

9511-HA30

## HOLIDAY DETECTOR OPERATION MANUAL



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MN-9511-HA30-E

V1



## I. Overview

Holiday detector is a high-voltage special detector that is used to detect the quality of metal anti-corrosion coating. This detector can detect different thickness of coatings, such as glass lining, glass reinforced plastic, epoxy coal tar, rubber lining and so on. The detector will emit bright sparks and with sound alarm when something is wrong with the coating, such as the emergence of pinhole, air bubbles, fissures and cracks. As powered by Ni-MH battery, it is especially suitable for field operation.

## II. Specification:

1. Applicable detection thickness: 0.05 ~ 10mm
2. Output High-voltage: 0.6kV ~ 30.0 kV (stepless and continually adjustable)
3. Direct indication of output high-voltage
4. Battery: 12V/2800mA
5. Power consumption: about 5W
6. Dimension: 240×135×115 mm
7. Backlight
8. Instantaneous boot, and automatic shutdown
9. 3-digit LCD displays output voltage and all-touch panel
10. Alarm: Dual alarm with earphone and buzzer

## III. Detection Principle and Structure

### Description:

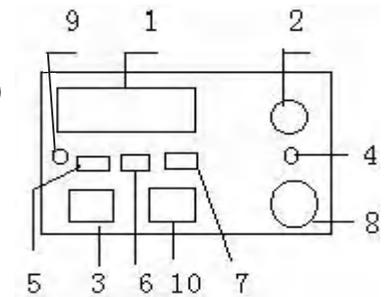
1. Detection principle: the spark leak detector performs detection of the anti-corrosion coating by exerting a certain amount of pulse high-voltage on the surfaces of anti-corrosion coatings of various conductive matrix, and the pulse high-voltage will form air gap and breakdown, and result in spark discharge, and send a pulse signal to alarm circuit to occur sound alarm when it pass through, if the anti-corrosion coating is much thin, metal leaks or there are leakage pinholes.

### Detector Structure Diagram

- (1) Front panel: (Figure 1)
- (2) Rear panel : (Figure 2)
- (3) High-voltage probe: (Figure 3)

Figure 1: Front Panel Sketch

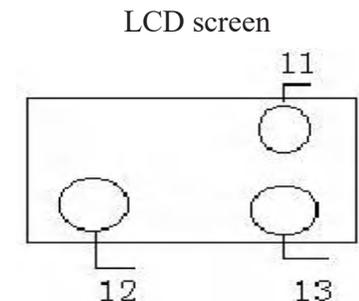
1. LCD screen
2. Voltage knob
3. Startup key
4. Earphone (socket)
5. Power indicator
6. Lack-of -power indicator
7. Charging indicator
8. Socket of high-voltage output
9. Lighting hole
10. Power-off /Charge- up key



(Figure1)

Figure 2: Rear Panel Sketch

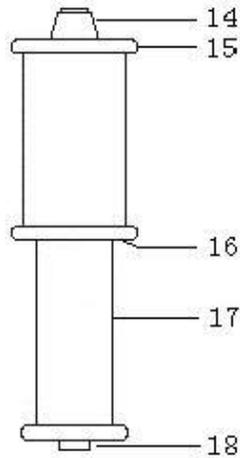
11. Fuse
12. Earthing base
13. Charge-up base



(Figure 2)

Figure 3: High-voltage Probe:

- 14. Connecting terminal of Probe
- 15. Rubber sheath
- 16. Light alarm
- 17. Knob
- 18. Multi-pin plug



(Figure 3)

2. Structure description: this instrument consists of three parts including main detector, high-voltage probe and probe.

- (1) Main detector: comprising integrated control circuit, sound alarm detector, etc.
- (2) High-voltage probe: comprising high-voltage generator, outlet of high-voltage output, etc.
- (3) Probe: Copper brush probe.

#### IV. Operation Procedures:

Please read up the Manual of this detector to make clear all parts of functions; as to their specific names, please see Detector Structure Diagram.

- (1) LCD screen: the value directly indicates the output high-voltage.
- (2) High-voltage knob: adjusting output high-voltage to meet detection requirements of different anti-corrosion coatings.
- (3) Startup Key: click to turn on the device.
- (4) Earphone socket: the sound alarm can be heard with earphone when high-voltage spark is produced.
- (5) Power indicator: the light is on after startup
- (6) Low-power indicator: charge the battery when the light is on.
- (7) Charging indicator: the light is on while charging and off when the battery is fully charged.

- (8) Socket of high-voltage output: used for connecting high-voltage probe with the main detector.
- (9) Lighting hole: Back light is turned on when the light is weak.
- (10) Power off /Charge up key: The detector will power off by press it for 3 seconds when the detector is working. Please charge the battery after power off.
- (11) Fuse: power supply fuse is 1A.
- (12) Earthing base: used for connecting earthing long wire.
- (13) Charge-up base: connecting the charger.
- (14) Connecting terminal of Probe: used for connecting various probes.
- (15) Rubber sheath.
- (16) Light alarm.
- (17) Knob: hold it by hand when detecting.
- (18) Multi-pin plug: it is connected with socket (8).

#### 2. How to use

- (1) The connecting cable of high-voltage probe is connected with multi-pin plug(18), and plugged in the socket of high-voltage output(8).
- (2) One side of earth wire is connected to the earthing base of main detector (12), and the other side of it is in good contact with the detected objects.
- (3) Select a suitable probe based on the different detection requirements.
- (4) Check the operating condition of machine;
  - a. The power supply indicator shall light when pressing Startup key.
  - b. Adjust high-voltage knob to the required detection voltage.
  - c. Sparks shall be producing and followed by sound alarm when the bare point of earth long wire is close to the probe;

turn up the high-voltage output, the distance between spark production becomes larger accordingly, which means the detector works and you can begin to test (see the attached table for detail).

(5) Select a suitable detection voltage according to the thickness of anti-corrosion coating (See the attached table for detail).

the high-voltage adjustment process is as follows: output the high-voltage according to the a and b in (4) firstly, and adjust the knob of high-voltage output to indicate an appropriate value and begin to detect.

(6) Choose a better detecting speed to maintain a better detection quality when detecting according to different anti-corrosion materials and thickness. (If the detection is carried out in a noisy environment, you can use earphone to monitor the alarm sound)

(7) After detection is completed, this detector will automatically shutdown after thirty minutes, or shutdown by pressing Power-off key.

## V. Charge

1. After shutdown, connect the charger to the charge-up base of rear panel of the detector, then the front charging indicator light is on, and the indicator light on the adapter turns red.

2. After charging up for 8-10 hours, the indicator light on the adapter turns green, which means the built-in battery is full.

3. Notes:

The lack-of-power indicator will not light when the battery voltage of the detector is normal; it will light when the battery voltage is down to 10V, and must charge up to prevent damage due to battery over-discharge.

## VI. Precautions:

1. After startup, the probe is strictly prohibited to contact with the ground. It is strictly forbidden to turn on the detector while the charger is connected to power supply.

2. (1) The operator shall master the Manual of this detector, and strictly following operation condition and protect the detector from break, bump and high temperature. Do not put it close to the wet and corrosive gas.

(2) Please replace the damaged fuse with the same specification for safety.

3. The appropriate earthing location shall be selected to guarantee the detection quality when you begin to detect.

(1) For the detection of anti-corrosion coating on the surface of small metal object, the detected object is required to support up more than 20cm with an insulator, then the earthing wire is connect well to the metal object to detect.

(2) For the detection of anti-corrosion coating on the surface of large or plane object, when the object to be detected is connected to the ground, the detection can be performed after connecting the ground wire to the ground.

4. During detection, the detecting personnel shall put on the high-voltage insulated gloves, and any persons shall not contact the probe and the detected object to avoid electric shock.

5. The surface of detected anti-corrosion coating shall be dry, if it is stained with conductive layer (dust) or water, it is difficult to determine the precise location of leakage point.

6. When the detector is not used, it shall be stored in packing box, and please note that battery short-circuit is absolutely prohibited.

7. When the detector is not used for long time and for storage, please charge the detector for 8-10 hours every two months

Note: Arc brush and circular probe are customizable (any length).

Attached Table for Detection Voltage

| Anti-corrosion Material        | Thickness of Anti-corrosion Coating (mm)  | Detection Voltage (KV) | Remarks                                     |
|--------------------------------|---|------------------------|---|
| Epoxy Coal Tar                 | 0.2   | 4-5KV or self-defined  | Perform according to standard (if provided) |
|                                | 0.4   |                        |   |
|                                | 0.6   |                        |   |
|                                | 0.8   |                        |   |
| Oil Asphalt                    | 2   | 11                     |   |
|                                | 3   | 15                     |   |
|                                | 5.5   | 18                     |   |
|                                | 7   | 20                     |   |
|                                | 9   | 24                     |   |
| Polyethylene Adhesive Tape     | Based on conversion formula : $3249TC=V$<br>V: voltage<br>TC: thickness of anti-corrosion coating<br>According to SY4014-92 Acceptance Standard |                        |   |
| Glass Lining                   | Determine detection voltage according to previous experience.<br>Generally, it is 8KV~20KV.   |                        |   |
| Other Anti-corrosion Materials | Detect voltage according to the design or material insulation.  |                        |   |