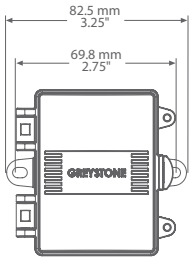
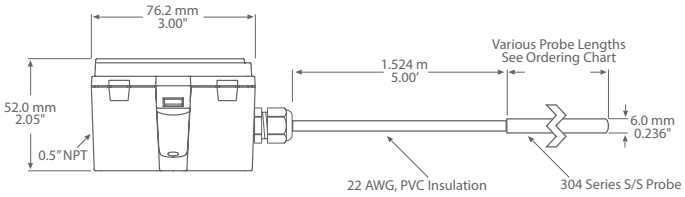
GREYSTONE
ENERGY SYSTEMS INC

# REMOTE PROBE STRAP-ON NETWORK TEMPERATURE SENSOR




## TNRP SERIES

## PRODUCT DESCRIPTION

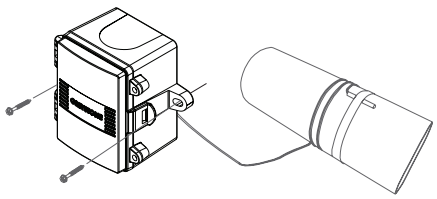
The single point remote probe network temperature sensor incorporates a precision sensor encapsulated in a 6 mm (0.236") OD, 304 stainless steel probe and is available in various lengths. All probes provide excellent heat transfer, fast response and resist moisture penetration. The transmitter provides a BACnet® or Modbus signal for network connection. A compact ABS enclosure with a hinged and gasketed cover is provided for ease of installation.

## TYPICAL INSTALLATION

**For complete installation and wiring details, please refer to the product installation instructions.**

**For best results, thermal conductive compound should be applied to pipe prior to mounting the probe.**

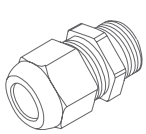
Find a suitable location along the pipe where both the probe and remote enclosure can be mounted. If necessary, remove a section of insulation from pipe. Position probe directly on the pipe and secure using a pipe clamp. For added security, make 1 to 3 loops of the sensor cable around the pipe and feed through wire hole on the enclosure and secure using the supplied grommet. If applicable, the pipe insulation can be re-applied to the pipe over the probe.



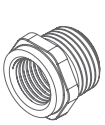
## SPECIFICATIONS

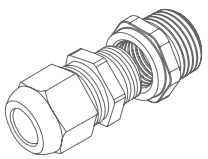
| | |
|---|---|
| POWER SUPPLY | **BACnet®:** 24 Vac/dc ±10% (non-isolated half-wave rectified)<br>**Modbus:** 24 Vac/dc ±20% (non-isolated half-wave rectified) |
| CONSUMPTION | **BACnet®:** 25 mA max @ 24 Vdc<br>**Modbus:** 10 mA max @ 24 Vdc |
| OPERATING ENVIRONMENT | -40 to 50°C (-40 to 122°F), 5 to 95 %RH non-condensing |
| PROBE MATERIAL | 304 series stainless steel |
| PROBE DIAMETER | 6 mm (0.236") |
| WIRE LENGTH | 1.524m (5') |
| WIRE MATERIAL | PVC insulated, parallel bonded (22 AWG) |
| WIRING CONNECTIONS | Screw terminal block (14 to 22 AWG) |
| ENCLOSURE | **A:** ABS, UL94-V0, IP65 (NEMA 4X)<br>**E:** Same as A, with thread adapter (1/2" NPT to M16) and cable gland fitting |
| COUNTRY OF ORIGIN | Canada |
| TEMPERATURE | **Sensing Element:** NTC thermistor<br>**Accuracy:** ±0.2°C (±0.36°F) @ 0 to 70°C (32 to 158°F)<br>**Probe Sensing Range:** -40 to 100°C (-40 to 212°F)<br>**Resolution:** 0.1°C/°F |
| BACnet® COMMUNICATIONS INTERFACE | **Hardware:** 2 wire RS-485<br>**Software:** Native BACnet® MS/TP protocol<br>**Baud Rate:** 9600, 19200, 38400, 57600, 76800, or 115200 (auto-detect)<br>**Network Address Range:** Locally set to 0-127<br>**Serial Configuration:** 8N1 |
| MODBUS COMMUNICATIONS INTERFACE | **Hardware:** 2 wire RS-485<br>**Software:** Native Modbus MS/TP protocol (RTU)<br>**Baud Rate:** 9600, 19200, 38400, 57600, 76800, or 115200 (auto-detect)<br>**Network Address Range:** Locally set to 1-255 (switch selectable)<br>**Parity:** None<br>**Stop Bits:** 1<br>**Error Checking:** A001 (CRC-16 reverse) |
| INPUT VOLTAGE EFFECT | Negligible over specified operating range |
| PROTECTION CIRCUITRY | Reverse voltage protected and transient protected |

## ACCESSORIES - INCLUDED WITH E ENCLOSURE OPTION



CABLE GLAND FITTING





THREAD ADAPTER 1/2" NPT TO M16

GREYSTONE
ENERGY SYSTEMS INC

## BACnet® COMMUNICATION

BACnet® is a data communication protocol for building automation and control networks. The sensor communicates on a standard 2-wire RS-485 MS/TP network designed to run at speeds from 9600 to 115200 baud over twisted pair wiring.

BACnet® is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of BACnet® listed products to the requirements of ASHRAE Standard 135 is the responsibility of BACnet® International (BI). BTL is a registered trademark of BI.

## MODBUS COMMUNICATION

Modbus is a network protocol for industrial manufacturing environments. The sensor communicates on a standard Modbus network using the RTU (Remote Terminal Unit) transmission mode. The hardware interface is RS-485.

| ORDERING | | | PART NUMBER |
|---|---|---|---|
| PRODUCT | **TNRP** | Remote Probe Strap-on Network Temperature Sensor | **TNRP** |
| ENCLOSURE | **A**<br>**E** | ABS, weatherproof with hinged and gasketed cover<br>Same as A, with thread adapter and cable gland fitting | |
| SENSOR | **20** | NTC Thermistor, ±0.2°C | |
| POBE LENGTH | **A**<br>**B**<br>**C**<br>**D** | 50mm (2")<br>100mm (4")<br>150mm (6")<br>200mm (8") | |
| COMMUNICATION OUTPUT | **B**<br>**M** | BACnet®<br>Modbus | |

NOTE: Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.

RoHS COMPLIANT

Greystone Energy Systems, Inc.
150 English Drive, Moncton,
New Brunswick, Canada E1E 4G7

Ph: +1 (506) 853-3057 Fax: +1 (506) 853-6014
North America: 1-800-561-5611
E-mail: mail@greystoneenergy.com