TRH Installation Procedure

I. Purpose:

This document describes the procedures necessary for installing the TRH humidity probe with aspirator shield.

II. Cautions and Hazards:

- After the Determination of the Temperature Sensor Calibration and before Installation of the Probe into the Aspirated Radiation Shield, perform a verification of the probe as described in **PRO(TRH)-001.001**.

III. Requirements:

- Vaisala Temperature/Relative Humidity Probe.
- Adapter ring.
- Locking nut.
- PVC cover.
- Aspirator with the radiation shield already installed.
- Notebook PC with RS232/EIA422/Impulse adapter cable.
- Insulated box (e.g., an ice chest).
- Dewer flask or Styrofoam cup.
- Watertight cover for T/RH probe (e.g., a balloon).
- Reference Digital Thermometer.
- Vaisala HMI31/HMP35 Digital Temperature/Relative Humidity Meter.

IV. Procedure:

A. Determination Of The Temperature Sensor Calibration:

1. Connect the new Temperature/Relative Humidity Probe to the SMET datalogger.
2. Put a watertight cover (e.g., a balloon) over the tip of the SMET probe. Put about 5 cm of water into a Dewer flask or Styrofoam cup and place it in the insulated box. Put the Reference Thermometer and the SMET probe into the water and close the lid.
3. Connect a notebook PC to the SMET datalogger using the RS232/EIA422/Impulse adapter.
4. Select the ZENO System Function Menu and change the Real-Time Output Format to ASCII (1).
5. Quit to view the output message.

6. Compare the ZENO air temperature to the reference temperature and the ZENO resistance ratio to the Resistance/Temperature Table for the temperature.
7. If they disagree, then
   a) Change the multiplier in Process 4 up or down several hundredths or thousandths. The value of this constant should be about 13.000.
   b) Quit to view the output message.
   c) If the temperatures do not agree within ±0.05°C, repeat steps a) and b) until they agree.
8. Remove the cup or flask from the insulated box. Remove the watertight cover from
9. the SMET probe. Put the probe and the reference Vaisala sensor into the insulated box.
10. From the ZENO System Function Menu change the Real-Time Output Format to
11. none (0).
12. Use the Test Menu to view Scaled Sensor Data. Compare the ZENO and reference RH values. They should agree within ±4 %.
13. From the Data Output Menu change the Configuration Version Number to include the current date.
14. Save the changes to EEPROM.
15. If any changes are made to the software configuration, download the new Configuration into the notebook computer using the naming convention SMETsssn.txt, where "**sss**" is the datalogger serial number and "**n**" is an alphabetic version number.
16. Quit to terminate the connection.
17. Disconnect the notebook computer and connect the logger to ADaM.
18. Download the new SMET ZENO configuration to ADaM.
19. Send a copy or a listing of the new SMET configuration file to the SMET mentor.

    Note: After the Determination of the Temperature Sensor Calibration and before Installation of the Probe into the Aspirated Radiation Shield, perform a verification of the probe as described in **PRO(TRH)-001.**

B. **Installation Of The Probe Into The Aspirated Radiation Shield:**

1. Slide the adapter ring over the probe from the sensor end, up towards the cable.
2. Screw the locking nut into the top of the aspirator, opposite the cone and rain shield.

3. Slide the probe through the locking nut and adjust the position of the adapter ring so that the sensor end is even with the end of the inner tube of the shield (cone).
4. While holding the probe to prevent it from twisting, tighten the locking nut until the probe is held firmly; there is no need to over tighten the nut.
5. Use a small cable tie to attach the cable to the probe so that the cover slides over easily; try not to make a sharp bend in the cable.
6. Slide the cover over the probe so that the cable exits the cover through the notch in the cover; this notch should face the back, or motor end, of the aspirator.
7. Using some clear packing tape, tape the cover in place, by wrapping the tape around the seam.
8. Using some black cable ties secure the cable to the aspirator tube.

V. References:

None

VI. Attachments:

None.