

SAFETY PERSONAL AC VOLTAGE (50 or 60Hz) PROXIMITY DETECTOR



INSTRUCTION MANUAL

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1. Safety rules

The Personal Safety 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. Please follow safety rules to reduce danger and practice safety.

- Read the User's manual carefully and completely before using the tester. 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 instrument.
- The voltage detector should never be in physical contact with any conductor higher than 1kV. This is a proximity detector, not a detector which works by contact. As such, contact should be avoided.
- Always check that the voltage detector is working correctly before and after the test (press both push button to verify It's working perfectly before using the testers to detect voltage and after detection).
- 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 which understands fully this test procedure. Personal working with High Voltage should be trained regularly. Use Protective gear.**



Caution, risk of electric shock.



Caution, refer to the user's manual.

2. General description

The **voltage detector** consists of an internal pickup AC sensor plate, a test (oscillator) and diagnostic circuit, an adjustable threshold comparator, a sound annunciator (buzzer), a visual indicator (super high bright led) and a 9V battery, all enclosed into the robust "beeper" style case.

The enclosure has a built-in clip to be able to be attached on the outer garments / external clothing or belt.

3. Principle of how it works

The **voltage detector** detects AC voltages using its internal AC sensor plate. The AC sensor plate picks up part of the radiated electric field in volts per meter (V/M).

The electric field is amplified and processed by the internal circuitry and once the processed signal is above the threshold, triggers the input of an integrated circuit,

oscillators and led. The and Led lits a rate of 2 second.

diagnostic depressing both push panel. The is always Please see on the front



which start the for the buzzer Buzzer beeps intermittently at beeps/flash per The "Self-test" is actioned by simultaneously button on the front battery monitoring ON. the priority of alert panel.

4. Check it and get it going

After inserting the battery, close the cover. The **voltage detector** will be ON automatically.

a. Check the working of voltage detector

Once the battery has been inserted, wait for a few seconds. If no beep and no flash occurs, press simultaneously the 2 push buttons.

While the 2 push buttons are pressed, the internal 50/60Hz oscillator will start oscillating (generates test signal) and this signal will be connected to the sensor.

While pressing the 2 push buttons, the buzzer and the led will function at a rate of about 2 beep/flash per second.

That indicate proper operation of the tester.

Release the push buttons, and wait for about 30 seconds. If there are no other beep/flash, that mean everything is correct.

b. Low Battery detection and indication

When the battery becomes to low, a beep/flash will happen about every 5 seconds, Replace the battery immediately.

c. Sensitivity

Covering the **voltage detector** with any kind of obstructive material could affect its sensitivity. It is advised to wear it outside clothing, clipped on the belt or on the pocket. Please note that the enclosure is static sensitive and can become charged and thus alarm may be triggered by excessive static.

d. Priority of functions - display and sound alerts



- (1) = Voltage Detected
= First Priority
= the tester beep and flash twice per second.
- (2) = Simulated Test = Voltage Detected
= Second Priority (identical to 1st priority)
= the tester beeps and flashes twice per second.
- (3) = Battery Indication
= Third Priority
= the tester beeps and every 5 seconds.

5. Low voltage testing

Physical contact with electrical conductors is not necessary when testing for Live Lines proximity.

This tester works by proximity.

Its sensor senses the radiated field which surrounds live conductors.

It is recommended not to touch High Voltage wires with the **voltage detector**.

Radiated field strength increases with voltage and decreases quickly with distance or earth shielding.

Detecting distance of a 240Vac single Live Wire is about 4 inches.

6. For best results

The **voltage detector** should always be WORN ON THE OUTSIDE of any clothing.

For example, clipped onto the pocket, belt or on the vehicle's mirror.

The **voltage detector** could be sensitive to static build-up and may become charged. In this case, this could trigger the alarm.

The **voltage detector** should be worn FACING THE DIRECTION OF WALKING TOWARD THE SOURCE. WHILE FACING THE SOURCE, THIS WOULD BE THE FRONT OF YOUR BODY (use the breast pocket).

Always ensure that the alarm can be heard and seen (in case of noisy environment, check again the alarm sound before using to ensure you can be alarmed)

7. Front panel layout



8. Back of voltage detector layout



9. Preparation for use

When unpacked, the tester should be inspected for any visible signs of damage, and the preliminary checks described (depress both push button for proofing the unit) 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 one 9V type battery. Use alkaline for best results.

10. Checking and proofing the tester

Depress both push button simultaneously. The Buzzer will beep and the LED will flash twice per second if everything is correct with the proofing of the **voltage detector**.

11. Typical uses

Workers Safety.

Emergency services protection (fireman, evacuation personal, police, etc...)

Safely identify HV source while approaching it.

The user's has the **voltage detector** clipped on his breast pocket while working/walking in a electrical environment. The **voltage detector** will alert the user of any HV source near by and therefore the user will be able to take protective action before being close to the H.V. Identify and check AC live cables.

Check and Detect Live High Voltage Cables.

Neon lightning servicing. Tracing live wires.

Detecting of residual or induced voltages.

12. Broken wires in cables

Faults in damaged flexible cables are found by applying low voltage to each conductor in turn, earthing the remainder 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).

13. Non contact advise

It is advised that the tester should not come into contact with cables (kV) as this tester is merely an Non-Contact A.C. Proximity Tester.

This advise is particularly useful to protect users which do not respect protection and safety rules and who do not wear protective gear.

Never work or be alone in the proximity of high voltage.

14. Limitations on the voltage detector

It is recommended that this tester is not used in H.V. Yards of mixed voltages. In the presence of mixed voltages, the user will not be able to pin point exactly which cable is the source of H.V.. This tester has been designed to be used as a personal safety proximity voltage detector alarm. This is not a measuring instrument.

Problems can be arise when the tertiary circuit of a 275/133/11kV transformer is tested. The electric field of the H.V. And M.V. Bus bars can trigger the detector when it is about 10 foot above the ground (this is common with most of the electric field voltage detectors and the users should be aware of it).

The tester could pick up adjacent circuit to the one being tested and indicates the wrong information to the user.

15. Replacing the battery

The **voltage detector** has been designed to have a super low current consumption.

One alkaline battery could last up to one year or even more (Depending on the battery energy).

Once the low battery alarm is announced (beeps and flashes every 5 seconds), the battery should be replaced Immediately.

The **voltage detector** uses one 9V battery.

Remove the battery cover.

Ensure polarity is respected and replace with a new battery. (Photograph shows cover removed and new battery inserted.



16. Laboratory test results

Test Results

Test Instrument: 100kVAC High Voltage generator

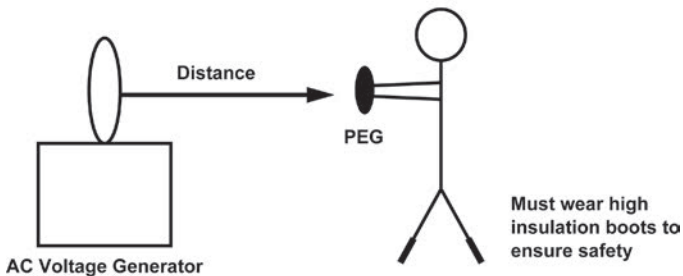
Test Temperature: 25°C

Relative Humidity: 65%

Accuracy: $\pm 20\%$

Source	Angle	Distance
240V	90°	2"
1.0kV	90°	40"
2.2kV	90°	51"
3.3kV	90°	61"
6.6kV	90°	82"

For best test results, ensure there are no interferences or obstacles on the electric field we want to detect.



17. Specifications

ELECTRICAL

Detecting Range

Selection Detects voltage from variable from 80V (differs with type of source) to 44kV.

Static can also trigger the voltage detector. Ensure the voltage detector is not reacting to static but AC.

Operating Temperature: -15°C to + 55°C

Storage Temperature: -20°C to + 65°C

Humidity: 93% RH @ 40°C

Dimensions: 4.5"(L)x2.6"(W)x1.2"(H) inches

Weight: 5.2 ounces (battery included)

Power Source: 9V battery x1

Safety Standard:

EN 61326 EN 55011 EN 61000-4-2 EN 61000-4-3

18. Limited warranty

Hoyt Warranty and Repair

Hoyt Electrical Instrument Works, Inc. (Hoyt) warrants its products to be free of defective materials and workmanship for a period of (2) years after shipment to the original purchaser. This warranty shall be limited to defective materials and workmanship. Hoyt will repair all warranty items at no charge.

Hoyt will not cover those products that have been damaged due to removal of warranty stickers, improper handling, storage, installation or operation by the purchaser or any third party. At Hoyt's discretion defective products may be repaired or replaced and the products returned to proper working condition. Upon this time you would be notified for approval of any charges.

All warranty claims must be made using the Hoyt RMA form available by calling the factory directly at 1-800-258-3652.

All products must be returned prepaid to:

Hoyt Electrical Instrument Works, Inc.

Attention: Returns

23 Meter Street

Penacook, NH 03303-1894

Return Shipments must be made in the original packaging or packaging of equal quality that will provide appropriate protection during shipping. Hoyt will not be responsible for warranty repair of products returned via inadequate containers and packaging, nor for missing components.

Hoyt shall not be liable for any special, punitive, incidental or consequential damages made by the buyer or any third party. This statement of warranty is in lieu of all other warranties, guarantees, liabilities, obligations, statutory or implied to the original purchaser or to any other party.