

# ElbowSense Installation

## 600A Voltage Monitoring Plug Installation

1. The system must be de-energized before attempting installation or retrofit.
2. Remove the elbow assembly.
3. Proceed with Current Monitoring Ring Installation now, if it will also be used.
4. The Voltage Monitoring Plug replaces the standard insulating plug supplied by the manufacturer of standard 600 amp elbow assemblies.
5. Grease, insert and torque the Voltage Monitoring Plug to a maximum of 60 ft-lbs using a 1-inch hex socket and a torque wrench. Excessive torque will cause permanent damage.
6. Attach a #12 AWG or #10 AWG ground wire to the terminal provided on the stainless steel shell of the Voltage Monitoring Plug, and connect it to the ground bus in the cabinet.
7. Plug in and hand tighten the waterproof signal cable and connect it to the input of the electronic monitoring device you are using. The red wire is the output signal and the white wire is the ground.
8. Installation is complete. The system can now be re-energized.

## Current Monitoring Ring Installation – Solid Core

1. The system must be de-energized before attempting installation or retrofit.
2. Remove the elbow assembly and slip the Current Monitoring Ring over bushing side of elbow.
3. Plug in and hand tighten the waterproof signal cable and connect it to the input of the electronic monitoring device you are using. The orange wire is the (H1) CT polarity
4. Re-install the elbow assembly, or proceed with Voltage Monitoring Plug Installation.

## Current Monitoring Ring Installation – Split Core

1. The elbow does not need to be removed for the installation of the Split Core Style Current Monitoring Ring.
2. Use a 1/8 Allen wrench to remove the stainless steel screw that locks the Split Core together. Do not attempt to remove the stainless steel pin that acts as a hinge for the Split Core.
3. Open the Split Core and place it around the elbow, either where the elbow connects to the bushing or, depending on the diameter, after the bend in the elbow.
4. Do not place the Split Core over bare conductor! It is only insulated for 700 volts isolation and must be used in conjunction with a standard elbow to provide a safe installation.
5. The elbow (or conductor) should be centered inside the Split Core when it is closed, for best calibration.
6. Use the stainless steel screw to lock the Split Core closed, being careful to not over-tighten.

## Operation

### ***DO NOT HIPOT the Voltage Monitoring Plug!***

1. Remove the Voltage Monitoring Plug from the elbow before performing a Hipot test. Typical Hipot voltage will permanently damage the Voltage Monitoring Plug.
2. Install the standard insulating plug originally supplied with the elbow to perform the Hipot test.
3. When testing is complete, re-install the Voltage Monitoring Plug per instructions above.
4. The Current Monitoring Ring may be left installed during Hipot testing.
5. Maximum burden (0.3% accuracy) of the current monitoring ring is:
  - 600A:1A = 22.5 ohms
  - 600A:5A = 0.9 ohms
  - 300A:5A = 0.22 ohms
6. All current sensors having a voltage signal output (for example, 600A:10V) should be terminated with 1000 ohms impedance or greater.
7. The (standard) voltage divider ratio (1% accuracy) is designed and calibrated for exactly 1 megohm load impedance. Lower impedance will reduce the output, higher impedance will increase the output.
8. Voltage divider ratios 60:1, 120:1 and 166:1 are very sensitive to cable length changes. Consult the factory before cutting or adding cable; the calibration will change.

## **200A Deadbrake Bushing Voltage Sensor Installation**

1. The system must be de-energized and grounded before attempting installation or retrofit.
2. Remove the existing elbow assembly.
3. Proceed with optional Current Monitoring Ring Installation, if it will also be used.
4. The Voltage Monitoring Sensor replaces the standard insulating plug supplied by the manufacturer of standard 200 amp elbow assemblies.
5. Secure the grounding wire from the Voltage Monitoring Sensor to the ground bus.
6. Grease, insert, and torque the Voltage Monitoring Sensor using the tool provided till the wrench beds. Excessive torque will cause permanent damage.
7. Plug in and hand tighten the waterproof signal cable and connect it to the input of the electronic monitoring device being used. The red wire is the output signal and the white wire is the ground.
8. Installation is complete. The system can now be re-energized.

**No maintenance is required.**

## **200A Loadbrake Elbow Voltage Sensor Installation**

1. The sensor can be installed on energized or de-energized systems. When possible, it is preferable to install the elbow sensor on de-energized systems. Following instructions can be used in either conditions.
2. Secure the grounding wire from the Voltage Monitoring Sensor to the ground bus.
3. Apply a light, uniform coat of supplied grease, working thoroughly into the surface.  
**DO NOT OPERATE BY HAND!!!**
4. Remove the existing elbow or insulated cap from bushing with a hotstick.
5. Firmly tighten a hotstick to the elbow sensor operating eye.
6. Position elbow sensor so that the grounding end points in a downward direction. Place the elbow sensor receptacle area over the bushing, inserting the probe into the bushing until the first slight resistance is felt.
7. Turn face away and firmly thrust the elbow sensor home with a fast, straight motion, which will engage the internal lock of the elbow sensor into the bushing interface.
8. Plug in and hand tighten the waterproof signal cable and connect it to the input of the electronic monitoring device being used. The red wire is the output signal and the white wire is the ground.
9. Installation is complete. The system can now be re-energized if it was de-energized.

**No maintenance is required.**

### **Questions?**

Lindsey Manufacturing Co., Tel: 626-969-3471 or Fax: 626-969-3177 or [www.lindsey-usa.com](http://www.lindsey-usa.com)