



OPERATIONAL EQUIPMENT RESOURCE

NUCOM – *DELSAR AC Hot Stick*



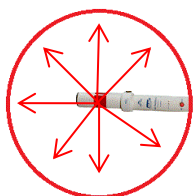
WARNING

This unit is an **AID** in detecting unshielded alternating current (AC) power sources. Rescuers must treat all wires and power sources as if they are **LIVE** until isolation has been confirmed by a competent person.

The Hot stick is a **non-contact detection device** so there is no need to come in contact with live electrical components or cables to perform a test.

The unit cannot detect direct current (DC) voltages such as batteries or Solar generated DC etc.

The unit cannot detect “Shielded” AC voltages such as live cables that are covered by dead cables, cables that are fully enclosed in metal conduit or surrounded by metal enclosure, though it will detect the AC if the enclosure is live. It can detect cables run in plastic enclosures, ceilings and walls with thin, non-metallic cladding but may not detect through bricks, concrete or cables run underground etc.



The unit detects Omni-directionally while in the **HIGH** and **LOW** sensitivity settings.



In the **FRONT** focussed setting the detection zone is reduced and only operates directly from the tip of the Hot stick with no Omni-directional detection.



| NUCOM | |
|-------------------------|---|
| N - Name | DELSAR AC Hot Stick |
| U - Use | <p>The AC Hot Stick has several uses as follows:</p> <ul style="list-style-type: none">• To provide warning from a safe distance of unshielded AC power sources.• To confirm AC power isolations.• To monitor AC power isolations. <p>Danger: The user should exercise extreme caution at all times when approaching areas where live voltage may be present.</p> |
| C - Construction | <p>The AC Hot Stick has four main component parts:</p> <ol style="list-style-type: none">1. The main tubular body is constructed of heavy duty PVC plastic, it is intrinsically safe and has an insulation rating of 50,000V, this being said it is a non-contact testing device so users should NEVER come in contact with live components or cables while performing a test.2. The electronic circuitry which is powered by 4 x AA batteries, including a highly sensitive amplifier for detecting AC voltages with a frequency between 20Hz and 100 Hz, an audible beeper and a flashing LED for detection notification.3. The hermetically sealed mode switch for turning the unit on/off and changing between High, Low and front focussed mode settings.4. The carrying lanyard with removable screw for battery changing. |
| O - Operation | <ul style="list-style-type: none">• Take the unit out of the protective cover, place lanyard over your wrist and turn unit on by rotating the Mode switch to the “High Sensitivity” setting.• Allow the unit to perform a self-test (The unit has an inbuilt self-test circuit that simulates an AC power source causing the unit to beep and flash for approximately 3 seconds). During the self-test, check the operation of the audible beeper and flashing LED. If the unit does not operate or emits a constant beeping sound there may be a fault or flat batteries. Replace the batteries and allow the unit to self-test again before use.• With the unit in High Sensitivity mode approach the test area with caution, should an AC source be detected in any direction around the red striped tip, the unit will emit the detection signal (beep and flash) increasing in speed as you get closer to the AC power source. The higher the voltage the greater the sensing range and therefore an earlier warning.• Users can then narrow down the search or remove interferences by switching to the “Low Sensitivity” setting (there may be other high voltage sources e.g. high voltage power lines nearby that cause the unit to give a false positive reading. Changing to “Low Sensitivity” will reduce the units detection range and should |



| <p>reduce/remove these interferences).</p> <ul style="list-style-type: none"> The exact source of the AC voltage can then be pin pointed by use of the “Front Focused” setting. This setting removes the “Omni-directional or all-round” detection and will only detect directly from the top of the unit. When testing insulated cables in front focused mode, move the hot stick along the cable to overcome the chance of shielding by dead conductors in the cable. If in doubt go back to low sensitivity mode. Due to the reduced detection distance, DO NOT use front focused or low sensitivity mode when starting a search. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="5">Typical detection distances</th> </tr> <tr> <th>Voltage</th> <th>Cable Layout</th> <th>High Sens</th> <th>Low Sens</th> <th>Front focussed</th> </tr> </thead> <tbody> <tr> <td>240v</td> <td>Overhead</td> <td>4.6m</td> <td>0.9m</td> <td>150mm</td> </tr> <tr> <td>240v</td> <td>On wet ground</td> <td>0.9m</td> <td>150mm</td> <td>25mm</td> </tr> <tr> <td>16kV</td> <td>Powerline</td> <td>65m</td> <td>21m</td> <td>6m</td> </tr> <tr> <td>46kV</td> <td>Powerline</td> <td>>150m</td> <td>>60m</td> <td>>20m</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Rescuers may wish to leave the unit turned on and nearby for warning of re-energising of power during an incident. NOTE - If the Hot stick is to be used for electrical isolation it should be tested on a known LIVE source before isolation and again after to confirm the isolation was successful. If in doubt wait for a competent person to confirm isolation. | Typical detection distances | | | | | Voltage | Cable Layout | High Sens | Low Sens | Front focussed | 240v | Overhead | 4.6m | 0.9m | 150mm | 240v | On wet ground | 0.9m | 150mm | 25mm | 16kV | Powerline | 65m | 21m | 6m | 46kV | Powerline | >150m | >60m | >20m | |
|--|--|-----------|----------|----------------|--|---------|--------------|-----------|----------|----------------|------|----------|------|------|-------|------|---------------|------|-------|------|------|-----------|-----|-----|----|------|-----------|-------|------|------|--|
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| 240v | Overhead | 4.6m | 0.9m | 150mm | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 240v | On wet ground | 0.9m | 150mm | 25mm | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16kV | Powerline | 65m | 21m | 6m | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 46kV | Powerline | >150m | >60m | >20m | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>M - Maintenance</p> | <ul style="list-style-type: none"> To maintain its insulation rating, the AC Hot Stick should remain clean and dry. If the unit does become dirty and/or wet, clean the unit with a mild household cleaner such as ‘Spray and Wipe’ using a soft cloth and dry. To replace the batteries, (in fresh air) unscrew the lanyard and remove the beeper exposing the 4 x AA batteries. Replace with new batteries taking note of the polarity. The manufacturer recommends changing the batteries annually. DFES operations recommend 1st April – April Fools Day. The Hot stick should be tested weekly on a known live AC power source as part of the weekly BA checks. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DOCUMENT HISTORY

| DATE | VERSION | DESCRIPTION OF CHANGE |
|--------|---------|-----------------------|
| Aug 15 | 2.0 | Updates by SME. |
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