Technical Specifications for High Voltage Detector with detachable FRP Stick having Sensing Range from 230V to 36KV

SCOPE

This specification covers the design, engineering, manufacturing and testing at manufacturer's works before despatch, packing, supply and delivery of HIGH VOLTAGE DETECTOR and provides warning of exposed high voltage AC, unknown sources of unshielded and potentially hazardous AC Voltages from a safe distance as per specification.

TYPE TEST

The tenderer shall furnish detailed type test certificates **preferably** from CPRI [Central Power Research Institute, Ministry of Power, Govt. of India, Bangalore] or ERDA [Electrical Research and Development Association, Mumbai] Laboratory or any other NABL accredited Laboratory for 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.

If tests are carried out beyond 5 years
If test carried out not from NABL accredited Laboratory.

The following tests should be carried out in the Laboratory.

IS 2071(Part-1)/ IEC 61243-1: Method of High voltage Testing

Measurement of leakage current before Humidity test
Humidity test
Measurement of leakage current after Humidity test
Dry & wet Power Frequency Voltage Withstand Test
Insulation Resistance test
High temperature(Dry Heat) test
Low temperature (Cold) test.

IEC 61235 : Telescopic insulated stick.
IS 13770/ IEC 855: Insulating Foam-Filled Tubes and Solid Rods for Live Working

Dry/ WET Power Frequency Voltage Withstand Test
Crushing Test
Bending Test
Dye Penetration Test

ROUTINE TEST:

Routine test of 10% material shall have to be arranged at the manufacturing/ assembling unit, the cost of which is to be borne by the tenderer.

SYSTEM CONDITION

The High Voltage Detector is intended for use in 415V/ 11KV/ 33KV Distribution System; 3 Phase 3 Wire/ 4 Wire at High Voltage has the following data

System Voltage	Normal System Voltage	33 KV	11 KV	415 Volt
	High System Voltage	36 KV	12 KV	440 Volt
	Line to Earth (Nominal)	19.05 KV	6.35 KV	230 Volt
Insulation Level (Lightning Impulse Level) for 33KV 11KV Equipment erected on Structure/ Pole/ Ground		& 170 KV	95 KV	1.1 KV
Power Frequency Withstand Voltage, High Voltage		70 KV	28 KV	N A
Rated Frequency		50 C/s		
Insulation Resistance @ 1000V DC		Greater than 100 MΩ		
Sound Pressure		90 dB/meter ± 10 dB/meter		

SAFETY INSTRUCTIONS

It is to be ensured that the changes do not dilute the safety parameters as compared to IS/IEC. Any changes should not directly or indirectly impact the safety aspects which is the most critical parameter & uncompromising, thus be double ensured.

GENERAL & CONSTRUCTIONAL REQUIREMENT

- High Voltage Detector shall be designed and manufacturing 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 by Audio annunciation as well as Visual Indication of the presence of the voltage from a safe distance as per IE Rules 1956 and its latest amendment IE 2005.
- Bright high intensity RED LEDs should provide clear visual indication even in unfavorable daylight conditions. The buzzer should produce a loud beep which is audible even in noisy backgrounds.
- The silicon petticoat arrangement shall be fixed on rod for decrease of the flashover contact probability with the operator.
- Insulating material used in the manufacturing of High Voltage Detector Probe shall be made from non-hygroscopic, non-ageing, non-allergic of tested premium quality Nylon Resin material.
- Insulating material used in the manufacturing of High Voltage Detector Hot Stick (Detachable / Telescopic Insulated) shall be made from non-hygroscopic, non-ageing, non-allergic of tested premium quality Fiber Glass material.
- The detector should not have any external accessibility to change either the Voltage or the Sensing Distance to ensure the safety of a user to avoid confusion at site.

DIMENTIONS

The High Voltage Detector probe should have universal connecting link make Glass Filled Nylon with suitable length for the attachment of the Detachable / Telescopic Insulated stick.

For detachable stick max. outer dia should be 35 mm with tolerance as per IS. The diameter of the Telescopic Insulated stick should be 32 mm ± 1 mm, top portion Stick and the down tube should conform to the IS 13770:1993 RA: 1999 IEC Pub 855(1985) corresponding to the length of the Rod. Length of the Detachable /Telescopic Insulated stick should be about 5000 mm, detachable type in four sections, having maximum length 1600 mm & minimum length 1250 mm (including coupling) with the bottom section having locking arrangement, to reach the required distance so that the High Voltage Detector attached to it must sense the Voltage of 36 KV to 230 V line mounted on Pole.

CLIMATIC 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 Indicator/Detector shall be capable of detecting live line on the bare conductor under hot, tropical and dusty climate.

Maximum Ambient Air Temperature in shade	: 50°C
Minimum Ambient Air Temperature	: (-) 5°C
Maximum Wind Pressure	: 150 Kg/mm²
Average Rainfall/ year	: 2000 mm
Maximum Relative Humidity	:95 %(non- condensing)
Minimum Relative Humidity	: 10%
Climatic Condition	: Moderately hot & humid Tropical Climate
Storage Temperature	: 10°C to 60°C

POWER SUPPLY

Dry Battery with suitable voltage ratings & commercially available at market in remote area also, easily replaceable at field level

Battery Low indication

Current Consumption: 30mA maximum

SELF DIAGNOSTIC FEATURE

The High Voltage Indicator/Detector shall be capable of performing complete self diagnostic check to ensure the working of the probe before taking on site.
A self diagnostic feature will enhance safety at hazardous areas.

TRAINING

The supplier shall provide free training in the field office, if required.

GENERAL & CONSTRUCTIONAL REQUIREMENTS:

- High Voltage Detector shall be designed and manufacturing in such a way so as to avoid any danger to the operating personnel during use and under normal conditions.
- All insulating material used in the manufacturing of High Voltage Detector shall be non- hygroscopic, non-ageing and of tested quality.
- The High Voltage Detector probe should have universal connecting link make Glass Filled Nylon with maximum 95mm approx. length for the attachment of the Telescopic rod.
- The High Voltage Detector HOT STICK should be of non allergic, premium quality Fibre Glass material with upper stick foam filled (high voltage tested material) with piece to piece self locking arrangement in 5 (five) meter length.

DETECTION INDICATION

- 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.
- The High Voltage Detector shall give audible sound for the presence of live line so that it can be suitably used in populated and noisy areas for easy operation.
- The High Voltage Detector should sense in non contact condition while testing. If there is any possibility of contact of live wire, safety & functional activities principle of this item should be remain same.
- The High Voltage Detector should intelligently sense the voltage at overhead line/ Switchyard without any adjustable pot setting.
- A self test button to be provided to assess healthiness of the HV Detector.

QUALITY ASSURANCE

The bidder may furnish following information along with the offer.

a) Name(s) of the supplier(s) 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

Special features to be provided in the equipments to make it maintenance free.

MARKING ON THE HIGH VOLTAGE DETECTOR

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

Range
Rated Voltage
Manufacture's name & trade mark
Year of manufacturing
Model No
Serial No
Climatic Class- Normal Outdoor
Self Test- Guidelines
Property of WBSEDCL

Guaranteed Technical Particulars for High Voltage Detector

1	Name of Manufacturer	
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.	

Eligibility Criteria for Participation [Qualification Requirement (QR)]

1. **Only Manufacturers are eligible to Quote**:
   a) Original manufacturers of High Voltage Detector in India will be eligible in the tender.
   b) For any non-indigenous Manufacturer, having either manufacturing or assembling unit in India in collaboration with any registered Indian Company, are also eligible to quote.
   c) No Distributor or Dealer or Agent or Channel Partner shall be entertained for submission of quotation.
   d) Bidder will be OEM in nature.
   e) Bidders shall sold minimum 10% of the tendered quantity in last 5 years
   .
2. **Experience**: Experience in the field of manufacturing of High Voltage detector for last 10 (ten) years.
3. **Guarantee**: Manufacturer shall invariably give unconditional guaranty for 5 years from the date of delivery. 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, if they wish.
   Regarding non indigenous Manufacturers, having either manufacturing or assembling unit in India in collaboration with any registered Indian Company, the guarantee should be provided by the Parent Company.
4. **Delivery**: High Voltage Detectors to be delivered at 05 (five) no. Zonal Stores located at Santipur, Chinsurah, Burdwan, Midnapur & Siliguri as per delivery schedule.
5. **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 carton of a suitable material to prevent damage due to shocks during transit. The lid of 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
6. **Type Test Certificate**: Submission of Type test certificate preferably from CPRI [Central Power Research Institute, Ministry of Power, Govt. of India, Bangalore] or ERDA [Electrical Research and Development Association, Mumbai] Laboratory or any other NABL accredited Laboratory for the offered Instrument is mandatory.
7. **Routine Test**: Routine test of 10% material shall have to be arranged at the manufacturing/ assembling unit, the cost of which is to be borne by the Tenderer.
8. **Minimum Order Quantity for qualification**: Bidder shall sold a quantity not less than 150 nos. during last 05 years to any Electricity Distribution, Transmission or Generation Utility in India. Necessary supporting Order(s) to be attached with the offer.
   Documentary evidence for the supply & acceptance of above quantity by the Consignee Authority to be submitted with the offer.
9. **Performance Certificate**: Bidder shall submit Performance certificate a*s per their supplied order of High Voltage detector from any power uility / Govt. department.* High Voltage detectors, supplied during last 5 (five) years from date of Tender to be submitted with the Offer. The date of performance certificate should be at least after one year from the date of delivery.
10. **Financial Eligibility**: The bidder shall have adequate financial capability to the extent of the estimated value of their offer.
    For the financial eligibility of the bidder, pro-rata annualized value of the orders in the bidder's hand corresponding to the contract period of this tender along with the estimated value of the offer of the bidder should not exceed 150 % of their Average Annual Turnover of the last three completed financial years.