



Introduction

This document explains how to install & use the Delta-T SPN1 Sunshine Pyranometer with the NRG SymphoniePRO logger. 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/m²).

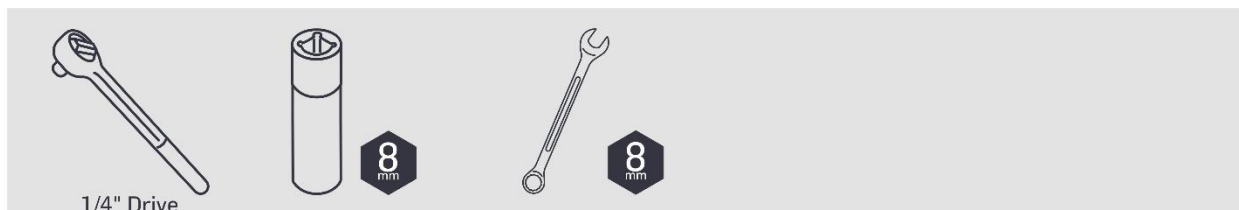
Parts List/BOM

NRG Part Number	Part Description	Part Specification	Quantity
9058	Delta-T SPN1 Pyranometer	Thermopile pyranometer	1
11280*	Threaded Standoff	M5x0.8 Male-Male threaded Stainless	3
11283*	Split-lock Washer	M5 Stainless	3
11284*	Nut	M5x0.8 Stainless	6

**Part of mounting kit #10531 | Included with SPN1 when purchased from NRG*

Installation

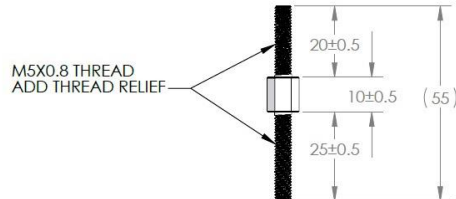
Tools





Procedure

- 1 Open the SPN1 sensor box, take the sensor out and place it upside down in the foam packing insert.
- 2 Insert the M5 male-male standoffs into the threaded holes in the bottom of the sensor.



- The shorter end (20mm) should be screwed into the sensor, leaving the longer end (25mm) sticking out.
- Thread the post into the sensor about 75% of the way in, leaving ~7mm of threads visible.



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



- 4 Pick up the SPN1 and place it onto the mounting plate, carefully feeding the threaded standoffs through the appropriate mounting holes.
 - It is assumed that the mounting plate has already been attached to your tower & leveled.
 - There may be several compatible mounting plates offered, so consult the instructions for your mounting plate to ensure compatibility and to see how to attach that plate to your tower.

Note: Per the instructions of the manufacturer, orientation of the sensor is not critical, but best practice is to install the sensor with the cable towards the nearest pole.

- 5 Twist the leveling posts until the SPN1 is level on the mounting plate. Use the integrated bubble level to confirm.

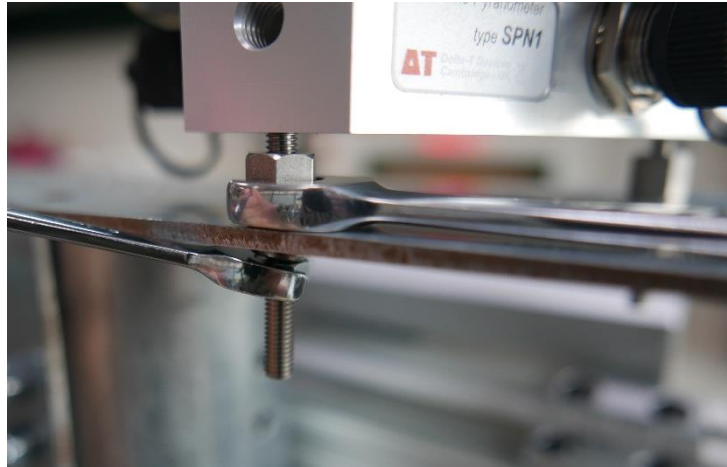
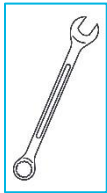
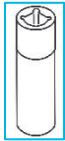


- 6 Place a lock washer & nut on the threads below the mounting plate of each standoff. Thread until the washer is against the bottom of the mounting plate.





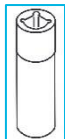
- Secure the standoffs to the plate using the deep socket & wrench (or two wrenches, as shown below). **Be careful to maintain the orientation of the standoff so as not to tilt the sensor at all.**



- To further secure the SPN1, add the second set of M5 nuts to the standoff threads below the mounting plate.



Again, be careful to maintain the orientation of the standoffs while tightening with the deep socket.



The SPN1 is now attached to the mounting plate, leveled, and ready to connect to the SymphoniePRO logger.

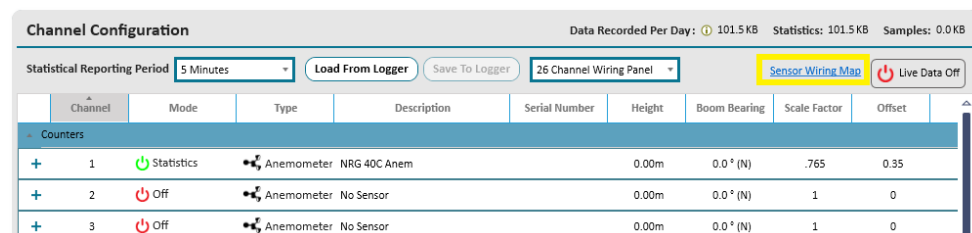


Wiring

The SPN1 sensor ships with a digital cable and an analog cable. Only the analog cable is used when connecting to the PRO logger.

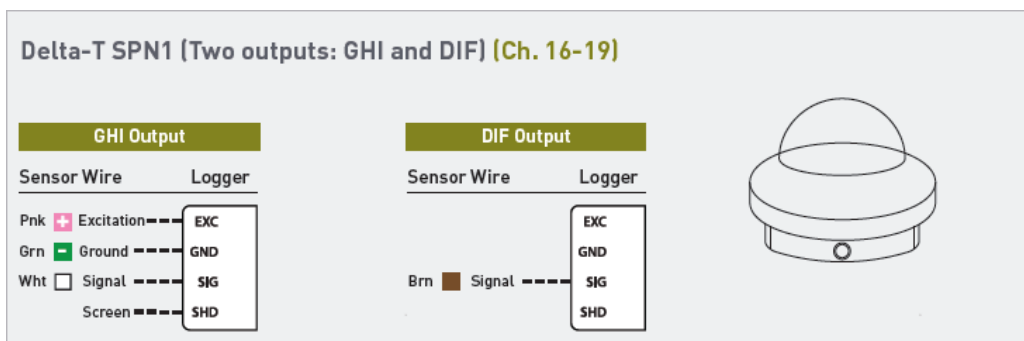
Not all the wires in the analog cable will be used. For the remaining wires, the best practice is to individually tape the ends, then tape them together and tuck them back out of the way.

Note: The following wiring diagrams can also be found through the PRO Desktop App. Click on the “Sensor Wiring Map” link in the top right corner of the Channel configuration box in the “Channels” tab.

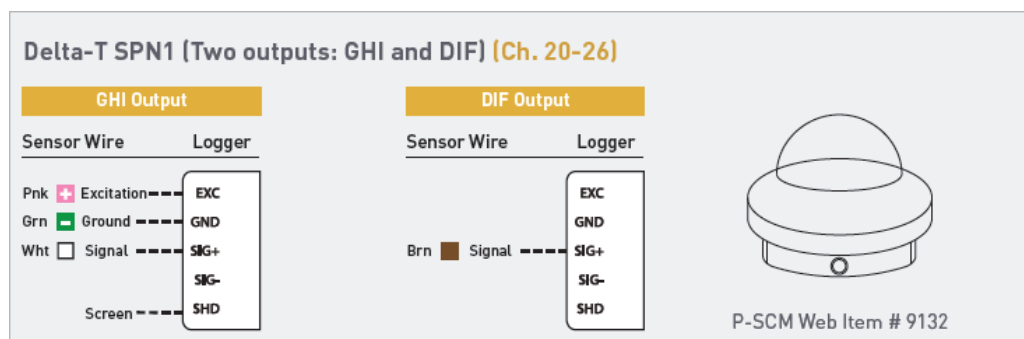


→ The ‘Screen’ is the thicker black wire and will only be installed on one of the two channels.

Channels 16 – 19



Channels 20 – 26*



*Must use P-SCM #9132 for each channel between 20-26 that the SPN1 is connected to.



Configuring the SymphoniePRO Data Logger

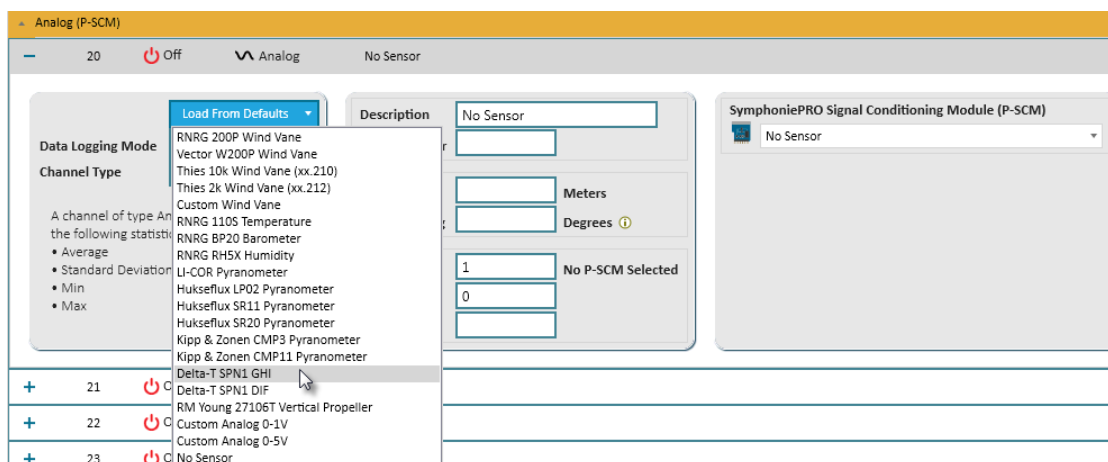
The SPN1 can be installed on channels 16 through 19 without a P-SCM, or on channels 20 through 26 with two #9132 P-SCM cards. The sensor requires two channels if both GHI and DIF are required.

For DNI calculations, the Delta-T SPN1 DIF output is utilized and often paired with a higher accuracy GHI output from another pyranometer on the MET tower.

Note: 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' and 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 on another channel 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.