KUSAM-MECO®

An ISO 9001:2008 Company

NON-CONTACT HIGH VOLTAGE DETECTOR

Model 278HP

The 278HP is a new water-proof design tool for checking the presence of AC high Voltage & low voltages. It has eight voltage detection settings from 240Vac to 500kVac.

The 278HP provides a non-contact detection of AC Voltages with an internal pickup sensor plate.

NEW

Preliminary Data

APPLICATIONS :

- Non-contact detection of live voltages.
- Find faults in cables.
- Check & detect live high voltage cables
- Trace live wires.
- Check high frequency radiation.
- Check grounding equipment.
- Detect residual or induced voltages

GENERAL SPECIFICATIONS :

- **Protection class :** Ip65.
- 3 LED indicators in a circle for easier viewing in any directions (360° LED indication).
- 10 Voltage settings : 240V, 3.3kV, 11kV, 22kV, 33kV, 66kV, 110kV, 220kV, 330kV, 500kV.
- High bright LED visual indication.
- With the longer shelter to make the 3 LED indicators brighter under the sun.
- **Operating Temperature :** -10°C ~ 50°C
- **Storage Temperature :** -20°C ~ 60°C
- **Humidity :** 85% R.H. @ 40°C
- Sound indication.
- Easy-to-prove method.
- Self-test function.
- High impact nylon casing.
- Non-contact work by proximity.
- Compatible with most hot sticks.
- Lightweight, robust & compact.
- Suitable for indoor and outdoor use.
- Easy access to batteries.
- Special ranges are available upon request.
- **Power Supply :** 1.5V "C" type Alkaline battery × 3.
- **Case width :** 117mm
- **Weight :** Approx. 600g. (including battery)
- **Accessories :** User Manual, Disconnect hook, Fuse extractor Head, Battery & Carrying case..

SAFETY :

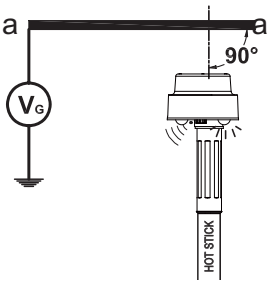
- Meets EN 61326-1 CISPR11 EN 61000-4-2 EN 61000-4-3 EN 61000-4-8.

Use the Hot Stick HS-175 or HS-120 for High Voltage Detection.

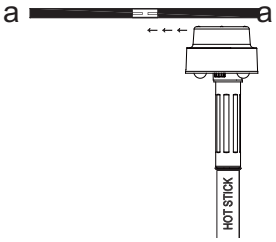
Accessories

Disconnect hook (HOK-HS166)

Fuse extractor head (ADP-HS120)



•The ideal detection angle



•For fnding a break of cable

• Carry case (TOC-278)

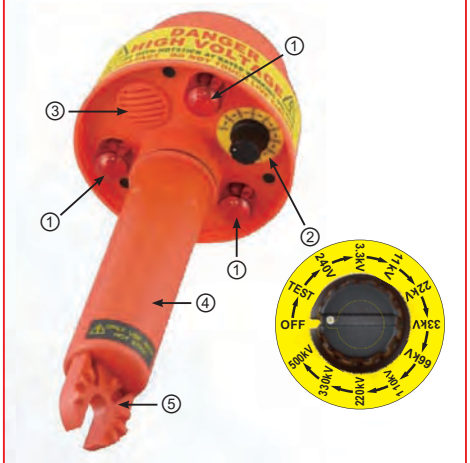
All Specifications are subject to change without prior notice.

MODELS LIST

Model Code	Range
275kV01	OFF--TEST--240V--2kV--6kV--11kV--22kV--33kV--132kV--275kV
275kV02	OFF--TEST--240V--3.3kV--6.6kV--11kV--22kV--33kV--66kV--132kV--275kV
275kV03	OFF--TEST--240V--11kV--22kV--33kV--66kV--110kV--132kV--210kV--275kV
275kV04	OFF--TEST--2.3kV--6kV--11kV--22kV--33kV--132kV--275kV
500kV01	OFF--TEST--240V--3.3kV--11kV--22kV--33kV--66kV--110kV--220kV--330kV--500kV
500kV02	OFF--TEST--240V--4.2kV--15kV--69kV--115kV--230kV--345kV--500kV
500kV03	OFF--TEST--240V--69kV--115kV--138kV--230kV--500kV
500kV04	OFF--TEST--230V--3kV--6kV--10kV--35kV--66kV--110kV--220kV--330kV--500kV
500kV05	OFF--TEST--240V--4.2kV--35kV--69kV--115kV--230kV--345kV--500kV
230kV01	OFF--TEST--240V--69kV--115kV--138kV--230kV
230kV02	OFF--TEST--240V--4.2kV--15kV--25kV--35kV--69kV--115kV--230kV
220kV01	OFF--TEST--240V--3.3kV--6.6kV--11kV--22kV--33kV--66kV--110kV--220kV
33kV01	OFF--TEST--33kV
11kV01	OFF--TEST--11kV
115kV01	OFF--TEST--240V--11kV--15kV--34.5kV--69kV--115kV

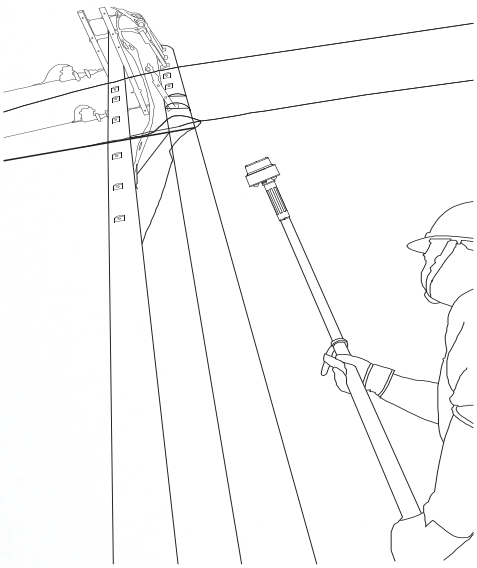
•Special ranges are available upon request !

Instrument Layout



① LED indicators
② Rotary selector with the settings listed below :
- OFF – Turn the pick-up sensor of
- Test – Check if the entire circuitry is working
- 240V, 3.3kV, 11kV, 22kV, 33kV, 66kV, 110kV, 220kV, 330kV, 500kV.

③ Buzzer
④ Battery Holder
⑤ Adapter end



• Check and detect live high voltage cables (using extension hot stick).

All Specifications are subject to change without prior notice.

KUSAM-MECO®
An ISO 9001:2008 Company

G-17, Bharat Industrial Estate, T. J. Road, Sewree (W), Mumbai - 400 015. INDIA.
Sales Direct.: 022-24156638, **Tel. :** 022-24124540, 24181649, **Fax :** 022-24149659
Email : sales@kusam-meco.co.in **Website :** www.kusamelectrical.com

WARRANTY

Each “KUSAM-MECO” product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the guarantee period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you. This warranty extends only to the original buyer or end-user customer of a “KUSAM-MECO” authorized dealer. This warranty does not apply for damaged Ic’s, fuses, disposable batteries, carrying case, test leads, or to any product which in “KUSAM-MECO’s” opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling. “KUSAM-MECO” authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of “KUSAM-MECO”. “KUSAM-MECO’s” warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a “KUSAM-MECO” authorized service center within the warranty period. THIS WARRANTY IS BUYER’S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. “KUSAM-MECO” SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER. All transaction are subject to Mumbai Jurisdiction.

KUSAM-MECO®

An ISO 9001:2015 Company

17, Bharat Industrial Estate, T. J. Road, Sewree (W), Mumbai-400015. INDIA
Sales Direct: 24156638 **Tel.:**(022)2412 4540, 2418 1649
Fax:(022)2414 9659 **E-mail :** kusam_meco@vsnl.net,

KUSAM-MECO®

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Non-Contact High Voltage Detector

INSTRUCTION MANUAL

INDEX **Page**

Caution, risk of electric shock.

Caution, refer to the user manual.

Safety Rules

The Non-contact high voltage detector has been designed with safety in mind. However, no design can completely protect against incorrect use.

Electrical circuits are dangerous and lethal through lack of caution or poor safety practice. The following rules should reduce the danger:

- Read the user manual carefully and completely before using the Non-contact high voltage detector. Fully understand the instructions before using this product. Follow the instructions for every test. Take all the necessary precautions. Do not exceed the limits of this Non-contact high voltage detector.
- The Non-contact high voltage detector must never be in physical contact with any conductor higher than 1kV. This is a proximity detector, not a detector which works by contact.
- Always use a fiber glass rod or any authorized stick.
- A high voltage test is carried out with the Non-contact high voltage detector attached to a hot stick, such as HS-175, HS-120.
- Verify the rotary switch setting before measuring. Make sure it is on the correct setting for your application.
- Always check that the Non-contact high voltage detector is working before and after the test.
- Do not touch any exposed wiring, connections, or other "live" parts of an electrical circuit.

This instrument should only be used by a competent, suitably trained person who understands this test procedure fully. Personnel working with high voltage Should be trained regularly.

Specifications

- Operating Temperature : -10°C~50°C
- Storage Temperature : -20°C~60°C
- Humidity : 85% R.H. @ 40°C
- Case Height : 265mm
- Case Width : 117mm
- Weight : Approx. 600g(Batteries included)
- Power Source : 1.5V "C" x 3 Alkaline Batteries
- Safety Standard :
  EN 61326-1 CISPR 11
  EN 61000-4-2 EN 61000-4-3
  EN 61000-4-8
- Accessories :
  Instruction manual
  Disconnect hook
  Fuse extractor head
  Carry case
  Batteries

• Carry case

• Disconnect hook
(HOK-HS166)

• Fuse extractor head
(ADP-HS120)

• Check and detect live high voltage cables(using extension hot stick.)

Changing Batteries

The Non-contact high voltage detector uses 3 x 1.5V "C" type batteries. Open the battery holder (turn counter-clockwise) to remove the batteries. Ensure the polarity is correct. Then install the new batteries.

General Description

The Non-contact high voltage detector is a new water-proof design tool for checking the presence of AC high voltages and low voltages.

Protection class : IP65.

The Non-contact high voltage detector consists of an internal pickup sensor plate, a rotary switch as sensitivity selector, a sound annunciator (high pitch, high power buzzer) and 3 LED indicators (high bright LEDs) in a circle for easier viewing by users in any directions. This provides a 360° LED indication.

The Non-contact high voltage detector detects AC voltages using the sensor plate. The sensor plate collects part of the radiated electric field (V/M).
The electric field is seen by the internal circuitry and triggers the input of a CMOS integrated circuit. The integrated circuit charges a capacitor via a diode. Once that capacitor reaches a certain level, the buzzer and the 3 LED indicators are turned on.

The trigger level is fixed (CMOS logical level change). The "Test" inserts a voltage on the sensor plate, just like if the sensor would pick up a voltage. The Non-contact high voltage detector allows identification of AC voltages. The enclosure is made out of industrial grade polyurethane. The enclosure can be attached to a hot stick. The small cylinder part of the Non-contact high voltage detector fits into most hot stick adapter.

Low Voltage Testing

The Non-contact high voltage detector works by proximity. Physical contact with electrical conductors is not necessary when testing for live lines. Its sensor senses the radiated field which surrounds live conductors. It is recommended not to touch high voltage wires with the Non-contact high voltage detector.

Radiated field strength increases with voltage and decreases quickly with distance or earth shielding. The radiated field from a cable of closely bunched conductors supplied by three phase power, tends to cancel (See "**Limitations of the Non-contact high voltage detector**" on page 8).
Detecting distance of a 220Vac single live wire is about 10cm.

Faults (Open) Cables

The Non-contact high voltage detector is capable of detecting faults in certain flexible cables. For a cable that is still energized, set the detector's sensitivity so that it triggers. Move the detector along the cable until you notice a change. An audible sound and LED will be on when the sensor is on the supply side of the open and will turn off when on the other side.

• For finding a break of cable

Limitations of the Non-contact High Voltage Detector

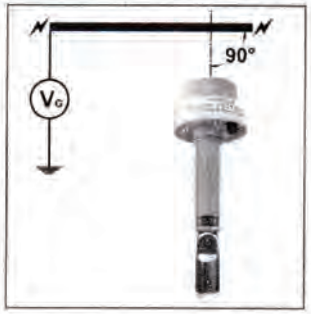
It is recommended that this Non-contact high voltage detector is not used in HV yards of mixed voltages. In the presence of mixed voltages, the tester can become unreliable.

Problems can arise when the tertiary circuit of a 275/ 133/11kV transformer is tested. The electric field of the HV and MV bus bars can trigger the detector when it is about 3m above the ground. This is common with most of the electric field voltage detectors. Users should be aware of it. The tester can pick up adjacent circuit to the one being tested and indicates the wrong information to the user.

An increase in voltage means an increase in its radiated field strength. The radiated field strength quickly decreases with distance and/or ground shielding. The radiated field from a cable where conductors supplying 3-phase power are close together tend to cancel out. The rotary switch, or attenuator, is used to identify and differentiate various HV live cables.

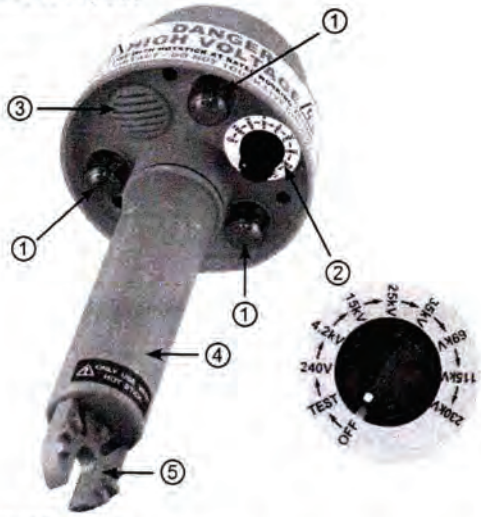
※The detector should only be used in conjunction with an insulated rod or hot stick when measuring high voltage.

Check to see if the Non-contact high voltage detector is in good operating condition. Select the appropriate test range. It is advised that you start with a lower test range setting than the actual working voltage. Then perform the test again with the higher settings. The user may also opt to use a lower setting to check for lower voltages on a conductor.
With the hot stick, gradually move the Non-contact high voltage detector towards the live conductor until its warning signal is triggered. Again, do not touch the live conductor with the Non-contact high voltage detector.



• The ideal detection angle

Instrument Layout



① LED indicators :
High bright low current LEDs triggered on voltage detection.

② Rotary selector with the settings listed below :
- OFF – Turn the pick-up sensor off
- Test – Check if the entire circuitry is working
- 240V, 4.2kV, 15kV, 25kV, 35kV, 69kV, 115kV, 230kV

③ Buzzer :
High noise level buzzer triggered on voltage detection.

④ Battery Holder

⑤ Adapter end :
The adapter end connection for hot stick.

Preparation for Use

When unpacked, the Non-contact high voltage detector should be inspected for any visible signs of damage, and the preliminary checks described in the user manual should be performed to ensure that it is operating correctly. If there is any sign of damage, or if the instrument does not operate correctly, return it to your nearest supplier.
This instrument is powered by three "C" type batteries.

Checking And Proofing

Switch the sensitivity to "TEST". The buzzer of the Non-contact high voltage detector should beep and the 3 LED indicators should light.
This indicates that the Non-contact high voltage detector is operational.

Verify the working of this unit by selecting 240Vac and place the dome against a low voltage live conductor or rub the dome with a cloth or against an item of clothing as this generates a static DC which triggers the detection of circuit.
The 3 LED indicators and the buzzer should go on as if a live wire is being approached.

Approaching the dome near a Computer screen or a TV screen (not liquid crystal display type) should also trigger the Non-contact high voltage detector while on the 240V selection.

Typical Uses

- Identify and check live cables.
- Check and detect live high voltage cables (using extension hot stick).
- Find fault in flexible cables.
- Check earth equipment.
- Trace live wires.
- Check high frequency radiation.
- Detect residual or induced voltages.

Broken Wires In Cables

Faults in damaged flexible cables are found by applying low voltage to each conductor. Earthing the remainder (the wires that do not need to be traced. Do not earth the live wire, so that they can be detected by the Non-contact high voltage detector.) and moving the tester along the cable until the change in condition is obtained. (Flexible cables, as used in mining and building industries, are readily repairable when the break in the cable is located).

High Voltage Testing

The rotary switch (attenuator) is used to identify and differentiate various HV live cables. **The Non-contact high voltage detector must be used in conjunction with a long and insulating rod or hot stick when measuring high voltage (kV).**

The Non-contact high voltage detector should never be in contact with live conductors. Live conductors emit a radiated field that can be detected by the detector's sensor.

※When working under high voltage systems, please wear the insulation gloves and rubber shoes. Do not touch live conductors with this Non-contact high voltage detector.