



## **NRG INSTRUCTIONS**

### **NRG BP60 Pressure Sensor**



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## INTRODUCTION

The NRG BP60 Pressure Sensor (beta introduced May, 2020) has a similar form factor as the NRG BP20, and utilizes a new signal transducer which lowers uncertainty. Sensors are individually serialized, and compatible with NRG SymphoniePRO and SymphoniePLUS3 loggers. For traceability, a manufacturing quality certificate is available for each individual sensor. A calibrated version of the sensor is available which includes a calibration certificate from an ISO 17025 accredited laboratory.

## SENSOR IDENTIFICATION

The BP60 can be identified by the label on the cable, which contains the “BP60” model name, serial number (9395NNNNNN), wiring information, and barcode.

*Shown with optional mounting bracket item 12132*



The BP60 is available with the following cable lengths:

NRG Item Number	Sensor Description
9395	BP60 Barometric Pressure Sensor   1.5m cable
9397	BP60 Barometric Pressure Sensor   67m cable
9398	BP60 Barometric Pressure Sensor   90m cable
9399	BP60 Barometric Pressure Sensor   110m cable

The calibrated version of the sensor, the BP60C, includes a 1.5m cable:

NRG Item Number	Sensor Description
9396	BP60C Barometric Pressure Sensor   1.5m cable



### POWER REQUIREMENTS

The BP60 requires an excitation voltage of (5 to 15) V DC and has an average current consumption of 1.25 mA. The sensor has a start-up time of 25 mSec and can be operated using a 5V pulsed excitation voltage source (natively supported by SymphoniePRO and SymphoniePLUS3 loggers), further reducing overall power consumed. When using a third party logger capable of pulsed excitation operation, please allow a minimum of 25 mSec settling time between the initial power-up and reading the sensor output voltage.

To reduce the risk of fire in the case of a sensor malfunction or short circuit, the available current to the BP60 should be limited to 50 mA or less by the power supply. When using the BP60 with NRG data loggers, the excitation is already current limited to below the recommended value and no further actions are needed by the customer.

***For optimal performance, deploy the BP60 on a logger channel configured for 5V pulsed excitation.***

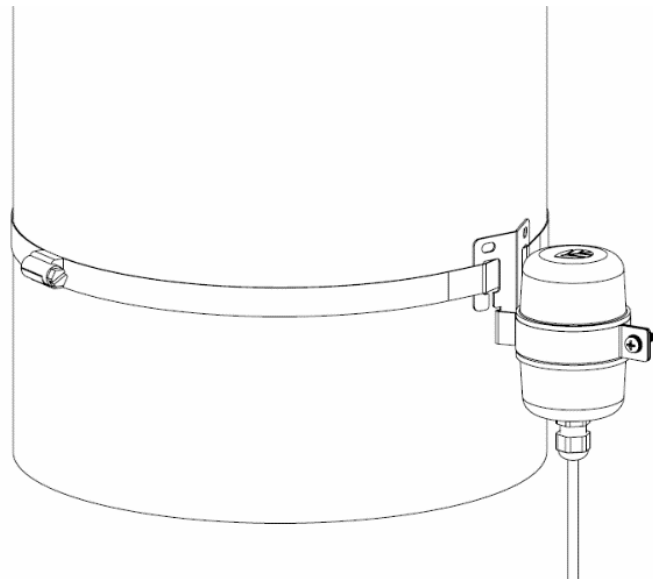
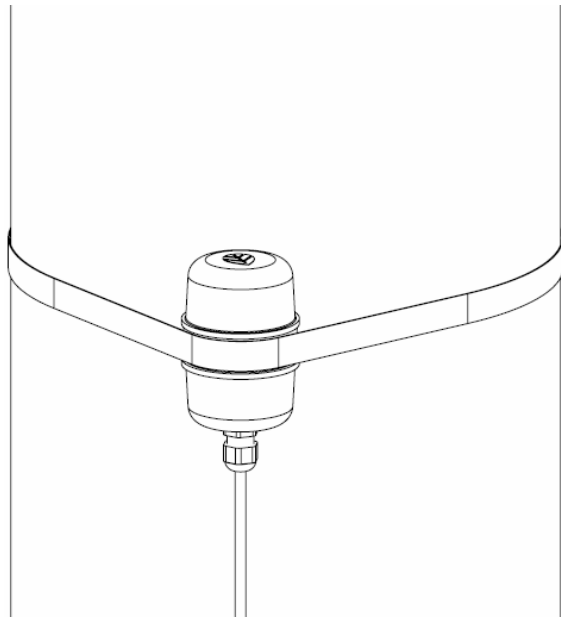
### MOUNTING

For maximum protection against ingress, NRG recommends mounting the BP60 inside a data logger shelter box. This practice is recommended but not required.

A hose clamp is included with each sensor to mount it directly to a met tower, preferably beneath a data logger shelter box. The hose clamp accompanying the sensor can be tightened with a flat head screw driver or a 5/16" nut driver.

An optional mounting bracket is sold separately for secure mounting up-tower, utilizing the hose clamp included with the sensor.

A drip loop should be left in the sensor wire to allow water to run off the cable.



## SYMPHONIEPRO

### Compatibility

The NRG BP60 pressure sensor defaults are available in SymphoniePRO Desktop Application 3.9.X and later. There are no additional logger firmware requirements.

**NOTE: It is best practice to update your desktop software and logger firmware before performing logger configuration and/or data processing tasks. The latest versions of software, firmware and documentation can be downloaded from this page: <https://www.nrgsystems.com/support/product-support/>.**

### Wiring

Wire the NRG BP60 to the SymphoniePRO following the table below.

**Built in Channels 13-15 and 16-19**

Channels 13-15 and 16-19 (no SCM required)		
BP60 Connection	Color	SymphoniePRO Logger
+	Red	Connect to 13-19 "EXC" terminal
Signal	Clear	Connect to 13-19 "SIG" terminal
-	Black	Connect to 13-19 "GND" terminal
Shield	Braid	Connect to 13-19 "SHD" terminal



### P-SCM Channels 20-26

<i>Channels 20-26 (use P-SCM #9130)</i>		
<b>BP60 Connection</b>	<b>Color</b>	<b>SymphoniePRO Logger</b>
<b>+</b>	Red	Connect to 20-26 "EXC" terminal
Signal	Clear	Connect to 20-26 "SIG +" terminal
<b>-</b>	Black	Connect to 20-26 "GND" terminal
Shield	Braid	Connect to 20-26 "SHD" terminal

### Channel Configuration

Create the following configuration in the SymphoniePRO Desktop Application (Version 3.9.X or later). Note, if you do not see the BP60 in the "Load From Defaults" drop-down menu, please update your software from the "Services and Support" section of our website (<https://www.nrgsystems.com>).

### *Default Scale Factors*

The SymphoniePRO Desktop Application contains default scaling information for the BP60 pressure sensor in millibars (mb).

- Scale Factor: 243.87100
- Offset: 494.42666

If using the calibrated version of the sensor, the BP60C, refer to the individual sensor's calibration report for the calibrated scale factor and offset.

### ***Built in Channels 13-15, and 16-19***

The BP60 can be installed on logger channels 13-15 and 16-19 without the need for a P-SCM. Choose "NRG BP60 Pres" from the "Load From Defaults" drop down menu.



Analog 2.500 V or 5 V Excitation

13 Statistics Analog NRG BP60 Baro 9395000046 2.20m 0.0 ° (N) 243.871 494.42666 hPa

**Data Logging Mode** Load From Defaults Statistics

**Channel Type** Analog

A channel of type Analog records the following statistical information:

- Average
- Standard Deviation
- Min
- Max

**Description** NRG BP60 Baro

**Serial Number** 9395000046

**Height** 2.2 Meters

**Boom Bearing** 0 Degrees

**Sensor Transfer Function**

Scale Factor 243.87100 hPa per V

Offset 494.42666 hPa

Units hPa

**Excitation**

Mode Pulsed On

Voltage 5 V

### P-SCM Channels 20-26

The BP60 can be used on channels 20-26 when the logger is equipped with P-SCM item #9130 [P-SCM #9130, (0 to 5) V, SE Input, Pulsed 5V EXC]. This is useful if Channels 13-19 are already in use for other sensors. Choose “NRG BP60” from the “Load From Defaults” drop down menu.

26 Statistics Analog NRG BP60 Baro 9395000047 2.20m 0.0 ° (N) 243.871 494.42666 hPa

**Data Logging Mode** Load From Defaults Statistics

**Channel Type** Analog

A channel of type Analog records the following statistical information:

- Average
- Standard Deviation
- Min
- Max

**Description** NRG BP60 Baro

**Serial Number** 9395000047

**Height** 2.2 Meters

**Boom Bearing** 0 Degrees

**Sensor Transfer Function**

Scale Factor 243.87100 hPa per V

Offset 494.42666 hPa

Units hPa

**SymphoniePRO Signal Conditioning Module (P-SCM)**

P-SCM #9130, (0 to 5) V, SE Input, Pulsed 5V EXC



## SYMPHONIEPLUS3

### Install SCM card

In order to use the BP60 Pressure sensor on the SymphoniePLUS3 logger, Symphonie SCM Card 110S Temperature #3153 is required.

**Do not use SCM 3151 BP20!**



This SCM can be installed in any of the 7 SCM slots which correspond to channel ranges 4-6 and 9-12.



### Wiring

#### Channels 4-6 or 9-12

Wire the sensor according to the following table and diagrams.

<b>Channels 4-6, 9-12 (requires 110S Temperature SCM 3153)</b>		
<b>BP60 Connection</b>	<b>Color</b>	<b>SymphoniePLUS3 Logger</b>
<b>+</b>	Red	Connect to channel "EXC" terminal
Signal	Clear	Connect to channel "SIG" terminal
<b>-</b>	Black	Connect to channel "GND" terminal
Shield	Braid	Connect to channel "SHD" terminal





### Channel Configuration

The BP60 has a different default scaling than the BP20.

***Do not use the BP20 settings found in SDR!***

#### ***Example***

To configure the BP60 on channel 4 (for example) do the following:

- On the logger keypad, press [Home > 4. Settings > 2. Analog Settings > Press “4” to configure channel 4 > Press the “↓” arrow to see the default list of sensors]
- Scroll down the list of default sensor settings and choose “NRG 110S Pres C” by pressing “Set”.
  - Edit the name to “NRG BP60 Pressure” by using the keypad. The ↑ arrow will capitalize a letter and the “1” button will erase characters. Press “Set” when finished.
  - Enter the scale factor “0.5960” and press “Set” (unless using the calibrated scale factor)
  - Enter the offset “494.4267” and press “Set” (unless using the calibrated offset)
  - Edit the units to “hPa” and press “Set”.
  - Set the sensor height (in meters) and press “Set”.
  - Enter the sensor’s serial number (or the last 5 digits of it) and press “Set”.
- With the sensor programmed and the wires connected to the logger, verify the sensor’s functionality by pressing [Home > 1. Measurements > Press the “↓” arrow until you see the channel that the sensor has been installed on. Check the current Pressure from a different source and confirm that the sensor is reading accurately.

Please refer to the SymphoniePLUS3 manual for more detailed information on entering information directly into the logger.

Configure as follows:

- Scale Factor: 0.5960
- Offset: 494.4267

Again, if using the calibrated version of the sensor, the BP60C, refer to the individual sensor’s calibration report for the calibrated scale factor and offset.



Site Information Editor - 000115037.nsd

File

Site Information		Sensor Information	
Site #	0001	Channel #	6
Site Desc	Windy Willows	As of	Baseline
Project Code	A123	Description	NRG BP60 Pressure
Project Desc	Mt Ferrara	Details	
Site Location	Hinesburg	Serial Number	000048
Site Elevation	000325	Height	1.8 m
Base Time Zone	(UTC-05:00) Indiana (East)	Scale Factor	0.596
Latitude	N 014° 21.944'	Offset	494.4267
Longitude	E 077° 32.058'	Print Precision	0.1
Serial Number (5-digit suffix)	15037	Units	hPa
Hardware Rev.	034-035-057	Notes	
Encryption Code:	<input type="checkbox"/> 0000	History	Delete
		Make New Change	

## SPECIFICATIONS

See [www.nrgsystems.com](http://www.nrgsystems.com) for up to date specifications

## ASSOCIATED ITEMS LIST

Item #	Description
14610	BP60 Barometric Pressure Sensor   1.5m cable
14612	BP60 Barometric Pressure Sensor   67m cable
14613	BP60 Barometric Pressure Sensor   90m cable
14614	BP60 Barometric Pressure Sensor   110m cable
14611	BP60C Barometric Pressure Sensor   1.5m cable
12132	Mounting Bracket   BP60



## Sensors | BP60 Pressure Sensor

9130	P-SCM   0 to 5 V, SE Input, Pulsed 5V EXC <i>(for use on PRO channels 20-26)</i>
3153	Symphonie SCM Card   110S <i>(for use on PLUS3 channels 4-6 or 9-12)</i>