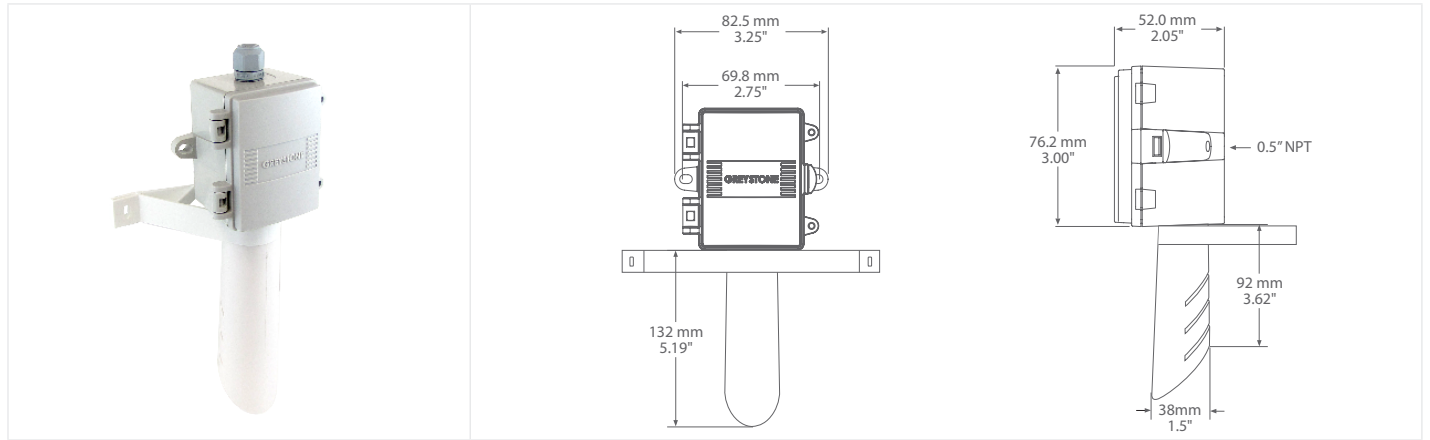# GREYSTONE
ENERGY SYSTEMS INC

OUTSIDE NETWORK TEMPERATURE SENSOR WITH SUN AND WINDSHIELD
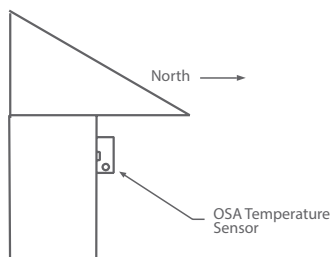

TNOB SERIES

PRODUCT DESCRIPTION

The single point outside network temperature transmitter sensor incorporates a precision sensor housed in a protective sun/wind shield. 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, weatherproof 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 outside temperature transmitter should be mounted on an outside North facing wall, under the eaves which will provide protection from direct sunlight.

The outside temperature sensor can be mounted directly to the building's wall face using the provided mounting holes. There is one 0.85" hole for conduit connection.

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	Stainless steel
WIRE MATERIAL	PVC insulated, parallel bonded (22 AWG)
WIRING CONNECTIONS	Screw terminal block (14 to 22 AWG)
ENCLOSURE	**A:** Polycarbonate, UL94-V0, IP65 (NEMA 4X) **E:** Same as A, with 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 50°C (-40 to 122°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

ACCESSORY - INCLUDED WITH E ENCLOSURE OPTION
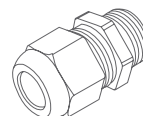
CABLE GLAND FITTING

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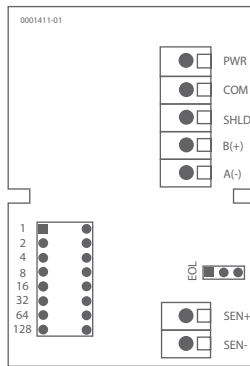
TERMINAL	FUNCTION
PWR	Power Supply
COM	Common
SHLD	Digital Output
B (+)	Digital Output
A (-)	Digital Output
SEN +	Sensor Input
SEN -	Sensor Input

0001411-01

PWR
COM
SHLD
B(+)
A(-)

1
2
4
8
16
32
64
128

EOL

SEN+
SEN-

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

PRODUCT	TNOB	Outside Network temperature Sensor with Sun and Windshield
ENCLOSURE	A E	Polycarbonate, weatherproof with hinged and gasketed cover Same as A, with cable gland fitting
SENSOR	20X	NTC Thermistor, ±0.2°C
COMMUNICATION OUTPUT	B M	BACnet® Modbus

PART NUMBER

TNOB

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