# NRG PVT1 PV TEMPERATURE SENSOR
## TECHNICAL PRODUCT SHEET



### Overview

The NRG PVT1 module temperature sensor provides PV module temperature for PV performance monitoring. The sensor includes an adhesion kit for affixing the sensor to PV modules to ensure proper installation, and is compatible with the NRG SymphoniePRO data logger as well as data acquisition systems which can accept a 2- or 4- wire thermistor input.

### Specifications

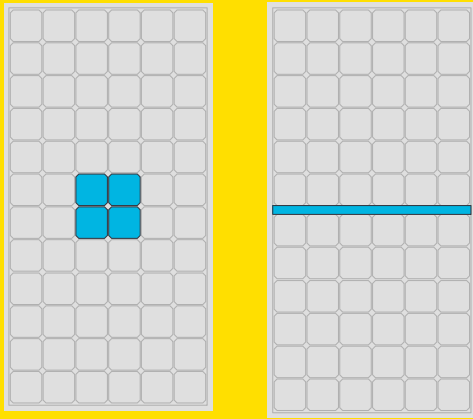| Measurement Range | -55 °C to 150 °C (-67 °F to 302 °F) |
|---|---|
| Signal Type | 10 kΩ NTC thermistor |
| Transfer Function<br><br>Steinhart-Hart Coefficients (sensor can be programmed to offer temp in °F) | A = 0.001032<br>B = 0.0002387<br>C = 0.000000158 |
| Accuracy | ± 0.2 °C from 0 to 70 °C (±0.36 °F from 32 to 158°F) |
| Supply Voltage | N/A |
| Supply Current | 15 µA maximum (supplied by logger) |
| Mounting | Attaches to back of PV panels with adhesive tape |

### Tools Required
- Small NRG screwdriver
- Alcohol prep wipes
- Adhesive strain relief stickers

### Recommended Maintenance
- Inspect the sensor and overlay tape to verify that it is securely attached to the PV module (monthly).
- Inspect the sensor body and cable for wear and tear (annual).
- Review data against a reference to verify accuracy (annual).



Scan QR Code for the Installation Quick Guide Video

**NRGSystems**®

**Monofacial\*** **Bifacial\***

**1**

\*Typical placement shown – contact PV module OEM for model-specific recommendations.

**2**

**NRG PVT1 PV Temperature Sensor Installation Process**

1. Sensor placement.

   *Monofacial module: Install sensor on module back sheet located in center of a cell nearest the center of the module. Any highlighted cell will suffice.*

   *Bifacial module: Unless otherwise specified, place the sensor in a gap between cells in the center of module.*
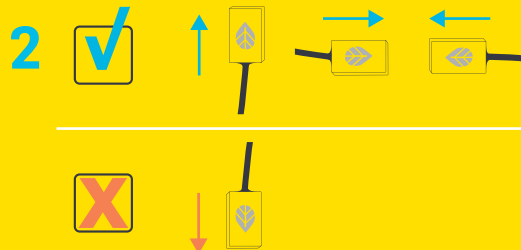
   a. Thoroughly clean the location where the PVT1 sensor will be installed using the provided alcohol wipe. Let the panel dry before proceeding to next step.

   b. Peel the backing off the sensor and place it onto the panel. Hold in place for 15 seconds.

   c. Remove the round circular sticker and cover the PVT1 sensor.

   d. Use the four strain relief stickers to secure the cable to the panel.

   e. Run the sensor wire from the panel to the data logger, making sure to secure the cable in place. Wire the sensor cable into the data logger.
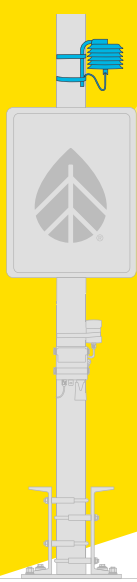
2. Sensor orientation.

   Do not orient inverted. *For single-axis tracking installations, orient the sensor cable along the axis of the torque tube.*
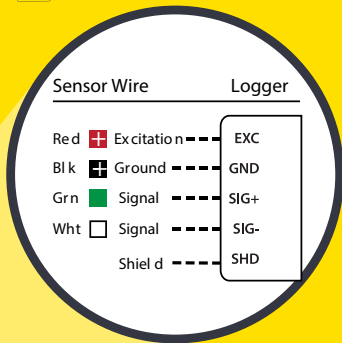
3. Wire the sensor cable into the data logger.
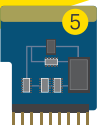
4. Program the data logger as outlined below

**3**

**Sensor Wire          Logger**

| Red | Excitation | --- | EXC |
| Blk | Ground | --- | GND |
| Grn | Signal | --- | SIG+ |
| Wht | Signal | --- | SIG- |
|  | Shield | --- | SHD |

For a two-wire configuration (when not using a SymphoniePRO data logger) the wiring is as follows:
**Green - Signal+**
**White - Signal-**

**LOGR-S**          **SymPRO**

| Description | NRG PVT1 PV Temp | ① |
| Serial Number |  | ② |
| Height |  | Meters | ③ |
| Boom Bearing |  | Degrees ⓘ |

**Sensor Transfer Function**

| Scale Factor | 1 |
| Offset | -273.15 | ④ |
| Units | C |

⑤

**Enable Configuration**

☑ Enabled

| Sensor Type | Description | Units | Slope | Offset |
|---|---|---|---|---|
| NRG PVT1 ① | NRG PVT1 | deg_C | 1.00000 | 0.00000 |

| Serial Number | Height (m) | Elevation Angle | Azimuth Angle | Modbus Address |
|---|---|---|---|---|
| 000000000 ② | 0.00 ③ | 0.0 | 0.0 ④ | 10036 |

**4   Data Logger Programming**

For SymphoniePRO, use the NRG SymphoniePRO Desktop Application.

For LOGR-S Data Loggers, use the web UI by navigating to the LOGR's IP address in a web browser.

Navigate to the Channel Configuration tab or web page (depending on the logger type) to configure the sensor.

1. Choose "NRG PVT1 PV Temp" from the sensor selection drop- down menu.
2. Enter the sensor's serial number (found on the end of the sensor cable).
3. Enter the height (elevation) of sensors from the ground.
4. Enter the direction (azimuth) the sensor is installed on the tower.
5. If using a SymphoniePRO data logger, insert P-SCM 9420 into the appropriate P-SCM slot in the front of the logger.

**For more information:**

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ISO 9001: 2015 Certified
ISO 14001: 2015 Self-Certified

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