

## Lightnin Lab Procedure

**Title: Telemetry System Wiring**

**Author: Thomas J Klaben JR**

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### Description

The purpose of this document is to detail the installation of the wiring for the wireless strain gauge Telemetry System

### Created By

Thomas J Klaben JR

### Equipment List

- Soldering Iron
- Solder
- Telemetry Case
- Telemetry System Header Blocks
- 3 conductor 22AWG shielded, grounded wire
- 2 Aircraft Grade 7 Pin IP68 Female plugs
- Soldering stand
- Liquid Electrical Tape
- Adhesive Lined Heat Shrink wrap
- Heat Gun
- 4 colors of electrical tape to help coordinate wires
- Small flat head screwdriver

### Resources

Lab technician, contractor (if applicable)

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## Reference Documents

Telemetry Wiring Schematic “P16315 Telemetry Gauge Wiring Schematic”  
Wire Tables “P16315 Wire tables”

Procedure is assuming plugs out of case not in it. Must be changed pending case design.

## Procedure

1. Plug in Soldering Iron and wait a few minutes for it to heat up.
2. While iron is heating cut 3 or 4 sections of wire 8 inches long. For now leave All wires in assemblies
3. Place copies of wire tables in front of soldering station for reference.
4. While placing cable assemblies into plugs, use pieces of different colored tape, or tape with wire numbers written on them to be able to know what wire is which went they are soldered into the plug.
5. Drill 2 holes big enough for half of the wires each to go through the side of the case in it.
6. Take plug and wire pins JR1-(1-3) with 3 signal wires in a cable assembly. Using wire tables and cable assembly one as reference for to and from location of wires.
  - a. Take plug and separate into its two pieces.
  - b. Slide wires through the back side of plug (side without any pins) and remove a small portion of the shield and out cable to access wires, but leave shield ground cable
  - c. Using wire tables solder cable assembly 5 onto pins JR1(1-3)
  - d. Solder a 1 inch piece of wire to JP1-4 according to wire tables, then using wire tables solder the shield ground to this wire
7. Take plug and wire pins JR1-(5-7) with 3 signal wires in a cable assembly. Using wire tables and cable assembly one as reference for to and from location of wires.
  - a. Slide wires through the back side of plug (side without any pins) and remove a small portion of the shield and out cable to access wires, but leave shield ground cable
  - b. Using wire tables solder cable assembly 6 onto pins JR1-(5-7)
  - c. Solder Shield ground to wire coming off of pin JR1-4
8. Check for good connections and then close the pieces of the plug together
9. Check continuity of connections using a Multimeter and going from cable ends to pin coming out of plug.
10. If continuity is good coat the end of the plug where wires enter with a generous amount of liquid electrical tape to seal any gaps and allow curing for 24 hours.
11. Repeat steps 4-9 with plug JR2 and wire assemblies 7and 8.
12. Onto other ends of wires lay out all wires and slide them through a two large pieces of adhesive lined shrink wrap, one around the cables coming from each plug. Then place one plugs wires each through the hole in the case.
13. The wires for one header block may need to be cut shorter depending on orientation of telemetry system.
14. Using the numbers of these wires places earlier wire into header blocks TB1/15 and TB 16/30. Loosen Screws in block, slide in wire and tighten. Use the Schematic and wire tables for reference along with pictures shown here.
15. Check continuity of wires to header blocks once more.
16. Use heat shrink wrap going through the case and shrink it around wires in this location.
17. Use copious amounts of silicone sealant to hold wires in place and seal the holes in the case.
18. Use liquid electrical tape on the ends of the heat shrink wrap to seal it.
19. Allow to cure for 24 hours
20. Now telemetry system should be placed in case to ensure a good fit with the header blocks.
21. Installation Complete.



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## Acceptance/Validation Criteria

1. All Wires are installed, waterproof, and continuous.
2. All holes in case are sealed.
3. Telemetry system fits in case with all wires and connected

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## Appendices