GREYSTONE
ENERGY SYSTEMS INC

RIGID DUCT AVERAGE NETWORK TEMPERATURE SENSOR TNDR Series

The multi point rigid duct average network temperature sensor incorporates numerous precision sensors at equal distances and encapsulated in a 6 mm (0.236") OD, 304 series 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.

SPECIFICATION:

Power Supply ..... **BACnet®:** 24 Vac/dc ± 10% (non-isolated half-wave rectified)
Modbus: 24 Vac/dc ± 20% (non-isolated half-wave rectified)
Consumption ..... **BACnet®:** 25 mA max @ 24 Vdc
Modbus: 10 mA max @ 24 Vdc
Protection Circuitry ..... Reverse voltage protected and over voltage protected
Operating Environment ... -40 to 50°C (-40 to 122°F), 5 to 95 %RH non-condensing
Probe Material ..... 304 series stainless steel
Probe Diameter ..... 6mm (0.236")
Wire Material ..... PVC insulated, parallel bonded (22 AWG)
Wiring Connections ..... Screw terminal block (14 to 22 AWG)
Enclosure ..... ABS - UL94-V0, IP65 (NEMA4X)
E style includes thread adapter (1/2" NPT to M16) and cable gland fitting
Country of Origin ..... Canada

Temperature
Sensing Element ..... NTC thermistor
Accuracy ..... ±0.2°C (±0.36°F) @ 0 to 70°C (32 to 158°F)
Probe Sensing Range ..... -20 to 60°C (-4 to 140°F)
Resolution ..... 0.1°C/°F

BACnet® Communications Interface
Hardware ..... 2 wire RS-485
Software ..... Native BACnet® MS/TP protocol
Baud Rate ..... 9600, 19200, 38400, 57600, 76800, or 115200 (auto-detect)
Network Address Range .. Locally set to 0-127
Serial Configuration 8N1

Modbus Communications Interface
Hardware ..... 2 wire RS-485
Software ..... Native Modbus MS/TP protocol (RTU)
Baud Rate ..... 9600, 19200, 38400, 57600, 76800, or 115200 (auto-detect)
Network Address Range .. Locally set to 1-255
Parity ..... None
Stop Bits 1
CRC ..... A001 (CRC-16 reverse)
Serial Configuration 8N1

PART NUMBER SELECTED

PRODUCT SELECTION INFORMATION:

MODEL	Product Description
TNDR	Rigid Duct Average Network Temperature Sensor

CODE	Enclosure
A	ABS, with hinged & gasketed cover
E	Same as A, with thread adapter & cable gland fitting

CODE	Sensor
20	NTC Thermistor, ±0.2°C

CODE	Probe Length
F	450mm (18")
G	600mm (24")
H	900mm (36")

CODE	Communication Output
B	BACnet®
M	Modbus

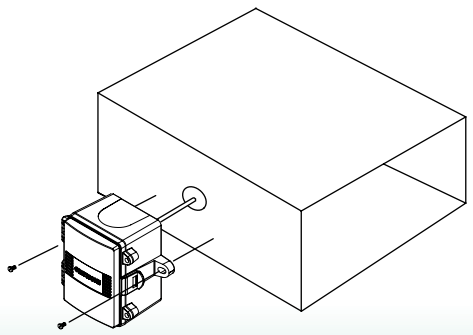
Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.

TYPICAL INSTALLATION:

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

The flex-duct average probes are installed through a hole in the side of the duct to monitor an average temperature within the duct. Select a probe length that allows for criss-crossing the duct multiple times. Install the probes in a straight section of duct at a suitable distance downstream from any heating, cooling or humidification devices.

The enclosure provides mounting tabs for ease of installation.



RoHS COMPLIANT

BACnet® COMMUNICATION

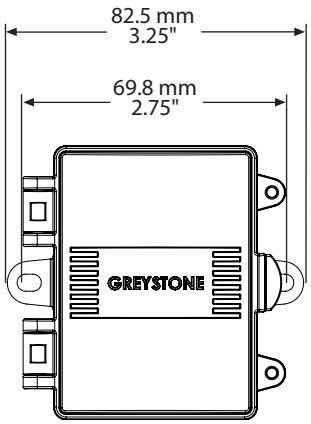
BACnet® is a data communication protocol for building automation and control networks. The sensor communicates on a standard 2-wire RS-485 MS/TP network designed to run at speeds from 9600 to 115200 baud over twisted pair wiring.

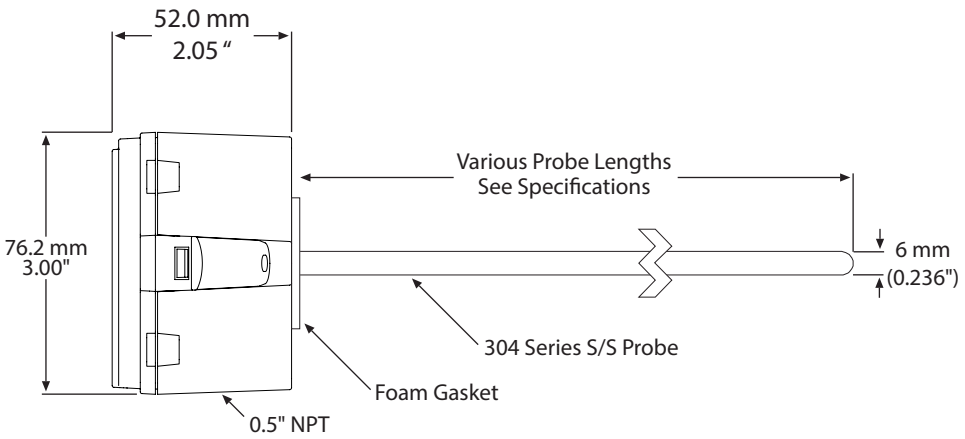
BACnet® is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of BACnet® listed products to the requirements of ASHRAE Standard 135 is the responsibility of BACnet® International (BI). BTL is a registered trademark of BI.

MODBUS COMMUNICATION

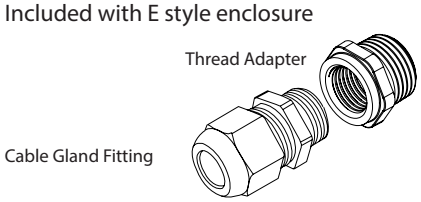
Modbus is a network protocol for industrial manufacturing environments. The sensor communicates on a standard Modbus network using the RTU (Remote Terminal Unit) transmission mode. The hardware interface is RS-485.

DIMENSIONS:





Included with E style enclosure



GREYSTONE
ENERGY SYSTEMS INC
Greystone Energy Systems, Inc.
150 English Drive, Moncton,
New Brunswick, Canada E1E 4G7
(506) 853-3057 Fax: (506) 853-6014
North America: 1-800-561-5611
e-mail: mail@greystoneenergy.com
www.greystoneenergy.com

RoHS COMPLIANT

Greystone Energy Systems Inc. is one of North America's largest ISO registered manufacturers of HVAC/R sensors and transmitters for Building Automation Management Systems. We have conscientiously established a worldwide reputation as an industry leader by maintaining leading-edge design technology, prompt technical support, and a commitment to on-time deliveries. We take pride in our Quality Management System which is ISO 9001 certified, assuring our customers of consistent product reliability.

GREYSTONE HAS AN **ISO 9001** REGISTERED QUALITY SYSTEM

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