

2103 Secondary Surge Protector

Installation Guide

Overview

Teledyne Isco's 2103 Modem Module has internal protection for differential voltages and large current flows on the tip and ring conductors of a phone line. However, since the 2103 is powered by batteries, it lacks a ground reference and does not have protection from common mode voltages. In certain situations, such as a lightning strike, large currents could be sent through the 2103 and attached 2150 down to the probe and into the stream, resulting in damage to the equipment.

Installation of the 2103 Secondary Surge Protector provides additional protection against a close proximity lightning strike. It does this by using a low impedance Ground Equalization Conductor (GEC), which equalizes the ground potential at the 2150's probe with that at the primary earth ground.

Installation

The Surge Protector Kit (P/N 60-5314-493), shown in Figure 1, contains the following items:

- 30 Cable tie fasteners
- 2 5/16" #4-40 flat head screws
- 2 1/4" #4-40 flat head screws
- 1 50 foot Ground Equalization Conductor
- 1 Secondary Protector

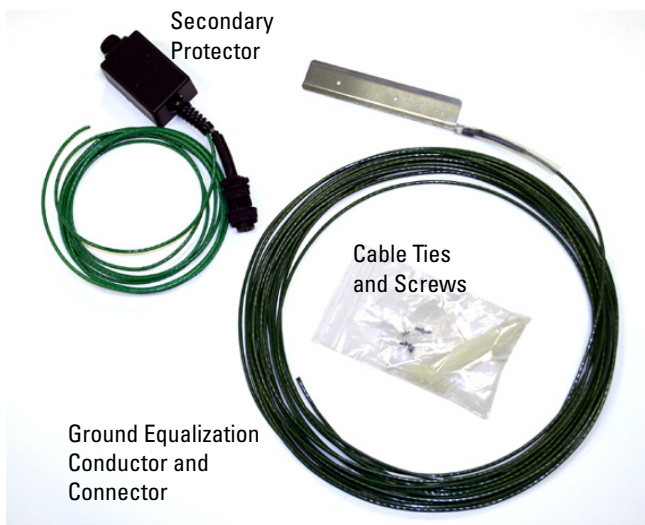


Figure 1: Secondary Surge Protector Kit

CAUTION

The surge protector kit is not to be installed in an environment that is classified as a Hazardous Location. This kit has not been certified to be safe or to make equipment safe in environments defined as hazardous.

The preferred configuration is shown in Figure 2, which shows a site where the 2103 is within twelve feet (cable route) of the primary earth ground.

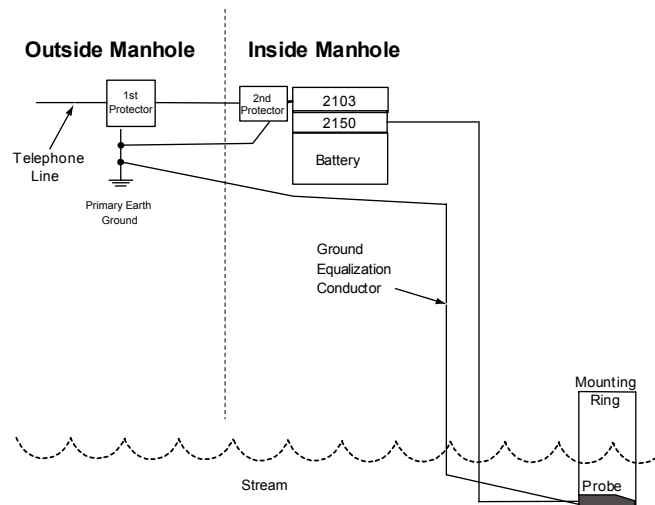


Figure 2: Preferred Installation Configuration

If the 2103 is more than twelve feet from the primary ground, an additional earth ground will be needed. This second grounding point should be as close to the 2103 as possible, but outside of the manhole. When using this configuration, the secondary protector and the GEC should be connected to the secondary ground instead of the primary ground.

Note

To prevent an excessive amount of energy from being dissipated through the manhole, the primary earth ground must be of highest quality.

Follow the steps below to install the secondary surge protector:

1. Remove the 2150 and 2103 from the manhole.
2. Extract the mounting ring with probe from the sewer. Remove the old cable ties holding the probe to the mounting ring and remove the probe from the ring. Clean off the ring, probe, and cable.
3. Mount the GEC to the probe, as shown in Figure 3. Use the longest set of screws in the kit to securely mount the GEC and probe to the mounting ring, as shown in Figure 4.



Figure 3: Attach the GEC to the Probe

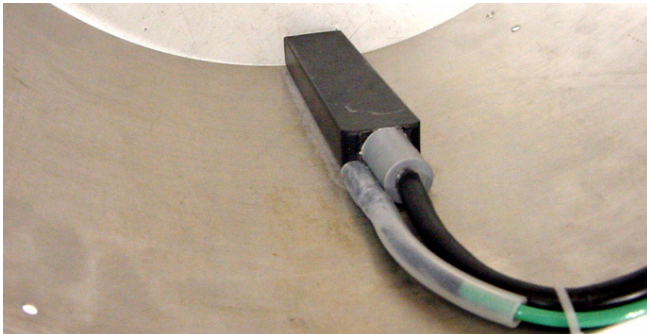


Figure 4: Attach GEC and Probe to Mounting Ring

4. Use cable ties to secure the cables to the edge of the mounting ring, as shown in Figure 5. Keep in mind the side of the sewer that will allow for the cables to stay clear of the flow.

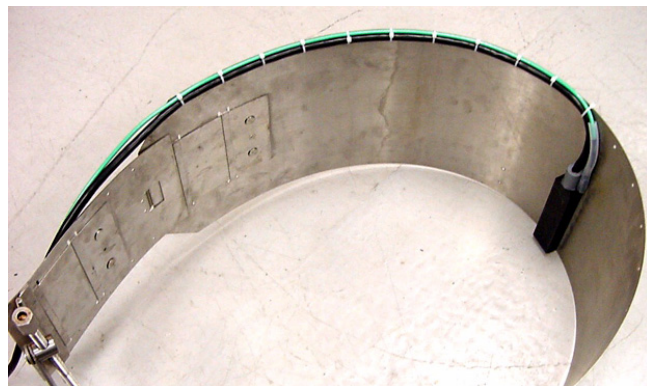


Figure 5: Secure the Cables

5. Use cable ties to tie the lengths of cable together, using one tie per foot of cable.

6. Reinstall the mounting ring and route the cables so they are clear of the flowing water. **Do not loop the GEC cable; cut it to length.** If there is excess probe cable such that it is looped to keep it out of the way, route the GEC cable separately.
7. Disconnect the modem line from the 2103. Connect the secondary protector to the 2103, as shown in Figure 6. Connect the modem cable to the end of the secondary protector.

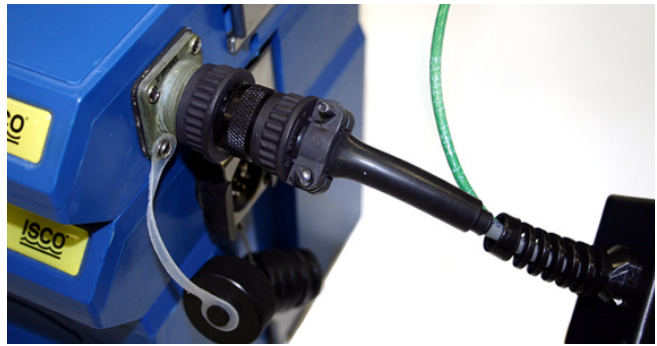


Figure 6: Connect Secondary Protector to 2103

8. Reinstall the 2103 and 2150. Route the secondary protector conductor wire and the GEC conductor cable through the manhole casing to the grounding point.

⚠ CAUTION

Do not loop the wires! This can form an inductor and permanently damage your equipment. The cables can be loose with easy bends around corners for convenient routing, but should be cut as short as practical.

9. Cut the conductors to the length necessary to connect to the ground point, leaving enough length to allow for the equipment to be serviced outside the manhole. Strip the conductors and connect them to the ground point, as shown in Figure 7.

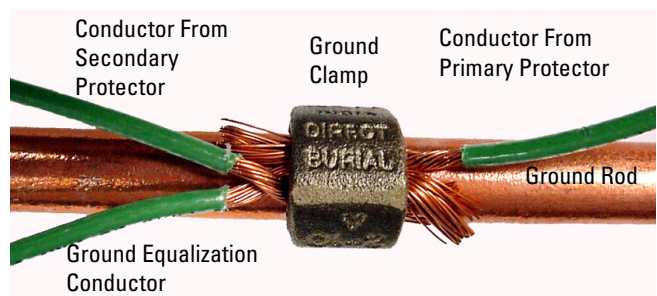


Figure 7: Connect Conductors to the Ground Rod

Last modified September 12, 2005

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