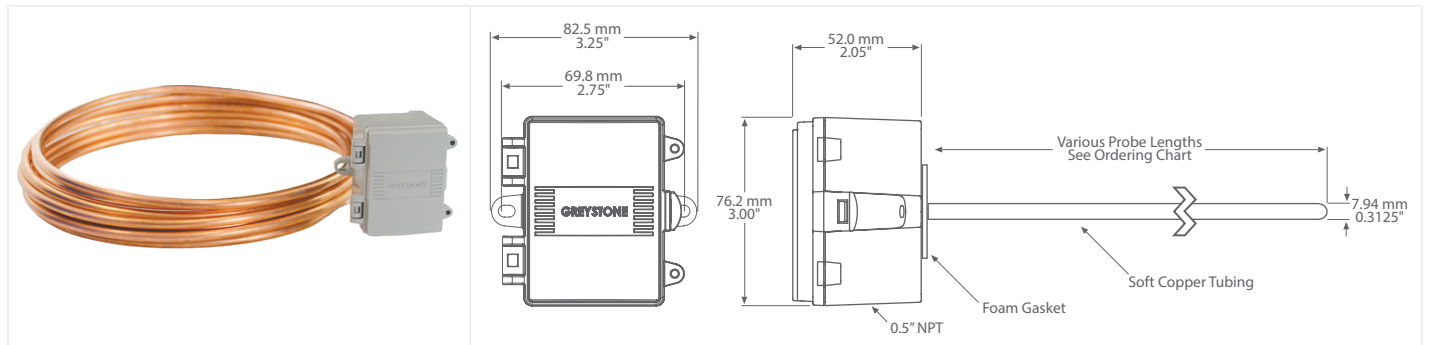




## FLEXIBLE COPPER NETWORK DUCT AVERAGE TEMPERATURE SENSOR



### TNDC SERIES

### PRODUCT DESCRIPTION

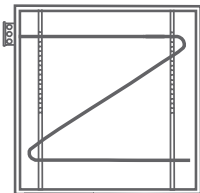
The multi point duct average network temperature sensor incorporates numerous precision sensors at equal distances encapsulated in a 7.94 mm (0.3125") OD, soft copper probe that is available in various lengths. All probes provide excellent heat transfer, fast response and resist moisture penetration. 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.**

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.



### SPECIFICATIONS

<b>POWER SUPPLY</b>	<b>BACnet®:</b> 24 Vac/dc ±10% (non-isolated half-wave rectified) <b>Modbus:</b> 24 Vac/dc ±20% (non-isolated half-wave rectified)
<b>CONSUMPTION</b>	<b>BACnet®:</b> 25 mA max @ 24 Vdc <b>Modbus:</b> 10 mA max @ 24 Vdc
<b>OPERATING ENVIRONMENT</b>	-40 to 50°C (-40 to 122°F), 5 to 95 %RH non-condensing
<b>PROBE MATERIAL</b>	Soft copper
<b>PROBE DIAMETER</b>	7.94 mm (0.3125")
<b>PROBE SENSING RANGE</b>	-20 to 60°C (-4 to 140°F)
<b>STANDARD LENGTHS</b>	1800mm, 3600mm, 6100mm, 7300mm (6', 12', 20', 24')
<b>WIRING CONNECTIONS</b>	Screw terminal block (14 to 22 AWG)
<b>ENCLOSURE</b>	<b>A:</b> ABS, UL94-V0, IP65 (NEMA 4X) <b>E:</b> Same as A, with thread adapter (1/2" NPT to M16) and cable gland fitting
<b>COUNTRY OF ORIGIN</b>	Canada
<b>TEMPERATURE</b>	<b>Sensing Element:</b> NTC thermistor <b>Accuracy:</b> ±0.2°C (±0.36°F) @ 0 to 70°C (32 to 158°F) <b>Resolution:</b> 0.1°C/°F
<b>BACnet® COMMUNICATIONS INTERFACE</b>	<b>Hardware:</b> 2 wire RS-485 <b>Software:</b> Native BACnet® MS/TP protocol <b>Baud Rate:</b> 9600, 19200, 38400, 57600, 76800, or 115200 (auto-detect) <b>Network Address Range:</b> Locally set to 0-127 <b>Serial Configuration:</b> 8N1
<b>MODBUS COMMUNICATIONS INTERFACE</b>	<b>Hardware:</b> 2 wire RS-485 <b>Software:</b> Native Modbus MS/TP protocol (RTU) <b>Baud Rate:</b> 9600, 19200, 38400, 57600, 76800, or 115200 (auto-detect) <b>Network Address Range:</b> Locally set to 1-255 (switch selectable) <b>Parity:</b> None <b>Stop Bits:</b> 1 <b>CRC:</b> A001 (CRC-16 reverse)
<b>INPUT VOLTAGE EFFECT</b>	Negligible over specified operating range
<b>PROTECTION CIRCUITRY</b>	Reverse voltage protected and transient protected

### ACCESSORIES - INCLUDED WITH E ENCLOSURE OPTION





## 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	TNDC	Network Flexible Copper Duct Average Temperature Sensor		
ENCLOSURE	A	ABS, with hinged and gasketed cover		
	E	Same as C, with thread adapter and cable gland fitting		
SENSOR	20	NTC Thermistor, ±0.2°C		
PROBE LENGTH	I	1800mm (6')	(4 sensors)	
	J	3600mm (12')	(4 sensors)	
	K	6100mm (20')	(4 sensors)	
	L	7300mm (24')	(9 sensors)	
COMMUNICATION OUTPUT	B	BACnet®		
	M	Modbus		
			TNDC	

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



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