Document Title: Description, AN, Wire Splicing and Sealing Technique for Soil Moisture Sensors		Part # and Rev. 13471-00	
		Release Date:	
Rev.	Description	Revision By	Date

Production Filename: 13471 (In Product Library)

Path to Working Files: DecaDoc\Application Notes\Master

Dimensions: 8.5 inch wide, 11 inch tall

Material: Paper, 92 Bright White or better, 75g/m² or heavier

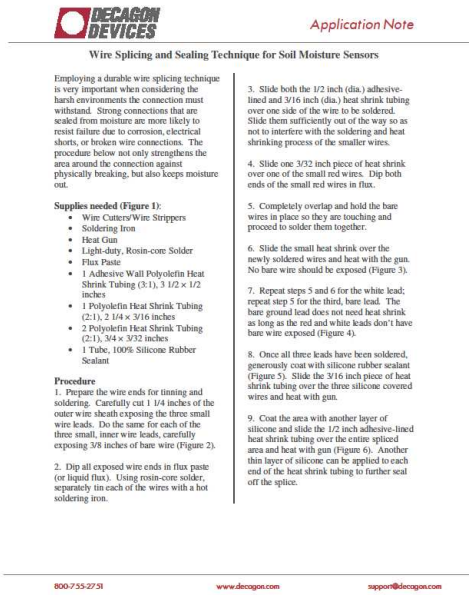
Colors: Color Print on White

Printer: HP Color LaserJet 8550-PS

Finish: None

Adhesive: None

Special Notes: Illustrations are Ref Only ** Not to Scale ** (Shown Page 1 of 3)



DECAGON DEVICES Application Note

Wire Splicing and Sealing Technique for Soil Moisture Sensors

Employing a durable wire splicing technique is very important when considering the harsh environments the connection must withstand. Strong connections that are sealed from moisture are more likely to resist failure due to corrosion, electrical shorts, or broken wire connections. The procedure below not only strengthens the area around the connection against physically breaking, but also keeps moisture out.

Supplies needed (Figure 1):

- Wire Cutters/Wire Strippers
- Soldering Iron
- Heat Gun
- Light-duty, Rosin-core Solder
- Flux Paste
- 1 Adhesive Wall Polyolefin Heat Shrink Tubing (3:1), 3 1/2 × 1/2 inches
- 1 Polyolefin Heat Shrink Tubing (2:1), 2 1/4 × 3/16 inches
- 2 Polyolefin Heat Shrink Tubing (2:1), 3/4 × 3/32 inches
- 1 Tube, 100% Silicone Rubber Sealant

Procedure

1. Prepare the wire ends for tinning and soldering. Carefully cut 1 1/4 inches of the outer wire sheath exposing the three small wire leads. Do the same for each of the three small, inner wire leads, carefully exposing 3/8 inches of bare wire (Figure 2).

2. Dip all exposed wire ends in flux paste (or liquid flux). Using rosin-core solder, separately tin each of the wires with a hot soldering iron.

3. Slide both the 1/2 inch (dia.) adhesive-lined and 3/16 inch (dia.) heat shrink tubing over one side of the wire to be soldered. Slide them sufficiently out of the way so as not to interfere with the soldering and heat shrinking process of the smaller wires.

4. Slide one 3/32 inch piece of heat shrink over one of the small red wires. Dip both ends of the small red wires in flux.

5. Completely overlap and hold the bare wires in place so they are touching and proceed to solder them together.

6. Slide the small heat shrink over the newly soldered wires and heat with the gun. No bare wire should be exposed (Figure 3).

7. Repeat steps 5 and 6 for the white lead; repeat step 5 for the third, bare lead. The bare ground lead does not need heat shrink as long as the red and white leads don't have bare wire exposed (Figure 4).

8. Once all three leads have been soldered, generously coat with silicone rubber sealant (Figure 5). Slide the 3/16 inch piece of heat shrink tubing over the three silicone covered wires and heat with gun.

9. Coat the area with another layer of silicone and slide the 1/2 inch adhesive-lined heat shrink tubing over the entire spliced area and heat with gun (Figure 6). Another thin layer of silicone can be applied to each end of the heat shrink tubing to further seal off the splice.