



## **Powermetrix Division**

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### **Safety and Precautions with the Sensorlink Amp Litewire Probe & Cable**

#### **Safety Testing from the Manufacturer**

In 2004, Sensorlink tested a 6-inch length of the fiber optic cable between 2 electrodes. The applied voltage was 50KV RMS. Sensorlink ran this test for 3 minutes without any breakdown. This would directly correlate to a breakdown voltage greater than 100KV RMS per linear foot of cable. However, the aforementioned test was performed under clean and dry laboratory conditions. Real world conditions may not be that good. Repeated testing during calibration procedures only confirm our belief that the cable is safe to use at high voltages.

Amp LiteWire products have been known to be used successfully in applications where the phase to ground measurement was 138KV. Sensorlink Amp LiteWires have been used at higher voltages above 230KV with varying success due to corona attacking the electronics in some 230KV applications. Conducting tests at 230KV in dry (lower corona) environments were successful. On all 230KV tests, safe voltage isolation was fulfilled.

Constant exposure to extreme High Voltages is not a problem with the LiteWire products since they are only used intermittently. The units are not left in place for extended periods of time, which could possibly degrade the outer jacket material.

The air gap between the HV conductor and the operator is the actual determining factor for establishing the "safe operating voltage" of the Amp LiteWire. Since the fiber optic cable is essentially a non-conductor, you are left with the fact that it will intrude into the HV field, which surrounds the conductor. This same condition exists whenever a hot stick is introduced to the HV field surrounding the conductor. This is where environmental conditions, such as relative humidity, rain and surface contamination, etc., come into play.

#### **Safety Issues**

1. The LiteWire is designed for use when attached to a suitable universal hot stick.
2. All precautions appropriate for the line voltage should be taken.
3. The sensor unit of the LiteWire is not designed to be a high voltage insulator.
4. The sensor should not bridge between conductors or between a conductor and ground.
5. Be careful not to allow the universal chuck adaptor or the metal parts of the hot stick to bridge between high voltage and ground or between two high voltage points.
6. The fiber optic cable is a high voltage insulator and will isolate equipment and personnel in the same manner as a fiberglass hot stick.
7. The fiber optic cable should be maintained and tested in the same manner as the hot stick (see Cleaning Recommendations).
8. Cleaning and inspection should be done in the same manner and schedule as hot sticks. If any nicks, cuts or defects in the cable are found, return the instrument to the factory for replacement of the fiber optic cable.
9. High Voltage testing should be done in the same manner as hot stick tests.
10. Length of cable between line and operator should follow the same rules as used for hot sticks.

### **Cleaning Recommendations**

In the daily use of your Sensorlink Amp Litewire probe and cable, precautions should be taken to prevent contamination or moisture build-up. If your probe and cable are still reasonably clean and glossy, a daily inspection and a thorough wiping to remove dust and other contaminants is still recommended to maintain the dielectric strength of the tool.

A silicone treated wiping cloth will do the job of wiping down the probe and cable. By doing this you are also adhering to OSHA Rule 1926.951:Sub-Part V: Tools & Protective Equipment. This rule states, "All live line tools shall be visually inspected before use each day. Tools to be used shall be wiped clean and, if any defects are indicated, such tools shall be removed from service." This rule is also printed on the package that the silicone cloth is shipped in. As the probe and cable are being wiped down, not only is the dust being wiped off by using a silicone treated cloth, a fine silicone film is being deposited on the surface of the probe and cable. This will aid in repelling water and contamination helping to maintain the dielectric properties when the tool is used under wet or adverse conditions. If the marks or contamination on your probe and cable are more than what can be removed by simply wiping them down, a hot stick cleaner wipe should be used.