

T60 TEMPERATURE SENSOR

This next generation ambient temperature sensor builds on the NRG 110S's trusted design, offering improved temperature accuracy and long-term reliability in harsh environments.



	4.6m cable (#9400)	13m cable (#9411)	67m cable (#9402)	90m cable (#9403)	110m cable (#940)
DESCRIPTION					
Sensor type	Integrated circuit ambient temperature sensor with six plate radiation shield	Integrated circuit ambient temperature sensor with six plate radiation shield	Integrated circuit ambient temperature sensor with six plate radiation shield	Integrated circuit ambient temperature sensor with six plate radiation shield	Integrated circuit ambient temperature sensor with six plate radiation shield
Applications	<ul style="list-style-type: none"> • Wind and solar resource assessment • Wind and solar plant operations • Meteorological studies • Environmental monitoring 	<ul style="list-style-type: none"> • Wind and solar resource assessment • Wind and solar plant operations • Meteorological studies • Environmental monitoring 	<ul style="list-style-type: none"> • Wind and solar resource assessment • Wind and solar plant operations • Meteorological studies • Environmental monitoring 	<ul style="list-style-type: none"> • Wind and solar resource assessment • Wind and solar plant operations • Meteorological studies • Environmental monitoring 	<ul style="list-style-type: none"> • Wind and solar resource assessment • Wind and solar plant operations • Meteorological studies • Environmental monitoring
Sensor range	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)
Instrument compatibility	All NRG loggers	All NRG loggers	All NRG loggers	All NRG loggers	All NRG loggers
OUTPUT SIGNAL					
Signal type	Linear analog voltage	Linear analog voltage	Linear analog voltage	Linear analog voltage	Linear analog voltage
Transfer function	Temperature (°C) = (Voltage x 44.74364) - 40.85555 °C Temperature (°F) = (Voltage x 80.53855) - 41.53999 °F	Temperature (°C) = (Voltage x 44.74364) - 40.85555 °C Temperature (°F) = (Voltage x 80.53855) - 41.53999 °F Note: Transfer function above applies to 4.6-meter cable. For sensors with cable lengths longer than 4.6 meters, subtract 0.002922 °C (0.0052596 °F) per additional meter from the transfer function offset.	Temperature (°C) = (Voltage x 44.74364) - 40.85555 °C Temperature (°F) = (Voltage x 80.53855) - 41.53999 °F Note: Transfer function above applies to 4.6-meter cable. For sensors with cable lengths longer than 4.6 meters, subtract 0.002922 °C (0.0052596 °F) per additional meter from the transfer function offset.	Temperature (°C) = (Voltage x 44.74364) - 40.85555 °C Temperature (°F) = (Voltage x 80.53855) - 41.53999 °F Note: Transfer function above applies to 4.6-meter cable. For sensors with cable lengths longer than 4.6 meters, subtract 0.002922 °C (0.0052596 °F) per additional meter from the transfer function offset.	Temperature (°C) = (Voltage x 44.74364) - 40.85555 °C Temperature (°F) = (Voltage x 80.53855) - 41.53999 °F Note: Transfer function above applies to 4.6-meter cable. For sensors with cable lengths longer than 4.6 meters, subtract 0.002922 °C (0.0052596 °F) per additional meter from the transfer function offset.
Accuracy	Uncertainty (k=2): ±0.200 °C (±0.360 °F)	Uncertainty (k=2): ±0.200 °C (±0.360 °F)	Uncertainty (k=2): ±0.200 °C (±0.360 °F)	Uncertainty (k=2): ±0.200 °C (±0.360 °F)	Uncertainty (k=2): ±0.200 °C (±0.360 °F)

	4.6m cable (#9400)	13m cable (#9411)	67m cable (#9402)	90m cable (#9403)	110m cable (#9404)
Output signal range	0.020 to 2.480 V DC	0.020 to 2.480 V DC	0.020 to 2.480 V DC	0.020 to 2.480 V DC	0.020 to 2.480 V DC
Turn on time	<20 ms	<20 ms	<20 ms	<20 ms	<20 ms
Resolution	0.0025 °C (0.0045 °F)	0.0025 °C (0.0045 °F)	0.0025 °C (0.0045 °F)	0.0025 °C (0.0045 °F)	0.0025 °C (0.0045 °F)

RESPONSE CHARACTERISTICS

Thermal time constant	5.38 minutes	5.38 minutes	5.38 minutes	5.38 minutes	5.38 minutes
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POWER REQUIREMENTS

Supply voltage	5 to 15 V DC 5 V pulsed excitation strongly recommended	5 to 15 V DC 5 V pulsed excitation strongly recommended	5 to 15 V DC 5 V pulsed excitation strongly recommended	5 to 15 V DC 5 V pulsed excitation strongly recommended	5 to 15 V DC 5 V pulsed excitation strongly recommended
Supply current	<ul style="list-style-type: none">• 1.2 mA max. (no load on output)• SymphoniePRO Pulsed: 0.85 mA average• SymphoniePLUS3 Pulsed: 0.43 mA average	<ul style="list-style-type: none">• 1.2 mA max. (no load on output)• SymphoniePRO Pulsed: 0.85 mA average• SymphoniePLUS3 Pulsed: 0.43 mA average	<ul style="list-style-type: none">• 1.2 mA max. (no load on output)• SymphoniePRO Pulsed: 0.85 mA average• SymphoniePLUS3 Pulsed: 0.43 mA average	<ul style="list-style-type: none">• 1.2 mA max. (no load on output)• SymphoniePRO Pulsed: 0.85 mA average• SymphoniePLUS3 Pulsed: 0.43 mA average	<ul style="list-style-type: none">• 1.2 mA max. (no load on output)• SymphoniePRO Pulsed: 0.85 mA average• SymphoniePLUS3 Pulsed: 0.43 mA average

INSTALLATION

Mounting	Attaches to tower with included hose clamps	Attaches to tower with included hose clamps	Attaches to tower with included hose clamps	Attaches to tower with included hose clamps	Attaches to tower with included hose clamps
Tools required	<ul style="list-style-type: none">• 8 mm (5/16 inch) nut driver or flat blade (-) screwdriver (to install hose clamps)• Sheet metal shears or similar (for trimming hose clamps)	<ul style="list-style-type: none">• 8 mm (5/16 inch) nut driver or flat blade (-) screwdriver (to install hose clamps)• Sheet metal shears or similar (for trimming hose clamps)	<ul style="list-style-type: none">• 8 mm (5/16 inch) nut driver or flat blade (-) screwdriver (to install hose clamps)• Sheet metal shears or similar (for trimming hose clamps)	<ul style="list-style-type: none">• 8 mm (5/16 inch) nut driver or flat blade (-) screwdriver (to install hose clamps)• Sheet metal shears or similar (for trimming hose clamps)	<ul style="list-style-type: none">• 8 mm (5/16 inch) nut driver or flat blade (-) screwdriver (to install hose clamps)• Sheet metal shears or similar (for trimming hose clamps)

ENVIRONMENTAL

Operating temperature range	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)
Operating humidity range	0 to 100% RH	0 to 100% RH	0 to 100% RH	0 to 100% RH	0 to 100% RH
Lifespan	10 years +	10 years +	10 years +	10 years +	10 years +

PHYSICAL

	4.6m cable (#9400)	13m cable (#9411)	67m cable (#9402)	90m cable (#9403)	110m cable (#9404)
Connections	Wire leads: <ul style="list-style-type: none"> • Signal (clear wire) • Ground (black wire) • Excitation (red wire) • Shield wire for earth ground 	Wire leads: <ul style="list-style-type: none"> • Signal (clear wire) • Ground (black wire) • Excitation (red wire) • Shield wire for earth ground 	Wire leads: <ul style="list-style-type: none"> • Signal (clear wire) • Ground (black wire) • Excitation (red wire) • Shield wire for earth ground 	Wire leads: <ul style="list-style-type: none"> • Signal (clear wire) • Ground (black wire) • Excitation (red wire) • Shield wire for earth ground 	Wire leads: <ul style="list-style-type: none"> • Signal (clear wire) • Ground (black wire) • Excitation (red wire) • Shield wire for earth ground
Cable length	4.6 m (15 ft)	13 m (42 ft)	67 m (220 ft)	90 m (295 ft)	110 m (361 ft)
Weight	0.47 kg (1.04 lbs)	0.75 kg (1.65 lbs)	2.53 kg (5.6 lbs)	3.29 kg (7.2 lbs)	3.94 kg (8.7 lbs)
Dimensions	<ul style="list-style-type: none"> • Probe only: 51.6 mm (2") height x 12.7 mm (0.5") diameter • Radiation shield: 124 mm (4.9") height x 127 mm (5 inches) diameter 	<ul style="list-style-type: none"> • Probe only: 51.6 mm (2") height x 12.7 mm (0.5") diameter • Radiation shield: 124 mm (4.9") height x 127 mm (5 inches) diameter 	<ul style="list-style-type: none"> • Probe only: 51.6 mm (2") height x 12.7 mm (0.5") diameter • Radiation shield: 124 mm (4.9") height x 127 mm (5 inches) diameter 	<ul style="list-style-type: none"> • Probe only: 51.6 mm (2") height x 12.7 mm (0.5") diameter • Radiation shield: 124 mm (4.9") height x 127 mm (5 inches) diameter 	<ul style="list-style-type: none"> • Probe only: 51.6 mm (2") height x 12.7 mm (0.5") diameter • Radiation shield: 124 mm (4.9") height x 127 mm (5 inches) diameter

MATERIALS

Cable	3 conductor 22 AWG, with overall foil shield and drain wire, chrome PVC jacket	3 conductor 22 AWG, with overall foil shield and drain wire, chrome PVC jacket	3 conductor 22 AWG, with overall foil shield and drain wire, chrome PVC jacket	3 conductor 22 AWG, with overall foil shield and drain wire, chrome PVC jacket	3 conductor 22 AWG, with overall foil shield and drain wire, chrome PVC jacket
Probe	Aluminum, epoxy filled	Aluminum, epoxy filled	Aluminum, epoxy filled	Aluminum, epoxy filled	Aluminum, epoxy filled
Shield	UV-stabilized thermoplastic solar radiation shield	UV-stabilized thermoplastic solar radiation shield	UV-stabilized thermoplastic solar radiation shield	UV-stabilized thermoplastic solar radiation shield	UV-stabilized thermoplastic solar radiation shield

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