

MATERIAL SPECIFICATIONS CELL



TECHNICAL SPECIFICATION

HIGH VOLTAGE LINE DETECTOR

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1.0 SCOPE

The specification covers the design, manufacture, testing before despatch, packing, supply and delivery of High Voltage Detectors suitable for detection of liveness of 6.6KV to 33 KV overhead distribution lines (bare conductors). The HV Detector starts annunciation with flashing Red LEDs and buzzer beeps indicating that the line is LIVE and not safe to earth and carry any operations. Sensing distance shall be approximately 3mts for 33KV and 1mtr for 11KV supply.

2.00 SERVICE CONDITION

The High Voltage Detector to be supplied as per this specification shall be suitable for satisfactory operation under the following tropical conditions. High Voltage Detector shall be capable of detecting live line on the bare conductor under hot, tropical and dusty climate.

- a) Maximum Ambient Air Temperature in shade: 50°C
- b) Minimum Ambient Air Temperature : 5°C
- c) Maximum Relative Humidity : 100 %(non- condensing)
- d) Minimum Relative Humidity : 10%
- e) Maximum Rainfall : 1450mm
- f) Maximum wind Pressure : 150Kg/Sq.mm
- g) Climatic condition : Moderately hot & Humid tropical climate

3.00 STANDARDS APPLICABLE

Unless specified elsewhere in this specification, the performance & testing of the High Voltage Detector shall conform to the following Indian/International standards, to be read with up to-date and latest amendments/revisions thereof.

- 1) IS 2071(Part-1) Method of High voltage Testing.
- 2) IS 13770:1993 RA: 1999 & IEC Pub 855(1985) For Insulating Foam-Filled Tubes and Solid Rods used in live working.

4.00 DETECTION RANGE

The High Voltage Detector Probe should have the unique capability to warn the user of the presence of high voltage from a safe distance and must be exceptionally sensitive approximately 3mtr for 33KV supply and 1mtr for 11KV supply. This unit is meant for professional use only. It is an aid in detecting live wires and dangerous AC potentials.

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5.00 SYSTEM CONDITIONS:

The High Voltage detector is intended for use in 11kv/33kV Distribution System; 3 Phase 3wire at High Voltage has the following data:

Medium Voltage at 33kV	Nominal	11kV	33kV
	High system voltage	12kV	36kV
	Line to earth(nom.)	6.35kV	19.05kV
Insulation level (lightning impulse level) for 11kv & 33kv equipment erected on the overhead system		95KV	170KV
Power frequency withstand voltage			
High voltage		28KV	70KV
Rated Frequency	50 Hz		
Insulation Resistance		Greater than 100MΩ @ 1000V DC of HV detector	
Sound Pressure		90dB/M±10dB/M	

6.00 POWER SPECIFICATION

Inbuilt Rechargeable & replaceable Battery suitable to be charged through a single phase, 230V, Supply

Current Consumption: 30 MA maximum

Battery Low: 7.2 V Nominal

Battery: 9V / Replaceable Battery type 6F22 or equivalent

Visual Indication: High Bright LEDs flashing

Audible Indication: Buzzer beeps loudly

Battery Life: 10 hours for Continuous use (Minimum).

Battery Check: built in Low voltage warning below 7.2 V.

Battery life: 10 years.

7.00 GENERAL & CONSTRUCTIONAL REQUIREMENTS

7.1 High Voltage Detector shall be designed and constructed in such a way so as to avoid any danger to the operating personnel during use and under normal conditions. It should have the capability to warn the user

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by audio annunciation as well as visual indication of the presence of voltage from a safe distance as per IE rule 1956.

- 7.2 Selectable sensing level 1m/3m for 11/33 KV respectively
- 7.3 Bright high intensity RED LEDs provide clear visual indication even in unfavorable daylight conditions. A buzzer produces a loud beep which is audible even in noisy back grounds.
- 7.4 The High Voltage Detector should have Self test button to test battery and proper functioning of HV detector & the facility of easy replacement of the power supply battery.
- 7.5 The High Voltage Detector should have universal connecting link for the attachment of the Telescopic rod.
- 7.6 The Telescopic rod should be of non-allergic, Premium Quality Fiber Glass Material with upper stick foam filled (High voltage tested material) with Piece to piece self Locking arrangement.
- 7.7 All insulating material used in the construction of High Voltage Detector shall be nonhygroscopic, non-ageing and of tested quality.
- 7.8 The silicon petticoat arrangement shall be fixed on rod for decrease of the flash over contact probability with the operator.
- 7.9 The detector should not have any external accessibility to change the voltage or the sensing distance to ensure the safety of a user to avoid confusion at the site

8.00 DIMENSIONS

- 8.1 Telescopic Insulated stick: 3000mm foldable type in two sections 1500mm each with rubber strap at bottom section with locking arrangement, to reach the required distance so that the High Voltage Detector attached to it must sense the Voltage of 33KV & 11kV line mounted on Pole.
- 8.2 The diameter of the Telescopic Rod shall be 32mm+/- 1%, Top portion Rod and the down tube should conform to the IS 13770:1993 RA: 1999 IEC Pub 855(1985) corresponding to the length of the Rod.

9.0 DETECTION INDICATION

- 9.1 The High Voltage Detector shall give the indication with High Intensity LED'S with flashing arrangement there by providing the suitable indication in day light.

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9.2 The High Voltage Detector shall give audible sound for the presence of live line so that it can be suitably used in populated and noise areas for easy operation.

10 SELF DIAGNOSTIC FEATURE

The High Voltage shall be capable of performing complete self diagnostic check in off-line mode with buzzer & flashing LED to ensure the working of the probe before taking on site.

11 SUITABLE CARRYING CASE

The High Voltage Detector with accessories shall be supplied with the carrying case so as to be carried by the operating person easily & individually.

12 MARKING ON THE HIGH VOLTAGE DETECTOR

The basic marking on the High Voltage Detector nameplate shall be as follows:

1. Rated Voltage
2. Manufacture's name & trade mark
3. Model No.
4. Serial No.
5. Year of Manufacturing
6. "Property of **"MSEDCL"**

13 TYPE TEST

The tenderer shall furnish detailed type test certificates of the offered Instrument for all the tests as per relevant Indian Standard amended upto date / International standards.
In case of any of the following, the offer may not be considered for placement of order.

- i. If tests are carried out beyond 5 years
- ii. Test carried out not from NABL approved Laboratory.

Following type tests are to be carried out

13.1 IS 2071(Part-1) / IEC61243-1 Method of High voltage Testing.

1. Measurement of leakage current before Humidity test
2. Humidity test
3. Measurement of leakage current after Humidity test
4. Dry & wet Power Frequency Voltage Withstand Test
5. Insulation Resistance test
6. High temperature(Dry Heat) test
7. Low temperature (Cold) test.

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13.2 IS 13770 / IEC855: Insulating Foam-Filled Tubes and Solid Rods for Live Working.

1. Dry / WET Power Frequency Voltage Withstand Test
2. Crushing Test
3. Bending Test
4. Dye Penetration Test

14 SAFETY INSTRUCTIONS

14.1 Please ensure that the changes do not dilute the safety parameters as compared to IS/IEC.

14.2 Any changes should not directly or indirectly impact the safety aspects which is the most critical parameter & uncompromising, thus be double ensure. If necessary take expert opinion of third party.

15 TRAINING

The supplier shall provide training in the field office.

16.0 QUALITY ASSURANCE

16.1 The bidder shall invariably furnish following information along with the offer failing to which the offer will be rejected.

- a) Names of the supplier for the raw material.
- b) List of standard accordingly to which the raw materials are tested.
- c) List of test normally carried out on raw materials in presence of bidder's representatives.
- d) Copies of type test certificates.

16.2 Special features provided in the equipments to make it maintenance free

17.0 Qualifying Requirement: As per Tender

18 GUARRANTY

Supplier shall invariably give unconditionally guaranty, 5 years

The guaranty shall include calibration of all the equipments including transportation during guaranty period. The terms and condition of the guaranty shall be attached along with the technical bid. The bidder shall quote separately for extended guaranty.

19 PACKING

The equipment shall be suitably packed in order to avoid damage or disturbance during transit or handling. Each equipment may be suitably packed in the first instance to prevent ingress of moisture and dust and then placed in a cushioned cartoon of a suitable material to prevent damage due to shocks during transit. The lid of

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the carton may be suitably sealed. A suitable number of sealed cartons may be packed in a case of adequate strength with extra cushioning if considered necessary. The cases may then be properly sealed against accidental opening in transit. The packing cases may be marked to indicate the fragile nature of the contents.

20 GUARANTEED TECHNICAL PARTICULARS FOR HIGH VOLTAGE DETECTORS

1	Name of Manufacturer's	
2	Manufacturing class of High Voltage Detector	
3	Test Voltage Range	
4	High Voltage Indication	
	i. Visual	
	ii. Audible	
5	Electrical Specifications:	
	i. Insulation Resistance	
	ii. Dielectric Strength	
6	Power Specifications:	
	i. Max Current Consumption	
	ii. Battery Low Voltage	
	iii. Battery Rating & Type	
7	Environmental Specifications:	
	i. Operating Temperature Range	
	ii. Humidity	
	iii. Storage Temperature	
8	Universal Link	
	i. Material	
	ii. Length	
9	Insulated Stick	
	i. Material	
	ii. Length	
10	Physical Specifications	
	i. Length	
	ii. Diameter	
	iii. Weight	
11	General Features	
	i. Type of probe	
	ii. Self test button to test proper functioning	
	iii. Other feature	
	iv. material used for upper stick & material of foam used.	