# GREYSTONE
## ENERGY SYSTEMS INC

## ROOM NETWORK TEMPERATURE AND HUMIDITY SENSOR



84mm 3.3"

29mm 1.15"

119mm 4.7"

58mm 2.3"

82.6mm 3.25"
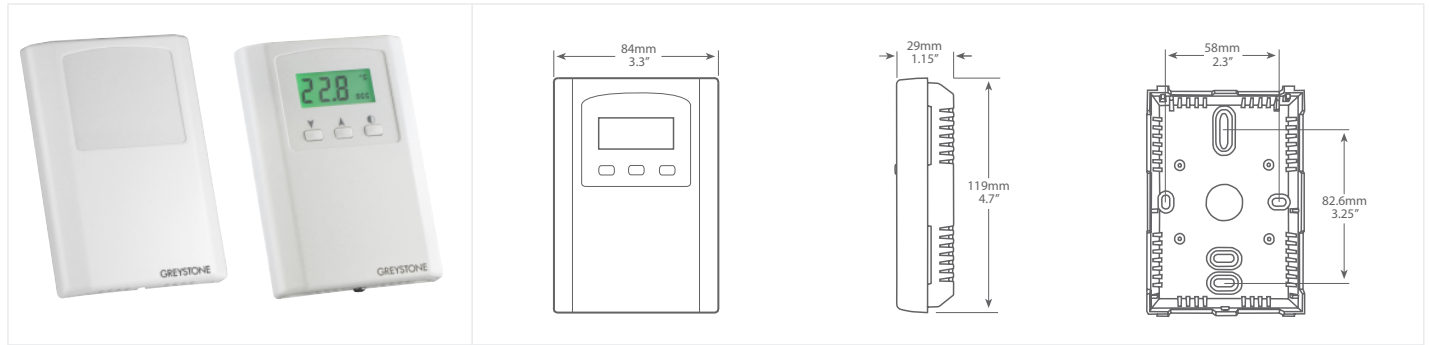
### NTRC SERIES

## PRODUCT DESCRIPTION

The NTRC Series Network features embedded BACnet® and Modbus communication and is available in several configurations for the most efficient monitoring and control solution. The basic unit accurately measures room temperature. Optional features include RH measurement, up/down setpoint control, a local override function, a control relay output, a fan speed switch and a digital input.
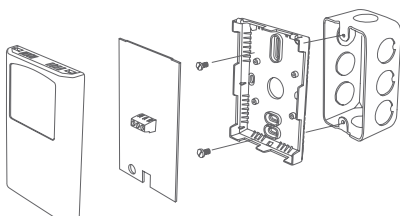
The device connects to an RS-485 MS/TP network to offer a single-point solution for control of indoor air quality and comfort. Features include a back-lit LCD and user menu for easy installation, field-proven sensors and user input controls to add local setpoint, override functions and a digital input at the same network point.

## TYPICAL INSTALLATION

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

The NTRC series can be mounted directly to a single gang electrical box or directly to a wall. The backplate includes many mounting hole configurations to allow for mounting on a variety of electrical boxes.

The NTRC has a screw block terminal provided for connection to the Building Automation System.



## SPECIFICATIONS

| | |
|---|---|
| POWER SUPPLY | 20-28 Vac/dc (non-isolated half-wave rectified) |
| CONSUMPTION | 35 mA max @ 24 Vdc |
| PROTECTION CIRCUITRY | Reverse voltage protected, overvoltage protected |
| OPERATING CONDITIONS | 0 to 55°C (32 to 131°F), 0-95 %RH non-condensing |
| STORAGE CONDITIONS | -20 to 70°C (-4 to 158°F) |
| SENSOR COVERAGE AREA | 100 m² (1000 ft²) typical |
| ENCLOSURE | White ABS, IP30 (NEMA 1) |
| ENCLOSURE DIMENSIONS | 84mm W x 119mm H x 29mm D (3.3" x 4.7" x 1.15") |
| WIRING CONNECTIONS | Screw terminal block (14 to 22 AWG) |
| COUNTRY OF ORIGIN | Canada |
| COMMUNICATION INTERFACE | **Hardware:** 2 wire RS-485<br>**Software:** Native BACnet® or Modbus MS/TP protocol, menu selectable<br>**Baud Rate:** Locally set from 300 to 76800<br>**MAC Address Range:** *BACnet®* - 0-127<br>*Modbus* - 1-255<br>(Factory default is 2) (63 devices max on one daisy chain) |
| LCD DISPLAY | **Resolution:** 0.5 or 1°C/°F selectable, 1 %RH<br>**Size:** 38.1mm W x 16.5mm H (1.5" x 0.65"), 3 digit<br>**Backlight:** Auto-dimming, enable/disable via jumper<br>**Viewed Values:** Temperature Only, RH Only or alternating Temperature/RH (RH requires optional RH signal) |
| TEMPERATURE SIGNAL | **Sensing Element:** 10,000Ω thermistor, ±0.2°C (0.4°F)<br>**Range:** 0 to 50°C (32 to 122°F) |
| OPTIONAL RH SIGNAL | **Sensing Element:** Thermistor polymer based capacitive<br>**Accuracy:** ±2 %RH<br>**Range:** 0 to 100 %RH, non-condensing<br>**Resolution:** 1 %RH<br>**Hysteresis:** ±3 %RH<br>**Response Time:** 15 seconds typical<br>**Stability:** ±1.2 %RH typical @ 50 %RH in 5 years |
| OPTIONAL SETPOINT CONTROL | **User Interface:** Front panel Up/Down buttons available via BACnet® or Modbus<br>**Setpoint Mode:** Temperature (°C/°F) or RH, menu selectable (factory default is Temp & °C)<br>**Adjustable Setpoint Range:** 10 to 50°C, 50 to 122°F or 10 to 85 %RH, menu selectable (factory default is 18 to 24°C)<br>**Minimum Span:** 4°C/°F for 10 %RH<br>**Temperature Setpoint Resolution:** 0.5° or 1°, menu selectable (factory default is 1°) |
| OPTIONAL OVERRIDE SWITCH | **User Interface:** Front panel button available via BACnet® or Modbus<br>**Override Status:** Via BACnet® or Modbus "OCC" segment lights on LCD |
| OPTIONAL FANSPEED SWITCH | **User Interface:** Side panel, 5 position available via BACnet® or Modbus<br>**Indication:** Off, Auto, Low, Mid, High switch position indication |
| OPTIONAL RELAY OUTPUT | **Contact Ratings:** Form A contact (N.O.), 2 Amps @ 140 Vac, 2 Amps @ 30 Vdc<br>**Relay Activation:** Via BACnet® or Modbus |
| OPTIONAL DIGITAL INPUT | **Input Type:** Dry-contact only (relay contact), short to COMMON to activate |
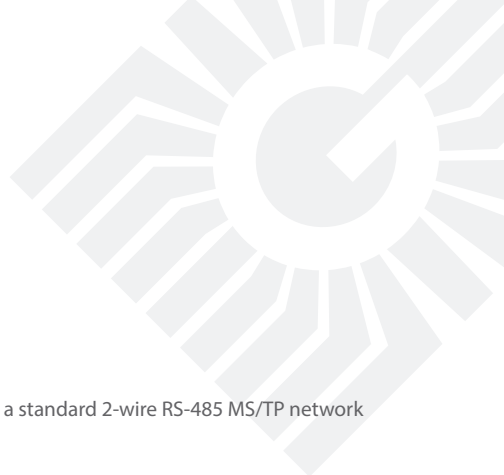
## BACnet® COMMUNICATION

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.

## WIRING INFORMATION
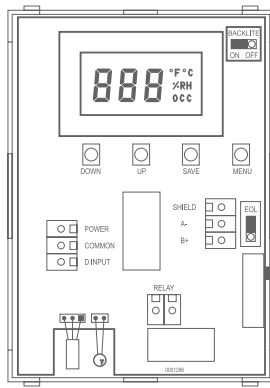


| TERMINAL | FUNCTION |
|----------|----------|
| PWR | 24 Vdc |
| COM | Common |
| SHLD | Shield |
| B+ | B+ |
| A- | A- |
| | |
| N.O. | Digital Output |
| Relay | Digital Output |

## ORDERING

| | | | PART NUMBER |
|---|---|---|---|
| PRODUCT | NTRC | Room Network Sensor with BACnet® or Modbus Communications | NTRC |
| LCD DISPLAY | N<br>L | Concealed<br>Viewable | |
| CONFIGURATIONS | T<br>RH | Temperature Only<br>Temperature & Humidity | |
| OPTIONS<br>(MULTIPLE SELECTIONS CAN BE MADE, LEAVE BLANK IF NO OPTIONS REQUIRED) | P<br>S<br>F<br>R<br>D | Setpoint adjustment, 2 button up/down<br>Momentary override switch - N.O.<br>Fanspeed switch, 5 position<br>Relay output<br>Digital input | |

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