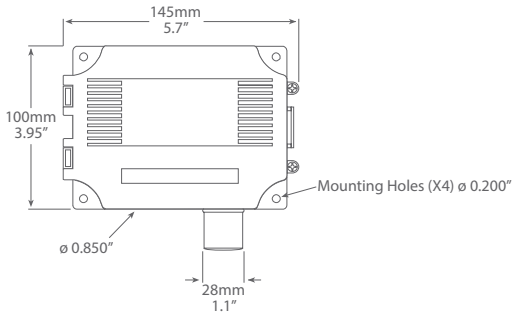
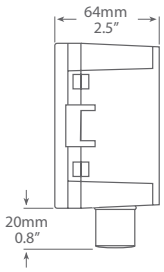
GREYSTONE
ENERGY SYSTEMS INC

OUTSIDE HUMIDITY/TEMPERATURE NETWORK SENSOR





NTOA SERIES

PRODUCT DESCRIPTION

The NTOA Series outside RH/temperature network sensor uses a highly accurate and reliable Thermoset Polymer based capacitance humidity sensor and curve-matched NTC thermistor temperature sensor together with embedded BACnet® or Modbus communication to provide the most efficient monitoring and control solution.

The device connects to an RS-485 MS/TP network to offer a single-point solution for control of indoor air comfort.

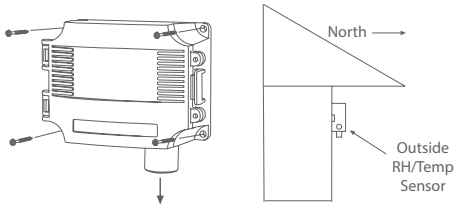
The NTOA Series is provided in a hinged, gasketed weatherproof ABS enclosure that allows for ease of installation and protection from the elements.

TYPICAL INSTALLATION

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

The NTOA should be mounted on an outside North facing wall, under the eaves which will provide protection from direct sunlight and wind.

The NTOA can be mounted directly to buildings wall face using the four provided mounting holes. There is a 0.85″ hole for conduit connection.



SPECIFICATIONS

POWER SUPPLY	**BACnet®:** 24 Vac/dc ±10% (non-isolated half-wave rectified) **Modbus:** 15 to 30 Vac/dc (non-isolated half-wave rectified)
CONSUMPTION	**BACnet®:** 25 mA max @ 24 Vdc **Modbus:** 10 mA max @ 24 Vdc
PROTECTION CIRCUITRY	Reverse voltage and over voltage protected
OPERATING CONDITIONS	-40 to 50°C (-40 to 122°F), 0-95 %RH, non-condensing
WIRING CONNECTIONS	Screw terminal block (14 to 22 AWG)
ENCLOSURE	ABS, UL94-5VB, IP61 (NEMA 2)
ENCLOSURE DIMENSIONS	145mm W x 100mm H x 64mm D (5.7″ x 3.95″ x 2.5″)
PROBE	20mm (0.8″) long x 28mm (1.1″) diameter, PVC hub with mesh filter
RELATIVE HUMIDITY	**Sensing Element:** Thermoset polymer based capacitive **Accuracy:** ±2 %RH **Range:** 0 to 100 %RH **Resolution:** 0.1 %RH **Hysteresis:** ±1.5%RH **Response Time:** 15 seconds typical **Stability:** ±1.2 %RH typical @ 50 %RH in 5 years
TEMPERATURE	**Sensing Element:** 20KΩ NTC Thermistor **Accuracy:** ±0.2°C (±0.4°F) curve matched **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 or 76800 **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 or 76800 (auto-detect) **Network Address Range:** Locally set to 1-255 **Parity:** None **Stop Bits:** 1 **CRC:** A001 (CRC-16 reverse)
COUNTRY OF ORIGIN	Canada

*Modbus parameters may be factory customized

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BACnet® COMMUNICATION

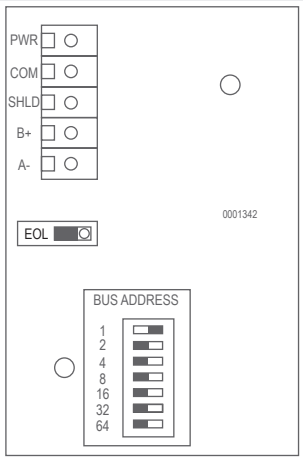
BACnet® is a data communication protocol for building automation and control networks. The sensor communicates on a standard 2-wire RS-485 MS/TP network designed to run at speeds from 9600 to 76800 baud over twisted pair wiring.

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.

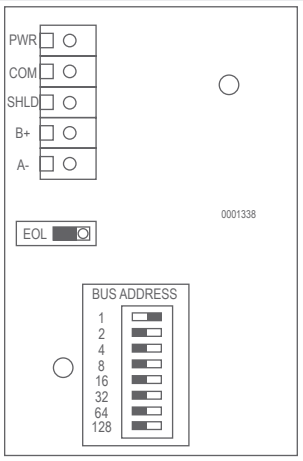
MODBUS COMMUNICATION

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.

WIRING INFORMATION



TERMINAL	FUNCTION
PWR	24 Vac/dc of controller or power supply
COM	To GND or COMMON of controller
SHLD	To communications bus shield
B+	To + of communications bus
A-	To - of communications bus



BACnet® Modbus

ORDERING

PRODUCT	**NTOA**	Outside Air Humidity/Temperature Network Sensor
COMMUNICATIONS OUTPUT	**BAC**	BACnet®
	MOD	Modbus

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

PART NUMBER

NTOA

RoHS COMPLIANT

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