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RESET - PIR Rad Sensor Replacement Procedure

I. Purpose:

This document describes the steps for removal and replacement of the PIR sensors at the Tropical Western Pacific site.

II. Cautions and Hazards:

- The instrument and ventilator must always be bolted down, except when it is transported or the level is adjusted.
- When removing the sunshield, as required when replacing radiometers, be careful not to slip the screw driver off the shield screws. This may scratch the dome.
- The shield should fit tightly around the plastic housing to force the air over the domes rather than out the sides. Take note of this after new radiometer is attached and sealed.
- The level of the instruments must be checked weekly to ensure that the PIR is level.
- The ventilator fan is always running. Never stick your fingers under the instrument or into the fan.
- If the ventilator motor is in need of replacement, please follow the **PIR Fan Motor Replacement Procedure PRO(PIR)-005**.

III. Requirements:

- Spare shipping box for radiometer.
- Replacement procedure form.
- Adjustable wrench.
- Screw driver.
- Spare bolts (10-32).
- Spare screws for sunshield.
- Wire snips.
- Note PC with RS232/EIA422/Impulse adapter cable.

IV. Procedure:

A. PIR Sensor Replacement:

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Before starting the following Procedure, make sure that the datalogger data has been uploaded recently to ADaM. Accessing the ZENO software configuration can lead to deletion of all old data. While performing this procedure, log serial numbers and configuration file differences on the Excel formatted, replacement record forms (example attached).

1. Prepare a replacement procedure form with all serial numbers, etc. Be sure to complete this form and get information from both of the parts being swapped.
2. Remove the 25cm diameter ventilator cover shield; there are three (3) screws to remove.
3. Unscrew the three (3) screws holding the sensor to its mount in the ventilator.
4. Snip tie downs holding the cable routing in place.
5. Unplug the PIR from the DAQS (Data Acquisition System). Do not attempt to unplug the cable from the PIR.
6. Place the removed radiometer into its original, padded black box.
7. Before installing and leveling the new sensor, check inside the ventilator for any debris or bugs. If the ventilator motor needs replacement, follow **PIR Fan Motor Replacement Procedure PRO(PIR)-005**.
8. Install the new sensor; ensure that the connector path is pointed to the equator.
9. Level the new sensor; adjust the leveling screws and center the built-in leveling bubbles.
10. Tighten bolts evenly after leveling.
11. Connect the PIR to the datalogger; see the GNDRAD or SKYRAD Sensor configuration Table for the Proper connection.
12. Reinstall the 25 cm diameter shield.
13. Using new tiedowns, reattach loose cables to stand.

B. ZENO Configuration:

When installing or replacing a Radiometer on SKYRAD or GNDRAD, the sensor calibration and a new configuration version number must be entered into the ZENO configuration. Follow the steps below to ensure proper ZENO configuration.

1. Connect a notebook PC to the RAD datalogger using the RS232/EIA422/Impulse adapter.

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2. Advance or jump to the appropriate record in the Sensor Menu. Refer to the GNDRAD or SKYRAD ZENO Sensor Configuration Table, attachments 1 and 2.
3. Enter the calibration values for the new sensor (into the datalogger).

Note: If a calibration of the datalogger documented a voltage offset for this channel, determine the appropriate Sensor Menu offset by multiplying the voltage offset by the sensor calibration. An offset less than 1 W/m² is not significant. Note that the Sensor Menu offset requires the opposite sign of the voltage offset.

If an offset is used for this channel, determine the new Sensor Menu offset by dividing the old offset by the old sensor calibration and multiplying it by the new sensor calibration. (Note: the sensor calibrations are usually sufficiently close to one another to use the same offset). An offset less than 1 W/m² is not significant.

4. Change the Configuration Version Number in the Data Output Menu to include the current date.
5. **Save the changes to EEPROM.**
6. Use the Test Menu to view the Raw and Scaled (calibrated) data.
7. When installing or replacing a PIR or UVB, view the temperature corrected data by selecting the System Functions Menu and changing the Real-Time Output Format to 1.
8. Once satisfied that the data are correct, disable the output message by changing the Real-Time Output Format to 0.
9. Download the new Configuration to the notebook computer using the naming convention GND^{sss}.txt or SKY^{sss}.txt, where “sss” is the datalogger serial number and “n” is an alphabetic version number.
10. Terminate the connection by selecting “Quit.”
11. Disconnect the notebook computer and reconnect the datalogger to ADaM.
12. Download the new ZENO configuration to ADaM.
13. Be sure to record all new serial numbers on the daily checklist and site operations log. Include old and new serial numbers info in site reports, etc. (also include date/time.)
14. Make sure all information is filled out on the instrument replacement procedure form.
15. Enter the date, start-time, end-time, and comments into the Site Data Log.
16. Send the sensor serial number and a copy or a listing of the RAD configuration file to the sensor and datalogger mentors.

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V. References:

1. E-mail 10/1/95 from Mike Reynolds "Replacement of Radiometers," Draft procedure from Dick Hart 8/2/95.

VI. Attachments:

1.

SKYRAD SENSOR CONFIGURATION TABLE

Sensor or Instrument	Designation	Sensor Menu No.	Connector No.
Global Pyrgeometer	PIRG	1	2
Diffuse Pyrgeometer	PIRD	2	6
Global Pyranometer	PSPG	3	1
Diffuse Pyranometer	PSPD	4	5
Pyroheliometer	NIP	5	7
Infra-Red	IRTUP	6	3
UVB Temperature	UVB-T	7	4
UVB Signal	UVB-UV	8	4

2.

GNDRAD SENSOR CONFIGURATION TABLE

Sensor or Instrument	Designation	Sensor Menu No.	Connector No.
Upwelling Pyrgeometer	PIRG	1	6
Upwelling Pyranometer	PIRDN	2	5
Upwelling IRT	PSPDN	3	3
Daytime Net Radiation	IRT-DN	6	9
Nighttime Net	NET+	7	9
	NET-		