



## FLEXIBLE COPPER NETWORK DUCT AVERAGE TEMPERATURE SENSOR TNDC Series

The multi point duct average network temperature sensor incorporates numerous precision sensors at equal distances encapsulated in a 7.94 mm (0.3125") OD, soft copper probe that is available in various lengths (see ordering chart). 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 ..... Soft copper

Probe Diameter ..... 7.94mm (0.3125")

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, 5760, 76800, or 115200 (auto-detect)

Network Address Range.. Locally set to 0-127

**Modbus Communications Interface**

Hardware..... 2 wire RS-485

Software..... Native Modbus MS/TP protocol (RTU)

Baud Rate ..... 4800, 9600, 19200, 38400, 5700, 76800, or 115200 (auto-detect)

Network Address Range.. Locally set to 1-255

Parity..... None

Stop Bits..... 1

CRC..... A001 (CRC-16 reverse)

### PART NUMBER SELECTED

### PRODUCT SELECTION INFORMATION:

MODEL	Product Description
TNDC	Network Flexible Copper Duct Average 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	No. of Sensor
I	1800mm (6')	4
J	3600mm (12')	4
K	6100mm (20')	4
L	7300mm (24')	9

CODE	Communication Output
B	BACnet®
M	Modbus

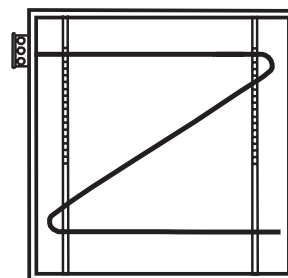
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### TYPICAL INSTALLATION:

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

The 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.



## BACnet® COMMUNICATION

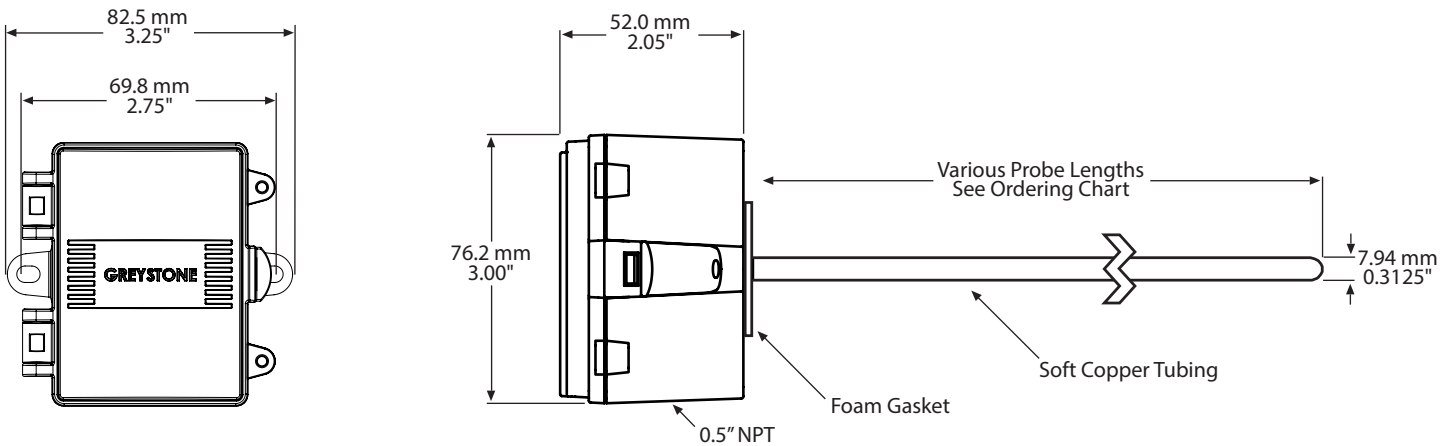
BACnet® is a data communication protocol for building automation and control networks. The sensor communicates on a standard 2-wire RS-485 MS/TP network designed to run at speeds from 9600 to 115200 baud over twisted pair wiring.

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.

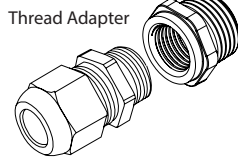
## MODBUS COMMUNICATION

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 enclosure option




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**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.*

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