks and recommended action _____	
Signature and date: tester _____	Signature and date: reviewer _____



Voltage, load and method

Typical test voltages, the load a test set can carry, and a safe test sequence

01 Test voltage

commonly used values, as guides. Use the standard or the manufacturer for your equipment

Item GUIDE	Test voltage, 1 minute
Motor windings, IEC 60034-1 routine test	2 × rated V + 1000 V (min. 1500 V)
Motor winding, in-service re-test	often 65 % to 80 % of the above
LV panel or switchgear, power frequency withstand	per the standard, often 1.5 to 2.5 kV
Field re-test of equipment	commonly 80 % of factory test

Rated voltage (kV)	Power frequency withstand (kV)
3.6	10
7.2	20
12	28
24	50

Common IEC 62271-1 values for MV switchgear, listed for reference only: a test set limited to a few kV cannot apply these.

02 What a test set can carry

the largest capacitive load at each voltage, from $I = 2\pi f C V$ at 50 Hz

Test voltage	Max load, 25 mA set (nF)	Max load, 50 mA set (nF)
1 kV	79.6	159.2
2 kV	39.8	79.6
3 kV	26.5	53.1
5 kV	15.9	31.8

For scale
A short LV motor winding: well under 100 nF
XLPE cable: very roughly 0.2 to 0.5 µF per km
A long cable run can draw more current than a small test set can supply. Test it in sections, or use a VLF or DC method

The table shows an upper limit using the set's rated current. In practice leave headroom and keep to what the set's manual allows. Capacitances are typical figures: measure yours with an LCR meter if the answer matters.

03 Safe test sequence

- Isolate and earth the item, disconnect electronics, surge arresters and any equipment not rated for the test voltage, and fence off the area with a warning notice.
- Measure IR first. Do not hi-pot equipment with a poor IR reading.
- Set the trip current, connect the earth lead first and the live lead last, then raise the voltage smoothly from zero. Hold for the stated time and watch the leakage meter.
- Reduce the voltage to zero, switch off, then discharge and earth the item before touching any lead. Remeasure IR.

Safety. The output is lethal. Only competent people should do this test, following the equipment standard and the site permit and safety procedure.

CIE INSTRUMENTS FOR THIS TEST

CIE/5050A

AC HV test set, 0 to 3 kV or 0 to 5 kV, 25 / 50 mA selectable



See the HV test set

Scan for the CIE A.C. high-voltage breakdown test set. cieinstruments.in/products