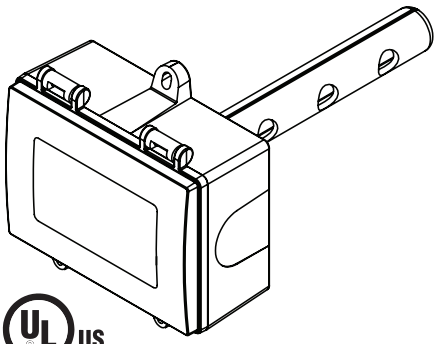
DUCT VOC TRANSMITTER

VOCDT Series - Network Installation Instructions



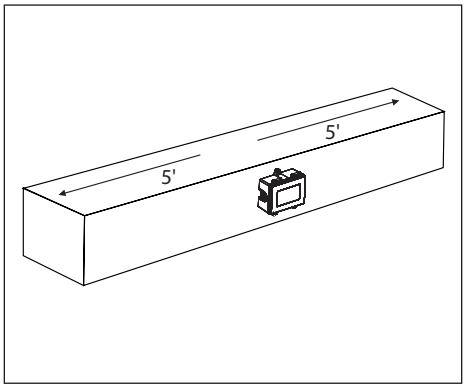
INTRODUCTION

The Duct VOC Transmitter uses an advanced MOx (metal oxide semiconductor) sensor to detect poor air quality. The sensor reacts quickly to detect a broad range of VOCs such as smoke, cooking odors, bioeffluence, outdoor pollutants and from human activities. The VOC Sensor also includes a precision temperature sensor. Optional output parameters of humidity are also available. Either a BACnet or Modbus output provide indication of the TVOC level or air quality levels against a VOC index and Temperature or optionally Humidity. Adjustable relay output option is available.

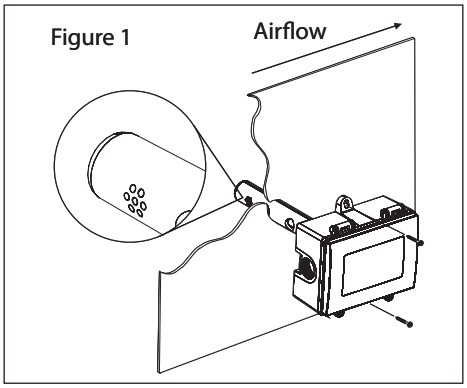
WARNING

Read these installation instructions carefully before commissioning the VOC. Failure to follow these instructions may result in product damage. Do not use in an explosive or hazardous environment, with combustible or flammable gases, as safety or emergency stop devices or in any other application where failure of the product could result in personal injury. Use electrostatic discharge precautions during installation and do not exceed the device ratings.

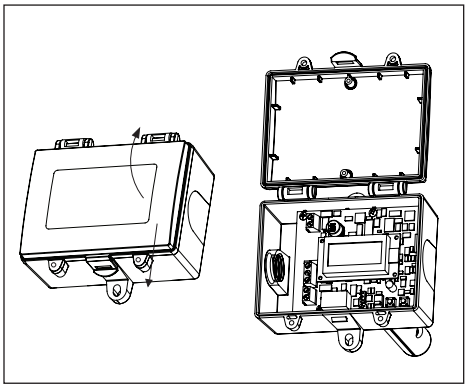
MOUNTING



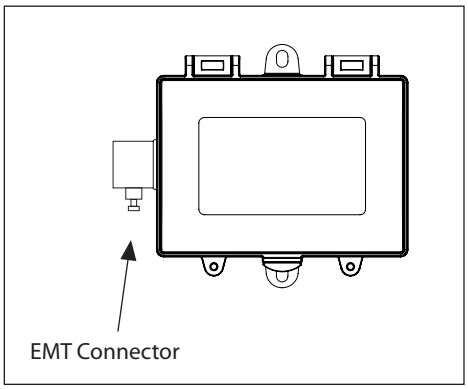
1 Mount the sensor in an easily accessible location in a straight section of duct at least five feet from corners or other items that may cause disturbances in the air flow. Avoid areas where the detector is exposed to vibrations or rapid temperature changes.



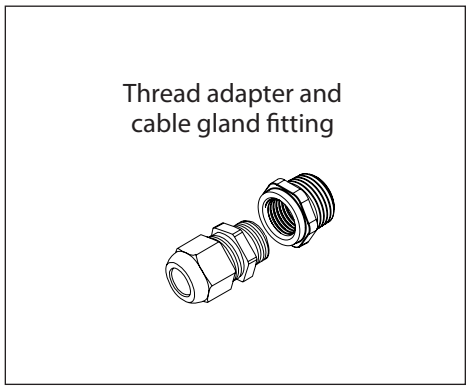
2 Clean all drilled holes of debris before mounting the device. Mount the enclosure to the duct with two sheet metal screws such that the duct air flow is parallel with the vent holes in the probe To prevent air leaks, ensure the gasket is compressed around the probe between the device enclosure and the air duct.



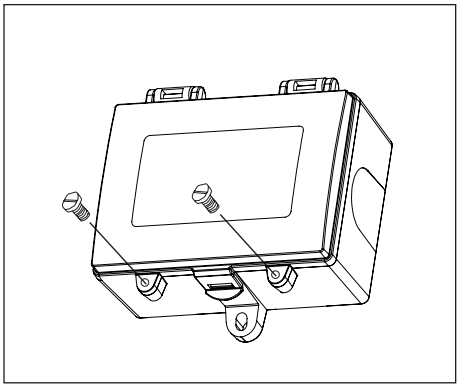
3 The enclosure has a hinged cover with a latch. Open the cover by pulling slightly on the latch on the bottom of the enclosure, at the same time pulling on the cover.



4 A 1/2" NPT threaded connection hole is provided in the side of the enclosure.



5 Screw an EMT connector or cable gland connector in until tight. A weatherproof conduit or cable gland fitting is recommended. There is an optional 1/2" NPT to M16 thread adapter and cable gland fitting.



6 Two security screws are provided which can be installed to help secure the cover once settings and wiring connections are complete.

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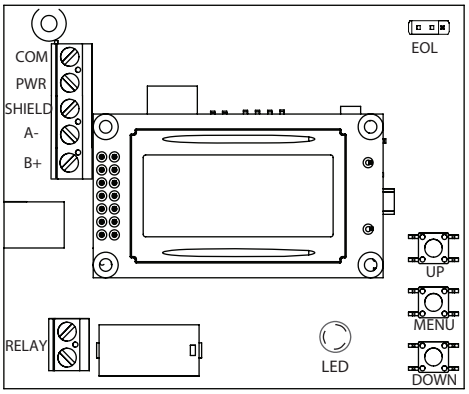
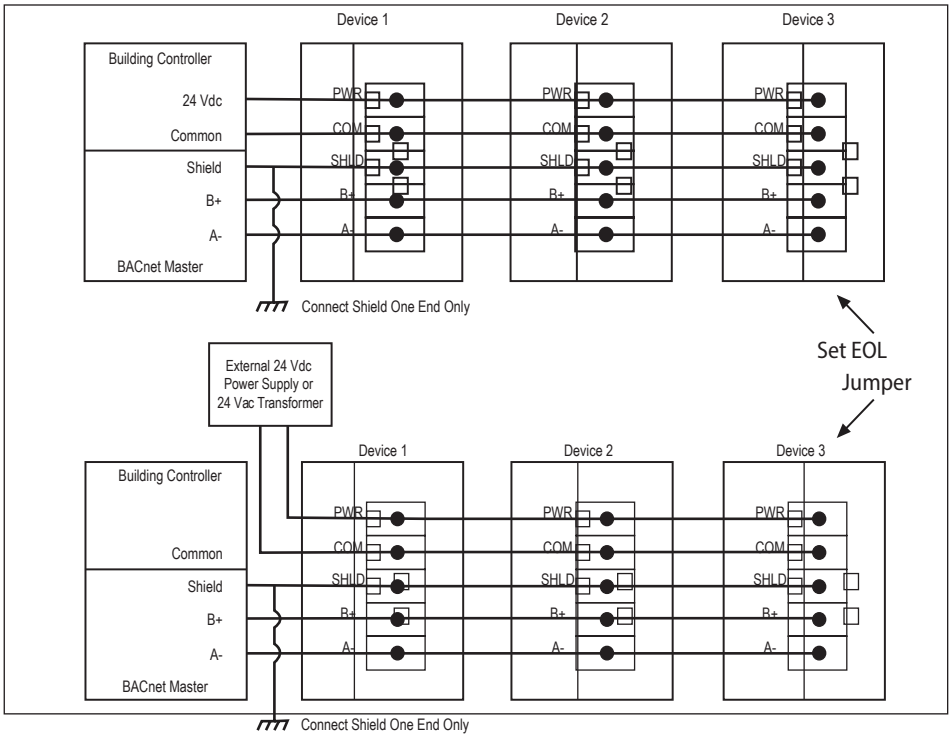


7 This device includes a EOL network termination jumper and will connect the (121 Ω) resistor correctly on the PCB. The default is OFF. Simply move the jumper to the ON position.



OPERATIONS

⚠ WARNING

The VOC Sensor requires a continuous burn-time of at least 3 weeks before the sensor algorithms provide accurate measurements. During this period the product-to-product readings may show variations. The sensor will calibrate itself over this time to the environment it is installed in.

The VOC Sensor is meant to provide an accurate measurement of INDOOR air quality. Diesel exhaust is not a component of indoor air quality, and the sensor should not be used in such an application.

In normal operation, the VOC Sensor will detect a broad range of reducing gases such as CO and VOCs and translate the measurement into a VOCI (VOC Index) value representing the average TVOC reading. This value is displayed on the LCD in either VOCI, ug/mg^3, or ppb as set in the menu.

The **GOOD**, **FAIR** and **POOR** air quality levels will also be displayed on the tri-color front panel LED. The LED colors are displayed as **GOOD=green**, **FAIR = yellow** and **POOR=red**.
If required, the LED operation can be disabled via the menu.

CONFIGURATION

The network type and parameters are configured locally via the Setup menu using the keypad and LCD. Any changes made are saved in non-volatile memory and are restored in case of a power loss. The menu can be accessed at any time after the start-up mode and if there is 5 minutes of inactivity the menu will close and normal operation will continue. All other device parameters are set up via the network.

To enter the menu, press and release the <MENU> key. This will enter the Setup Menu step 1, pressing the <MENU> key a second time saves the setting and advances to step 2. Each press of the <MENU> key saves the current setting and advances the menu item.

The <UP> and <DOWN> keys are used to make changes to program variables by scrolling through the available options. The first column below shows what will be displayed on the LCD, including the default value.

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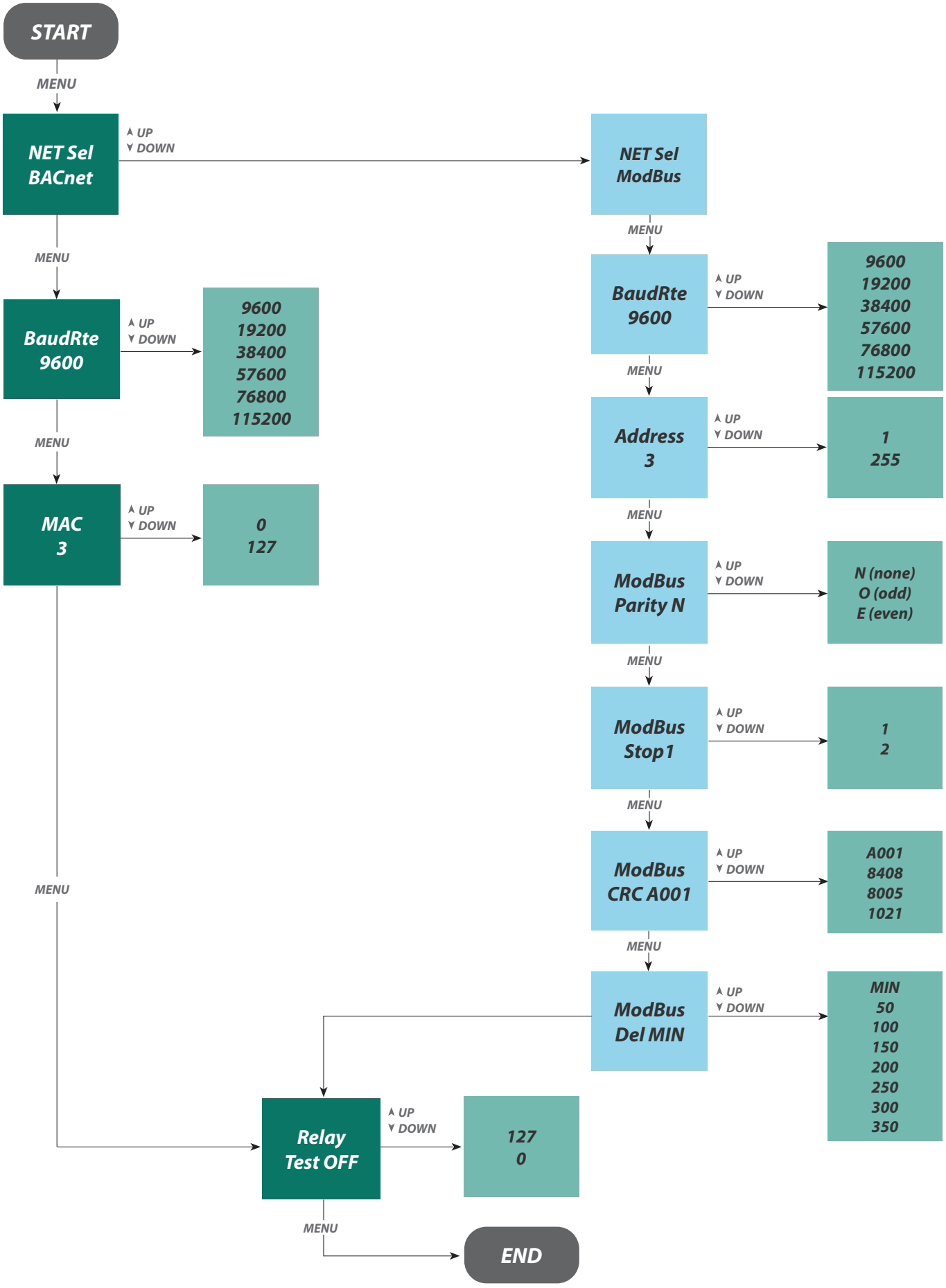

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SPECIFICATIONS

VOLATILE ORGANIC COMPOUNDS

Sensor Type:
MOX metal oxide semiconductor
Range:
VOC Index: 0 to 500 VOCI
TVOC: 0 to 2000 ug/m3 or 0 to 1000 PPB
Device Variation:
±15 VOC Index points, or ±15% VOC Index value (the larger value)
Repeatability:
±5 VOC Index points, or ±5% VOC Index value (the larger value)
Drift Compensation: Automatic baseline correction

TEMPERATURE

Sensor Type: Bipolar transistor sensor chip
Range: 0 to 50°C, 32 to 122°F
Accuracy: ± 0.2°C, ± 0.4°F (Typical)
Resolution: 0.1°C/°F
Calibration:
-5 to 5°C Offset, Resolution = 0.1°C ;
-10 to 10°F Offset, Resolution = 0.1°F

OPTIONAL HUMIDITY

Type: Thermoset polymer-based capacitance sensor chip
Range: 0-100% RH
Accuracy: ±2% RH
Resolution: 0.1% RH
Calibration:
-10 to 10%RH Offset, Resolution = 1%RH

GENERAL

Wiring: Screw terminal block (14 to 22 AWG)
Operating Conditions:
0 to 50°C (32 to 122°F), 0 to 90 %RH non-condensing
Storage Conditions:
-20 to 60°C (-4 to 140°F), 0 to 80 %RH non-condensing
Response Time: <10 seconds
Warm-up Time: 1 minute for detecting VOC events, 1 hour to meet specifications
Sensor Coverage: 100 m2 (1000 ft2) typical
Protection Class: III
Power Source UL: 24Vac/dc SELV (Class 2) supply
Outputs: Limited Energy, < 15W
Consumption: 150 mA max
EU Conformity: CE
UL Model: MIAQDTXPV & MIAQDTNPV
Certification: UL 60730 & CSA E60730, (UL E539555 file#)
UL 2043 / CSA/ULC S142 Compliant: Suitable for Use In Air Handling Spaces in Accordance with Section 300.22, (C) of the National Electrical Code
Purpose of Control: Operating Control
Type of Action: Type 1
Impulse Voltage: 330V
Pollution Degree: 2
Country of Origin: Canada

VISUAL INDICATION

LCD Display:
Alpha-numeric 2 line x 8 characters
LCD Dimensions:
35 x 15mm (1.4" x 0.6")
LCD Backlight:
Auto/Enable/Disable via Menu
LCD Resolution:
VOC Index value (0-500), resolution 1
TVOC value Analog 0 to 2000 ug/m3 or 0 to 1000 PPB, resolution 1
Temperature, 0-50°C (32 to 122°F), resolution 1°C (F)
Optional RH, 0-100%RH, resolution 1%RH
LED Indicator:
Tricolor (Green, Yellow, Red) see table, enable or disable via menu

OUTPUT

The output for BACnet® or Modbus network communication is selectable in the menu configuration.

Interface: MS/TP, 2-wire RS-485
Baud Rate: 9600, 19200, 38400, 57600, 76800, or 115200 (selectable)
Address Range: 0 - 127 (selectable) - BACnet®
Address Range: 1 - 255 (selectable) - ModBus

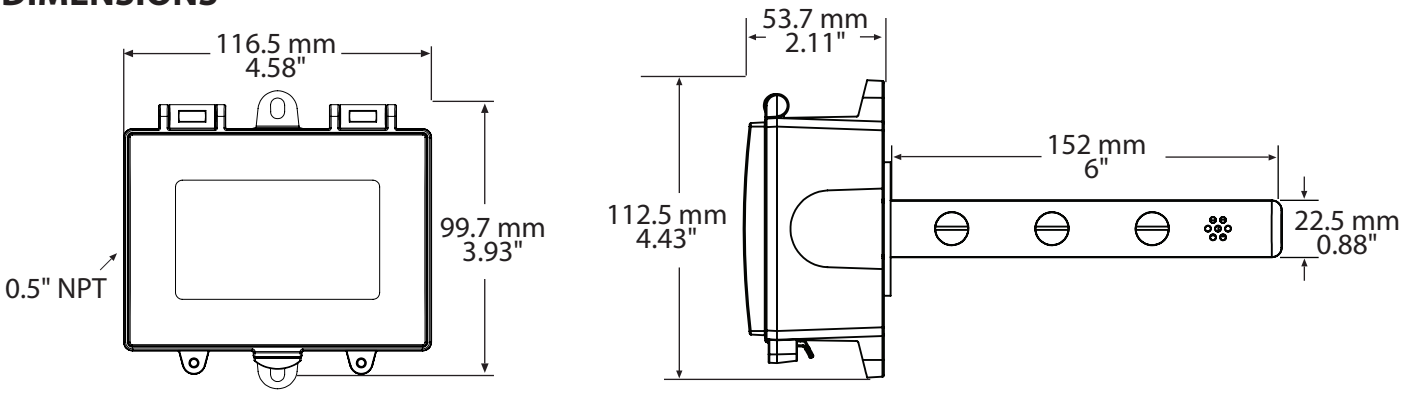
ENCLOSURE

Enclosure: Grey Polycarbonate, UL94-V0, IP65 (NEMA 4X)
Protection: IP65 (NEMA 4X)
Dimensions:
116.5mm W x 112.5mm H x 53.7mm D (4.58" x 4.43" x 2.11")
Probe Dimensions:
22.5mm D x 152mm L (0.88" x 6")

OPTIONAL RELAY

Contact Rating: Form A 5Amp @ 30Vdc/ac, SELV (Class 2), non-inductive load
Relay Setpoints (Selectable):
VOC: 100 - 500 VOC Index;
TVOC: 200 - 5000 ug/ m3
50 - 1300 ppb;
Temperature: 5 - 40°C / 40 - 100°F
Optional Humidity: 20 - 90%;
Setpoint/Hysterisis/Delay:
Selectable based on selected assignment
Relay Configuration: Via Menu
Switching Power: 60W, 62.5VA

DIMENSIONS



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NETWORK SETUP GUIDE

The network setup guide describes the implementation of the BACnet® or Modbus protocol. It is intended to assist control system programmers who may need to add support to their systems to communicate with this device.

BACnet® and Modbus setup guide downloads are available online.

BACnet® PROTOCOL

https://downloads.greystoneenergy.com/SG/SG-VOCXXXBAC-001.pdf

MODBUS PROTOCOL

https://downloads.greystoneenergy.com/SG/SG-VOCXXXMOD-001.pdf

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