GREYSTONE
ENERGY SYSTEMS INC

STRAP-ON NETWORK TEMPERATURE TRANSMITTER

69.8 mm
2.75"

76.2 mm
3.00"

82.5 mm
3.25"

52.0 mm
2.05"

28.6 mm
1.125"

0.5" NPT

Machined Aluminum Heat Sink

254 mm (10")
S/S Pipe Clamp

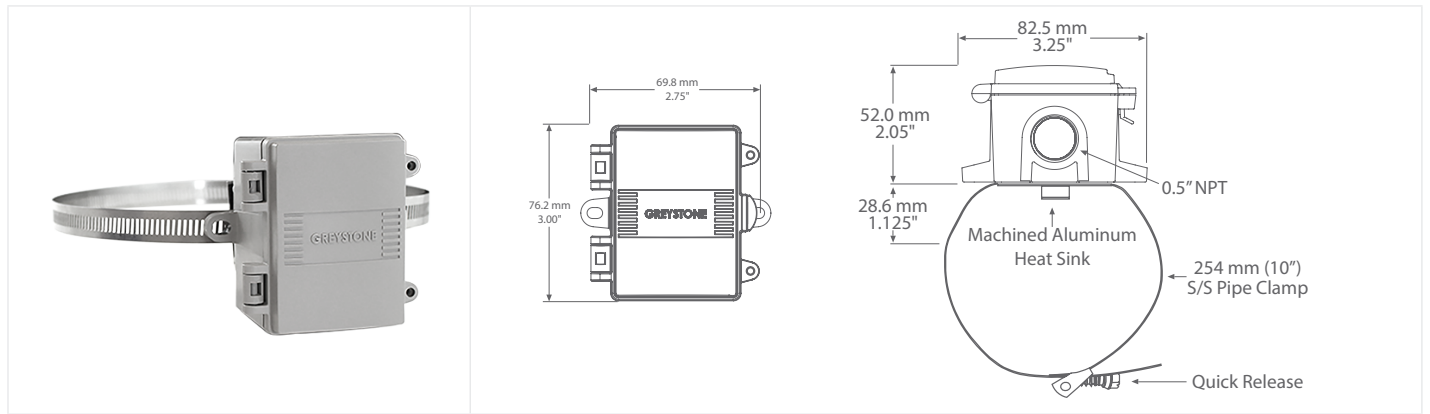Quick Release

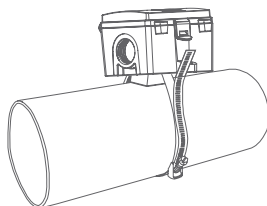### TNSO SERIES

PRODUCT DESCRIPTION

The single point strap-on network temperature sensor incorporates a precision sensor is encapsulated in a 38.1 mm x 12.7 mm (1.5" x 0.5") machined aluminum heat sink. A 25.4 cm (10") S/S pipe clamp is provided to secure the assembly to various sizes of pipes. All probes are constructed to provide excellent heat transfer, fast response and are potted to 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 strap-on temperature transmitter series can be mounted directly to various sizes of pipes and secured using a 254 mm (10") S/S pipe clamp. The 254 mm (10") S/S pipe clamp is a "Quick Release" type and can be separated by moving the tightening screw. Postion the aluminum plate on the pipe so it makes the best contact, wrap the clamp around the pipe and re-assemble and tighten. For best results, thermal conductive compound should be applied to pipe prior to mounting the probe.

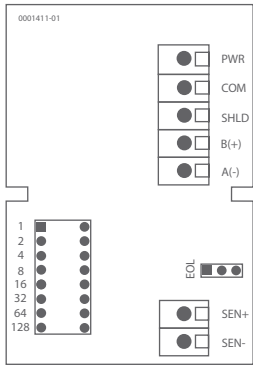Wiring connections are made inside the enclosure.

SPECIFICATIONS

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
OUTPUT SIGNAL	MS/TP 2-wire RS-485 (BACnet® or Modbus)
OPERATING ENVIRONMENT	-40 to 50°C (-40 to 122°F), 5 to 95 %RH non-condensing
PROBE MATERIAL	Machined aluminum heat sink
PROBE DIMENSIONS	38.1mm x 12.7mm (1.5" x 0.5")
PIPE-STRAP	25.4mm (10") stainless steel
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) **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 **Accuracy:** ±0.2°C (±0.36°F) @ 0 to 70°C (32 to 158°F) **Probe Sensing Range:** -40 to 100°C (-40 to 212°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 (switch selectable) **Parity:** None **Stop Bits:** 1 **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
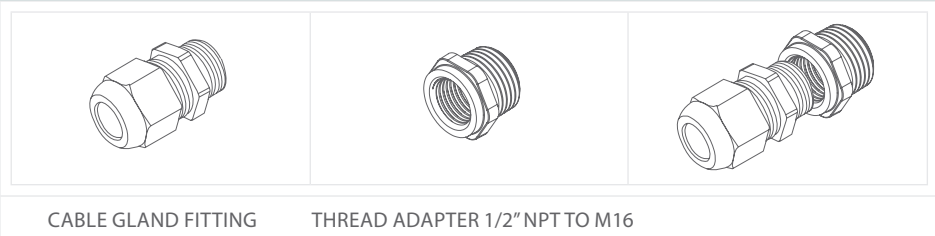
WIRING INFORMATION

TERMINAL	FUNCTION
PWR	Power Supply
COM	Common
SHLD	Digital Output
B (+)	Digital Output
A (-)	Digital Output
SEN +	Digital Output
SEN -	Digital Output

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	TNSO	Strap-on Network Temperature Sensor	TNSO
ENCLOSURE	A E	ABS, weatherproof with hinged and gasketed cover Same as A, with thread adapter (1/2" NPT to M16) and cable gland fitting	
SENSOR	20X	NTC Thermistor, ±0.2°C	
COMMUNICATION OUTPUT	B M	BACnet® Modbus	

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

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