Introduction

This document explains how to integrate the Delta-T SPN1 Sunshine Pyranometer onto the NRG SRA tower. The process includes configuring the logger channels to read the sensor signals, wiring the sensor to the SymphoniePRO logger and the mechanical installation.

The Delta-T SPN1 is a thermopile based pyranometer which provides signals for Global Horizontal Irradiance (GHI) and Diffuse Irradiance (DIF). The GHI and DIF outputs are proportional to the solar radiation, measured in Watts per square meter (W/m^2).

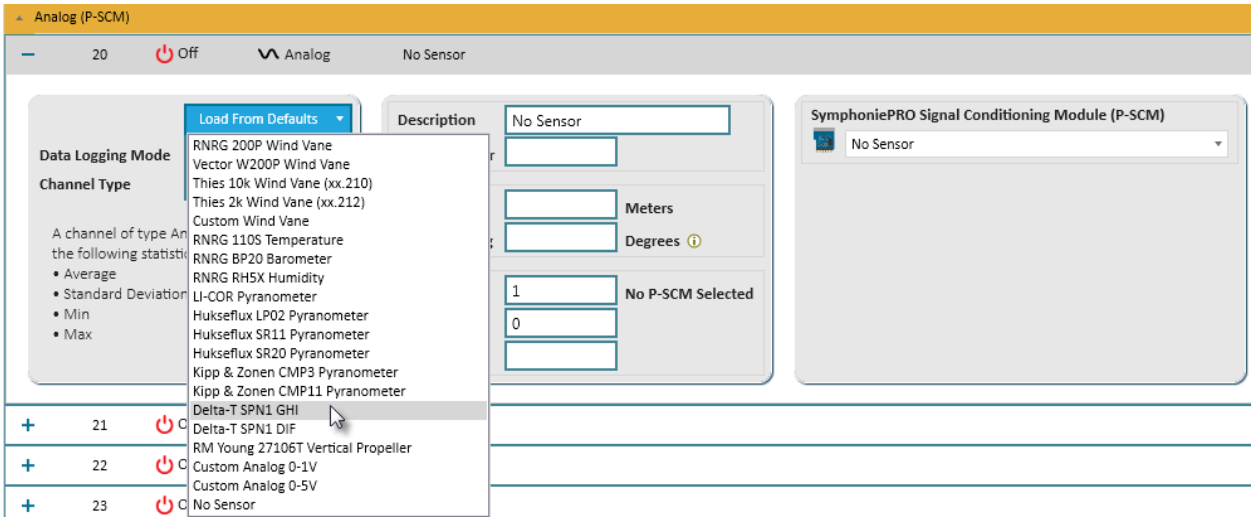
Configuring the SymphoniePRO Data Logger

The SPN1 can be installed on channels 16 through 19 without a P-SCM, or on channels 20 through 26 with two #9132 P-SCM cards. The sensor requires two channels if both GHI and DIF are required.

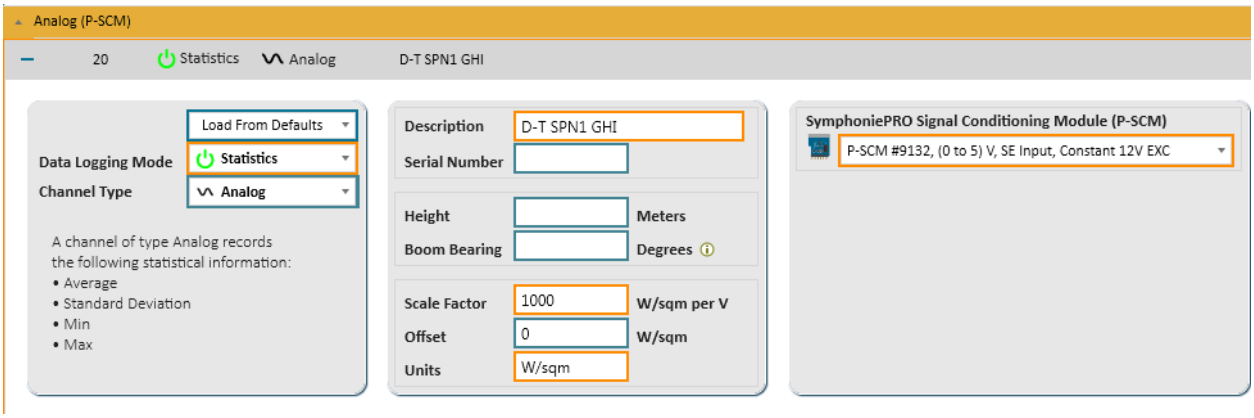
The following instructions show the sensor being installed on channels 20 and 21, which will require P-SCM cards. If the sensor is being installed on channels 16-19 the process is the same except for the use of P-SCMs.

Configure Channels tab:

1. Connect the data logger to a PC running the SymphoniePRO Desktop Application via USB cable. Click on the site in the Fleet View and navigate to the Channels tab.
2. Expand the channel that the sensor will be installed on (this example uses channels 20 and 21 – which require P-SCM cards).
3. Click on 'Defaults' can choose 'Delta-T SPN1 GHI' from the drop down list:

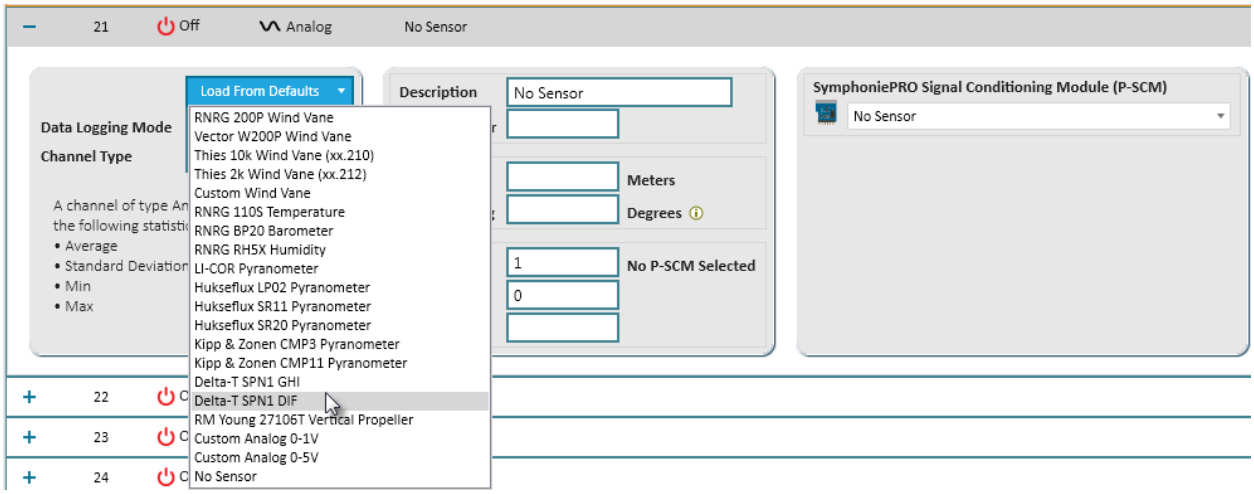


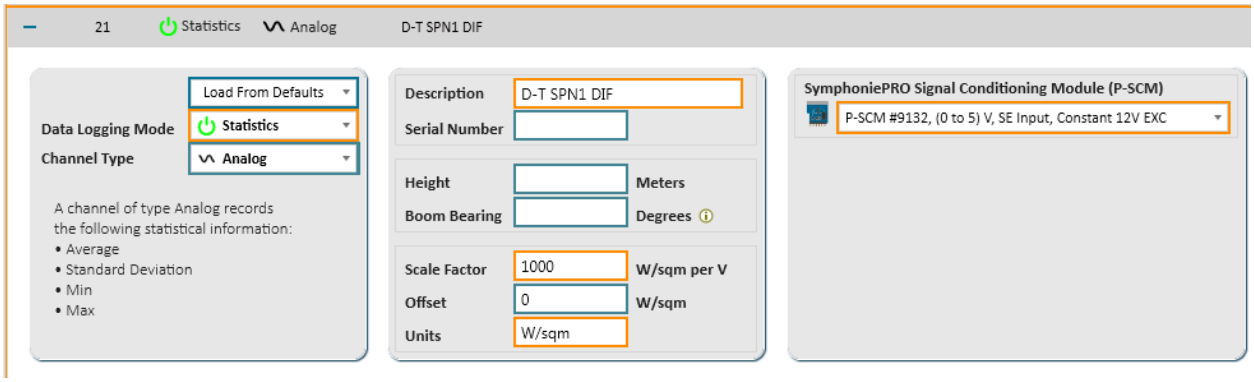
4. Upon selecting the sensor the application will fill in most of the required fields:



- Add the sensor's Serial Number and installed height.
- Make sure a #9132 P-SCM is installed in the logger P-SCM tray.

5. Repeat the process for DIF:





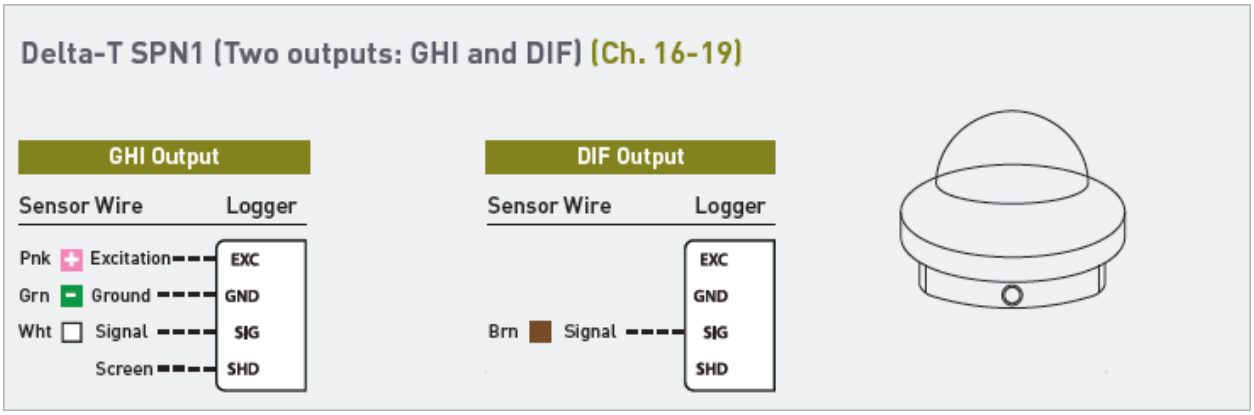
- Add the sensor's Serial Number and installed height.
- Make sure a #9132 P-SCM is installed in the logger P-SCM tray.

Wiring the SPN1 into the Wiring Panel:

The SPN1 sensor ships with a digital cable and an analog cable. Only the analog cable will be needed.

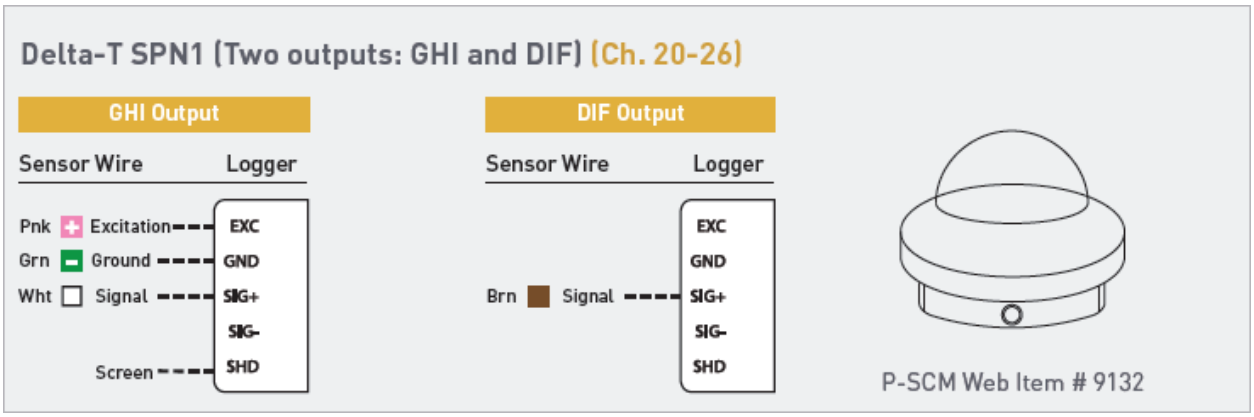
Not all of the wires on the analog cable will be used. For the remaining wires, tape them individually and then tape them back out of the way.

Installed on Channels 16 – 19:



- The 'Screen' is the thicker black wire and will only be installed on one of the two channels.

Installed on Channels 20 – 26:



- The 'Screen' is the thicker black wire and will only be installed on one of the two channels.

Physical Installation:

The SPN1 pyranometer can be installed on either the SRA tower's top plate or on a Plane of Array boom. The photos below shows the sensor being installed on the SRA tower's top plate.

Required tools:

- 10 mm wrench
- 10 mm nut driver
- 8 mm wrench
- 8 mm nut driver

- Soft cloth

Required hardware (included with sensor):

- 3 x leveling posts
- 3 x lock washers
- 3 x large M5 lock nuts
- 3 x small M5 lock nuts

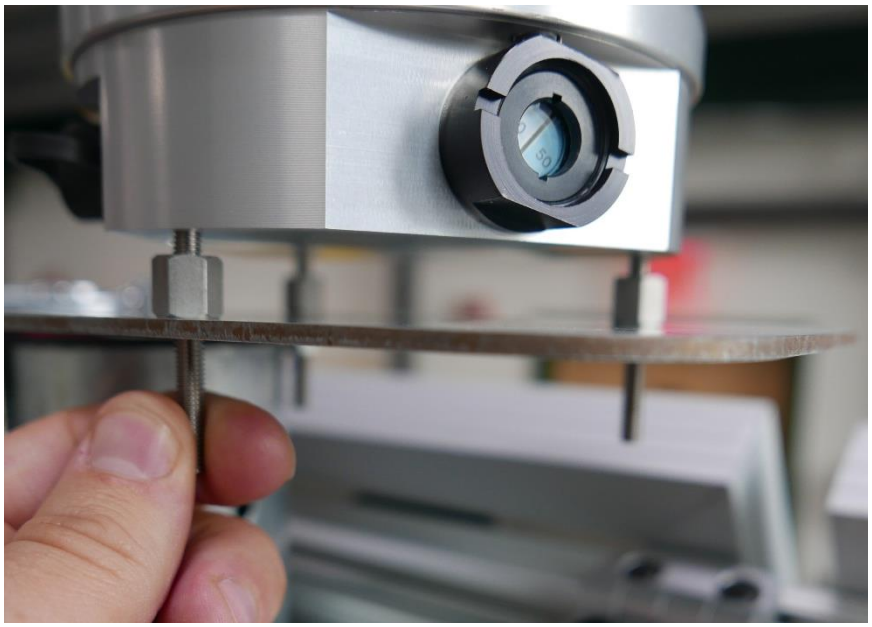
1. Open the SPN1 sensor box, take the sensor out and place it upside down in the foam packing insert.

2. Insert the leveling posts into the threaded holes in the bottom of the sensor:
    - The smaller end should be screwed into the sensor, leaving the longer end sticking up.
    - Thread the post into the sensor about 75% of the way in (don't bottom it out).

3. Attach the 'Logger Cable' to the SPN1. This is the cable with the nine color coded leads.
    - The DB9 RS232 cable is not used.

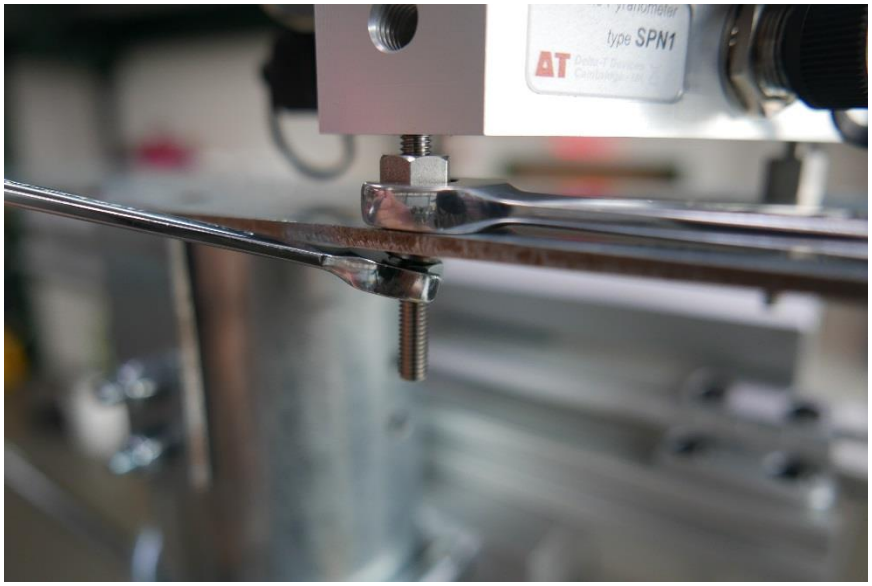
4. Gently pick up the sensor and place it onto the SRA tower's top plate or Plane of Array boom. Both mounting platforms have three unthreaded holes that the leveling posts will fit through.
    - Note that orientation of the sensor is not critical per the manufactures guidelines.

5. Twist the leveling posts until the bubble in the bubble level on the top of the sensor is in the middle of the black circle.



6. Put a lock washer and nut on the bottom of each post and tighten them with your fingers until snug.
    - Use the small M5 nuts on the SRA tower's top plate because one of the posts is very close to the edge of the tower tube.
    - Use the large M5 nuts on the Plane of Array boom.

7. Use a nut driver and wrench or two wrenches to tighten the bottom nuts. The nut on the leveling post should remain still to keep the sensor level during tightening.



Maintenance

Cleaning

Pyranometers should be cleaned regularly to keep the glass dome clean. Use a soft cloth to wipe away dust and dirt. If the dome needs a more thorough cleaning use a damp cloth with a mild detergent or isopropyl alcohol on it.

Desiccant

The SPN1 has a desiccant installed inside it, and it comes with a spare desiccant pack. Regularly check the window of the desiccant cartridge to see if it needs to be changed. The indicators will turn pink when replacement is required.

- Refer to the sensor manual for instructions on replacing the cartridge.

Leveling

The sensor's leveling should be checked periodically to confirm that the tower has not shifted over time. If the bubble level is no longer in the center of the black circle the sensor should be re-leveled.

Loosen the nuts on the bottom of the leveling posts, twist the posts to level the sensor and then tighten the nuts back down to secure the sensor.