KUSAM-MECO

An ISO 9001:2000 Company

HIGH VOLTAGE PROXIMITY DETECTOR

MODEL 275 HP

Preliminary Data.

The 275HP is a high voltage proximity detector. It has eight voltage detection settings from 240Vac to 275KVac. The 275HP consists of an internal pickup sensor plate, a sensitivity selector, a visual and a sound annunciator. With the 275HP, physical contact with electrical conductors is not necessary when testing for live lines. This tester works by proximity.

Its sensor senses the radiated field which sorrounds live conductors. 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 use" paragraph). Detecting distance of a 250Vac single live wire is approximately 10cm. With a bunched neutral and earth cable, as in a flexible cable, the distance is reduced to 5cm.

Some of the typical uses are : identify and check live cables; find fault in flexible cables; check earth equipment; service neon lightning; trace live wires; check high frequency radiation; detect residual or induced voltages. For example, faults in damaged flexible cables are found by applying low voltage to each conductor. Earthing the remainder and moving the tester along the cable until the change in condition is obtained. (Flexible cables which are used in mining and building industries, are readily repairable when the break in the cable is located.)

When testing for high voltage, the rotary switch (attenuator) is used to identify and differentiate various HV live cables. The tester must be used in conjunction with a long and insulating rod when measuring high voltage (KV). However, the 275HP is a non-contact tester and it is advised that the tester should never come into contact with cables (KV) as this tester is merely a non-contact AC proximity tester.

Checking or proofing the tester is easy. Switch the sensitivity to 240V 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 light and beeper should go "on" as if a live wire is being.

FEATURES

- Sealed by "0" rings
- 8 Voltage Settings : 240Vac, 2KV, 6KV, 11KV, 22KV, 33KV, 132KV and 275KV.
- High bright LEDs visual indication.
- Sound indication.
- Easy to proov method.
- Self test selection.
- Use 3 x 1.5V "C" batteries.
- High impact nylon casing.
- Non-contact work by proximity
- Compatible with most link sticks
- Light weight, robust, & compact
- Suitable for indoor and outdoor use.
- Detect low voltage on any systems.
- Easy access to batteries
- No special parts needed
- Simple and efficient to use
- Weight : Approx. 500g.
- Meets EN61000-3-2 EN61000-3-3 EN61326-1 EN55011 EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-11

Expected test results (laboratory testig) :

Range	Operated from
240V	Variable from 80V or depending on the type of source
2KV	250V
6KV	500V
11KV	1000V
22KV	1500V
33KV	4000V
132KV	8000V
275KV	22KV

Typical observation of test results made in the field:

Range	Min. Detection Voltage(MDV)	MDV as % of Line Voltage
11KV	1KV	9.1%
22KV	2KV	9.1%
33KV	3.1KV	9.4%
132KV	12.5KV	9.5%
275KV	22.5KV	8.2%

LIMITATIONS OF USE :

It is recommended that the 275HP 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, and the users should be aware of it. The tester can pick up adjacent circuit to the one being tested and indicate the wrong information to the user.

Note: All Specifications are Subject to change.

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HI - PROX 275HP - TEST REPORT NOTES -

1. The distance for 10cm at an angle of 90°.

		MEASURED	
275HP Setting	**Angle**	**V_G for Sound and Light Trigger**	**Distance**
240Vac	90°	162Vac	10cm
2kV	90°	1350Vac	10cm
6kV	90°	4800Vac	10cm
11kV	90°	10kV	10cm
22kV	90°	14kV	10cm
33kV	90°	27kV	10cm

From a distance of 10cm form the conductor, the 275HP can detect 162Vac while on the 240Vac setting. From a distance of 10cm, it will however only start to detect 1350Vac on the 2kV position, 4800Vac on the 6kV position, 10kV on the 11kV position, 14kV on the 22kV position and 27kV on the 33kV position.

2. The distance for 5cm at an angle of 90°.
The results are as follows :

		MEASURED	
275HP Setting	**Angle**	**V_G for Sound and Light Trigger**	**Distance**
240Vac	90°	90Vac	5cm
2kV	90°	1300Vac	5cm
6kV	90°	2800Vac	5cm
11kV	90°	5500Vac	5cm
22kV	90°	8200Vac	5cm
33kV	90°	15500Vac	5cm

From a distance of 5cm form the conductor, the 275HP can detect 90Vac while on the 240Vac setting. From a distance of 5cm, it will start to detect 1300Vac on the 2kV position, 2800Vac on the 6kV position, 5500V on the 11kV position, 8200V on the 22kV position and 15500V on the 33kV position.

3. The Voltage of the generator (V_G) set at a fixed voltage and the voltage setting on the 275HP is selected on the rotary setting switch.
The Voltage setting of 240Vac position selected.

			MEASURED
275HP Setting	**Angle**	**V_G on the generator**	**Distance For Detection**
240Vac	90°	500Vac	32cm
240Vac	90°	1000Vac	48cm
240Vac	90°	2000Vac	75cm
240Vac	90°	6000Vac	124cm
240Vac	90°	11000Vac	146cm
240Vac	90°	22000Vac	226cm

If you don't know the actual voltage to expect on a conductor, better try with 240Vac first. At 32cm, it will already detect 500Vac. While on the 240Vac position, from a distance of 2.26Meter, you would detect a conductor with 22kVac.

4. The rotary setting selector is now positioned on the 2kV position.

			MEASURED
275HP Setting	**Angle**	**V_G on the generator**	**Distance For Detection**
2kVac	90°	1000Vac	10cm
2kVac	90°	2000Vac	21cm
2kVac	90°	6000Vac	40cm
2kVac	90°	11000Vac	52cm
2kVac	90°	22000Vac	60cm
2kVac	90°	33000Vac	92cm

The Higher the voltage, the smaller the distance of detection.

5. The rotary setting selector is now positioned on the 6kV position.

			MEASURED
275HP Setting	**Angle**	**V_G on the generator**	**Distance For Detection**
6kVac	90°	1000Vac	11cm
6kVac	90°	2000Vac	18cm
6kVac	90°	6000Vac	44cm
6kVac	90°	11000Vac	61cm
6kVac	90°	22000Vac	75cm
6kVac	90°	33000Vac	105cm

On the 6kV position, the 275HP detect 22000Vac from a distance of 75cm. On the previous test, while on the 2kV position, the 275HP needed only 60cm to detect 22000V. So if you suspect the conductor to be of a certain voltage, refers to the tables of these tests to help you approximating the voltage.

6. The rotary setting selector is now positioned on the 11kV position.

			MEASURED
275HP Setting	**Angle**	**V_G on the generator**	**Distance For Detection**
11kVac	90°	3500Vac	1cm
11kVac	90°	4000Vac	6cm
11kVac	90°	6000Vac	11cm
11kVac	90°	11000Vac	22cm
11kVac	90°	22000Vac	35cm
11kVac	90°	33000Vac	42cm

As you increase the selected voltage on the rotary switch, you need more voltage on the conductor to trigger the 275HP or you need to be closer (more volt per meter).

7. The rotary setting selector is now positioned on the 22kV position.

			MEASURED
275HP Setting	**Angle**	**V_G on the generator**	**Distance For Detection**
22kVac	90°	3000Vac	----
22kVac	90°	4000Vac	1cm
22kVac	90°	6000Vac	9cm
22kVac	90°	11000Vac	14cm
22kVac	90°	22000Vac	25cm
22kVac	90°	33000Vac	36cm

We increased the selection voltage to 22kV and now, you need to be closer to detect the 11kV conductor. While on the previous test (11kV position), you could have been as far as 22cm before detecting 11kV, now while on the 22kV position (position on the 275HP), you need to be as close as 14cm from the conductor to detect 11kV.

8. The rotary setting selector is now positioned on the 33kV position.

			MEASURED
275HP Setting	**Angle**	**V_G on the generator**	**Distance For Detection**
33kVac	90°	1000Vac	----
33kVac	90°	2000Vac	----
33kVac	90°	7000Vac	1cm
33kVac	90°	11000Vac	7cm
33kVac	90°	22000Vac	11cm
33kVac	90°	33000Vac	16cm

9. The rotary setting selector is now positioned on the 132kV position.

			MEASURED
275HP Setting	**Angle**	**V_G on the generator**	**Distance For Detection**
132kVac	90°	18000Vac	1cm
132kVac	90°	22000Vac	7cm
132kVac	90°	33000Vac	10cm