



BACnet Room Pressure Monitor – RPC Series

Installation and Operating Instructions

Description

The Room Pressure Monitor is used to measure differential pressure in the range of 0.125 to 1"wc or 30 to 250 Pa. It combines precision high sensitivity silicon sensing capabilities and the latest ASIC technology to substantially reduce offset errors due to changes in temperature, stability to warmup, long term instability and position sensitivity. It is ideal for monitoring pressure for air or other clean inert gas. The device has an on-board auto-zero function, backlit LCD and alarm function with silence switch plus a native BACnet RS-485 MS/TP network connection.

Before Installation

Read these instructions carefully before installing and commissioning the Room Pressure Monitor. 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 a safety or emergency stop device or in any other application where failure of the product could result in personal injury. Take electrostatic discharge precautions during installation and do not exceed the device ratings.

Mounting

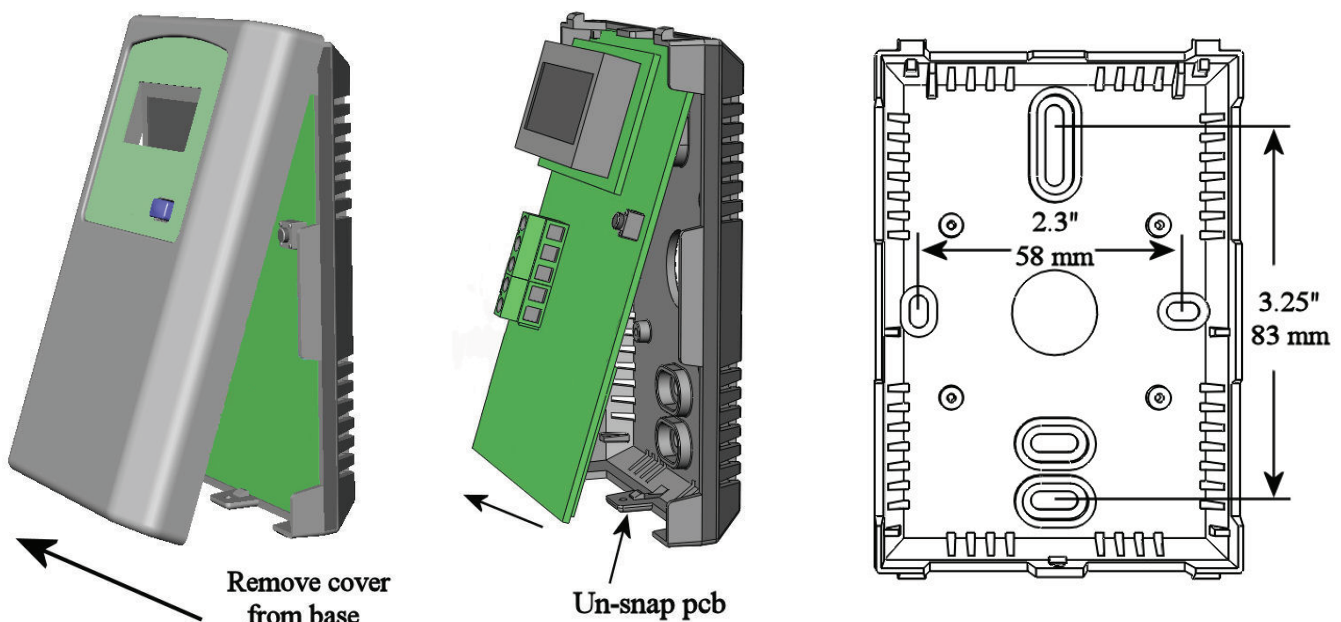
The RP installs directly on a standard electrical box and should be mounted about four to five feet from the floor of the area to be controlled. Leave enough space in the wall box to connect the pressure tubing and avoid locations with severe vibrations, excessive moisture or rapid temperature changes. To prevent erroneous readings due to air disturbances within the wall cavity, seal the conduit leading to the junction box.

The cover is hooked to the base at the top edge and must be removed from the bottom edge first. Use a small screwdriver to carefully pry each bottom corner if necessary. If a security screw is installed on the bottom edge, then it may have to be loosened or removed also. Tip the cover away from the base and sit it aside.

The pcb must be removed from the base to access the mounting holes. Follow usual anti-static procedures when handling the pcb and be careful not to damage any components. The pcb is removed by pressing the enclosure base to unsnap the latch near the bottom edge, then the pcb can be lifted out of the base. Sit the pcb aside until the base is mounted on the wall.

After the base is screwed to an electrical box or the wall using the appropriate holes, pull the wires through the wiring hole in the center of the pcb and then reinstall it in the enclosure base. Ensure the pcb is snapped into the base securely and correctly.

The remote pressure pickup (mounted on an electrical wall plate) is typically mounted on the opposite side of the wall outside the room being monitored. It also mounts directly to a standard electrical box four to five feet from the floor. If the remote buzzer option is used, simply mount it directly to a standard electrical box also.



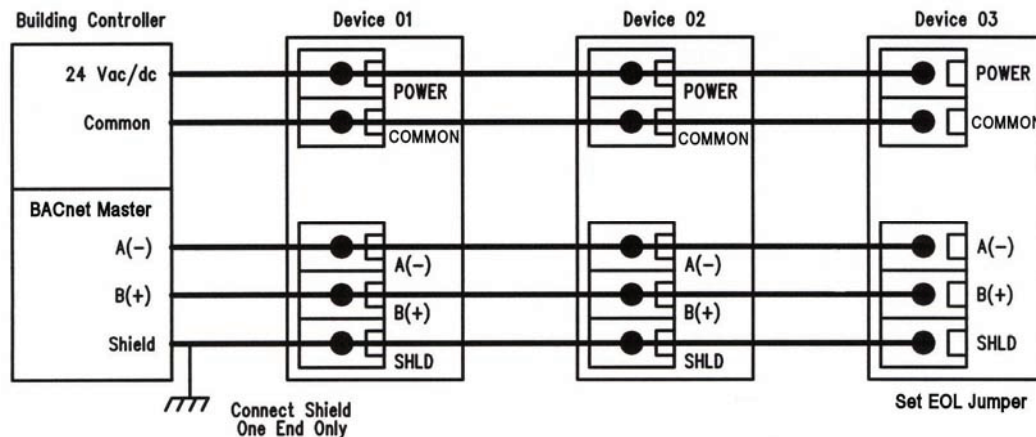
**Setup**

The device parameters must be set before connection to the network and will ensure each device will have a unique MAC address and Device Instance for startup. On startup, the MAC address is appended to the Device Object : Vendor Identifier to create the unique Device Instance (Device Object : Object Identifier). Once connected to a network, the Device Object : Object Identifier can be written to any unique value via BACnet and then the MAC address will no longer be appended to the value. Once set, all parameters are saved in non-volatile memory. The local menu and LCD are used to set the BACnet MAC device address (0-127) and the baud rate. The factory defaults are address 3 and 9600 baud. The menu and setup procedure is described later.

Wiring Instruction

The transmitter has standard screw block connectors. Use shielded twisted pair wiring of at least 22 AWG for all connections and do not run device wires in the same conduit with wiring used to supply inductive loads such as motors. Disconnect the power supply before making any connections to prevent electrical shock or equipment damage. Make all connections in accordance with national and local electrical codes.

This is a 3-wire sourcing device. Connect the positive dc or the ac voltage hot side (24 Vac/dc \pm 10%) to the **POWER** terminal. The supply common is connected to the **COMMON** terminal. The device is reverse voltage protected and will not operate if connected backwards. Use caution if 24 Vac power is used and one side of the transformer is earth-grounded. In general, the transformer should NOT be connected to earth ground when using devices with RS-485 network connections.



Connect the RS-485 network with twisted shielded pair to the terminals marked **A(-)**, **B(+)** and **SHIELD**. The positive wire connects to **B(+)** and the negative wire connects to **A(-)** and the cable shield must be connected to the **SHIELD** terminal on each device. If the device is installed at either end of an RS-485 network, an end-of-line (EOL) termination resistor (121 ohm) should be installed in parallel to the A(-) and B(+) terminals. This device includes a network termination jumper and will connect the 121 ohm resistor correctly on the pcb. Simply move the jumper to the EOL position and no external resistor is required. The ground wire of the shielded pair should be connected to earth ground at the end of the network and the master is not grounded. Do not run bus wiring in the same conduit as line voltage wiring or other wiring that switches power to highly inductive loads such as contactors, coils or motors.

A network segment is a single shielded wire loop run between several devices (nodes) in a daisy chain configuration. The total segment length should be less than 4000 feet (1220 meters) and the maximum number of nodes on one segment is 127. Nodes are any device connected to the loop and include controllers, repeaters and sensors such as the RP but do not include the EOL terminators. To install more than 127 devices, or to increase the network length, repeaters will be required for proper communication. The maximum daisy chain length (segment) depends on transmission speed (baud rate), wire size and number of nodes. If communication is slow or unreliable, it may be necessary to wire two daisy chains to the controller with a repeater for each segment.

The RELAY output is a normally open dry contact. This signal can be used to directly control an alarm, ventilation fan or may be connected to a digital input of the BAS for status monitoring. Ensure any load connected to the relay is within the relay rating in the Specification section.

The remote buzzer is an optional component that can be installed to give a remote indication of an alarm condition. The **BUZZER** output requires two wires (+ and -) to operate the 24 Vdc remote buzzer. Follow the polarity indications on both units when making the connections.

Pneumatic Connections

The two pressure ports are labeled **High Port** and **Low Port** on the pcb. The output reads a positive value when the port pressure is higher on the **High** port than the **Low** port so ensure these ports are connected correctly. One port will be left open to measure the room pressure where the device is installed and the other port is connected to a remote pickup outside the room to measure the differential pressure.

Use 1/16" ID flexible silicone tubing for the pressure connections. Tube size adapters are included to allow the use of 1/8" ID tubing. Arrange the tubing to minimize stress on the connections and ensure there are no kinks in the tubing. The tubing should be routed through the pcb access hole and out the back of the enclosure base.

Ensure the tubing to be used is clean and do not allow material to fall into the pressure ports as contamination could damage the sensor. When removing tubing use care to avoid breaking the ports. In some cases it is better to cut the tubing off rather than pulling it off but be careful not to cut the fitting or an air leak may occur.

Power Up Instruction

Before turning on the power, verify all wiring to ensure that it complies with the wiring instructions described above. Also, review the specifications to ensure the power supply is correct and that the pressure is within the correct range. The product should be allowed to warm-up for several minutes before attempting to verify accuracy.

Upon applying power to the device the alarm condition is set to off so the relay, buzzer, LED and remote alarm are off. The LCD will display the software version number such as 1.00 for 5 seconds. All keys are disabled during start-up mode. At the end of the start-up mode the device will enter normal operation.

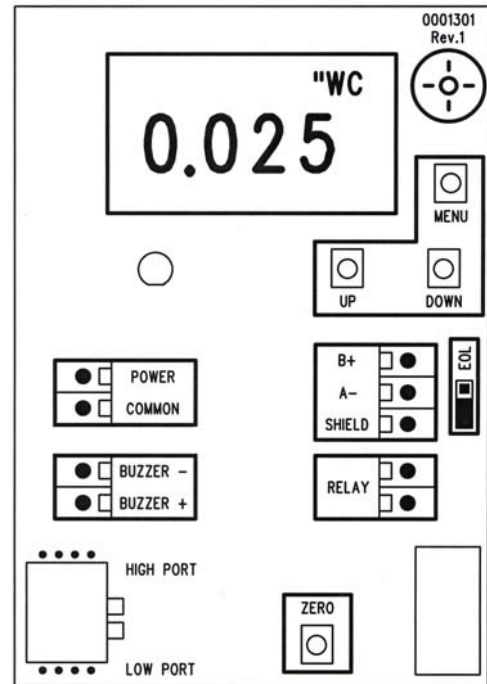
Normal Operation

For a bipolar range such as ± 1 "wc, the pressure applied to the **High** port should be higher than pressure applied to the **Low** port for a positive output response. In this case, differential pressure can be measured using both ports. If the **High** port has a positive pressure with respect to the **Low** port, then the output indicates a positive pressure. Negative pressure is indicated if the **High** pressure is less than the **Low** pressure.

During normal operation the device reads the pressure sensor and calculates the pressure value depending on the device model ranges and the selected pressure range. The pressure value is displayed on the LCD and sent to the pressure object.

The output value may be affected by the pressure averaging time setting in the menu. The pressure averaging setting controls how many readings are averaged to form the output value. The pressure averaging time defaults to 5 seconds and can be set from 1 to 60 seconds. This value effectively filters the output to prevent noise and false alarms.

The device also compares the output pressure value to the alarm setpoints and takes appropriate action. If the pressure value exceeds either setpoint then an alarm condition is set and the device will operate in alarm mode. Alarm mode activation is controlled by certain delay times and user settings described later. The device also monitors the keys and takes appropriate action if a key is pressed.



**Alarm Operation**

The alarm feature includes an on-board buzzer, silence switch, control relay, remote buzzer connection and LED.

The alarm feature has several settings that can be controlled by the setup menu or via BACnet. The device has two alarm trip points designated the high pressure alarm limit and the low pressure alarm limit. The high pressure alarm defaults to 50% of the maximum pressure range and the low pressure alarm defaults to 50% of the minimum pressure range. For example, if the device is set to a ± 1 "wc range, then the default low pressure alarm limit will be -0.5 "wc and the default high pressure alarm limit will be +0.5 "wc. This is the same result for Pa ranges.

The alarm setpoints can be set over the pressure range with certain conditions. For this example the pressure range is ± 1 "wc.

- the low pressure alarm limit cannot go below the minimum pressure range setting (-1.0 "wc).
- the high pressure alarm limit cannot go above the maximum pressure range setting (+1.0 "wc).
- the high pressure alarm limit must always be greater than the low pressure alarm limit.
- the minimum alarm span (high alarm - low alarm) must be at least 25% of the pressure span ($2 \text{ "wc} \times 25\% = 0.5 \text{ "wc}$).
- if the minimum span is reached while adjusting one of the alarm limits, then the other alarm limit will be "pushed".

In this example for the ± 1 "wc range, these are some possible alarm settings: -1.0 to -0.5 "wc, -0.75 to -0.25 "wc, -0.5 to 0 "wc, -0.25 to 0.25 "wc, 0 to 0.5 "wc, 0.5 to 1.0 "wc.

The alarm also has settings for on delay and off delay which can be set via the menu or BACnet. Both of these default to 5 seconds but may be changed from 1-59 seconds or 1-10 minutes. For an alarm condition to be set the pressure value must exceed either alarm trip point for more than the alarm on delay time. For an alarm condition to be reset the pressure value must return to a non-alarm value for more than the alarm off delay time.

When an alarm condition is set the red LED will flash, the relay output will activate, the local buzzer will sound and the remote buzzer output will activate. If the alarm condition is reset, all four outputs will de-activate. The LED flashes at a rate of 1 second on / 1 second off, the relay and remote buzzer are held on and the local buzzer sounds at a rate of 1 second on / 5 seconds off.

The alarm can be silenced by pressing the front cover silence switch during an alarm condition. In this case the buzzers and relay will de-activate but the LED continues to flash until the alarm condition is removed. The alarm silence time can be set in the menu or via BACnet to 1-60 minutes or forever and the default is 30 minutes. This means that if the silence switch is pressed and the alarms are silenced (and the alarm condition is not reset) then the alarm will re-activate after the silence time has expired. For the default setting of 30 minutes, the alarm buzzers and relay will activate again after 30 minutes of silence if the alarm condition still exists. If the delay is set to forever, then the alarms will not activate again in silence mode until the alarm condition is cleared and another alarm condition is set.

The alarm can be disabled by the user by holding the front cover silence switch for 5 seconds. It can be re-enabled by holding the switch again for 5 seconds. When the alarm is disabled, the OFF icon will be lit on the LCD and no alarms will be activated.

The local alarm buzzer volume can be set or muted via the menu or BACnet and an alarm test can be initiated via the menu or BACnet. The alarm test will force an alarm condition to be set. Since the menu has a 5 minute time-out, if the alarm is left on it will reset after 5 minutes back to a normal condition and the same time-out applies to the BACnet setting.

Auto Zero Operation

A sensor auto zero can be initiated by pressing and holding the internal **ZERO** switch for at least 3 seconds. If both pressure ports are close to zero pressure (open to ambient), then the device will calibrate with a new zero point.

Setup Menu Operation

The Setup Menu can be accessed by pressing the internal <MENU> key at any time after the start-up mode.

The system suspends operation when in the menu and holds the last pressure value as the output value. If an alarm condition was present then it will be reset to enter the menu and alarm operation is disabled while in the menu (except for alarm test). If the setup menu is not active for 5 minutes (no key press), then the menu will exit and the device returns to normal operation. When the menu is active, the silence key operation becomes the <UP> key as shown on the pcb silkscreen.

<MENU> Press and release the <MENU> key to enter the Setup Menu

1. "wc, Pa The pressure scale defaults to "wc. Use <UP> or <DOWN> to toggle it to Pa.



<MENU>

2. HI, LO The pressure range defaults to HI. Pressure ranges per model are shown below:
 RP01 = HI (± 1 "wc or ± 250 Pa), LO (± 0.5 "wc or ± 125 Pa)
 RP02 = HI (± 0.25 "wc or ± 60 Pa), LO (± 0.125 "wc or ± 30 Pa)
 This can be changed to LO using <UP> or <DOWN>.



<MENU>

3. 1-60" The pressure averaging time defaults to 5 seconds. This can be changed from 1-60 seconds using <UP> or <DOWN>.



<MENU>

4. x.xx, xxx The high pressure alarm limit defaults to (+ range max x 50%). This equals + 0.5 "wc for the ± 1 "wc range, + 125 for the ± 250 Pa range, etc. It can be changed using <UP> or <DOWN> throughout the range. Resolution for each range is: ± 1 "wc (0.05), ± 0.5 "wc (0.02), ± 0.25 "wc (0.01), ± 0.125 "wc (0.01), ± 250 Pa (10), ± 125 Pa (5), ± 60 Pa (2) and ± 30 Pa (1). Note that the ± 250 Pa range must be displayed as /10 such that it is - 25H to 25H.



<MENU>

5. x.xx, xxx The low pressure alarm limit defaults to (- range max x 50%). This equals - 0.5 for the ± 1 "wc range, - 125 for the ± 250 Pa range, etc. It can be changed using <UP> or <DOWN> throughout the range. Note the restrictions as described in Alarm Operation section.



<MENU>

6. 1-59", 1-10' The alarm on delay defaults to 5" (seconds). It can be changed from 1-59" (seconds) and 1-10' (minutes) using <UP> or <DOWN>.





<MENU>


7. 1-59", 1-10' The alarm off delay defaults to 5" (seconds). It can be changed from 1-59" (seconds) and 1-10' (minutes) using <UP> or <DOWN>.





<MENU>


8.  1-60', F The alarm silence time defaults to 30' (minutes). It can be changed from 1-60' (minutes) or F for forever using <UP> or <DOWN>.

<MENU>
9.  0, 1, 2 The buzzer volume defaults to 2 (high volume). It can be changed to 0 (off) or 1 (low volume) using <UP> or <DOWN>.

<MENU>
10.  0, 1 The LCD backlight defaults to 1 (on). It can be toggled to 0 (off) using <UP> or <DOWN>.

<MENU>
11.  OFF, On The alarm test defaults to OFF. It can be set to On using <UP> or <DOWN>.

<MENU>
12.  0-127 The default BACnet MAC address is 3. This can be changed from 0 to 127 using <UP> and <DOWN>.

<MENU>
13.  96, 192, 384, 768 The default network baud rate is 96 (9600). It can be changed to 192 (19200), 384 (38400) or 768 (76800) using <UP> or <DOWN>.

<MENU> Exits the Setup Menu and returns to normal operation.



BACnet Room Pressure Monitor – RPC Series

Installation and Operating Instructions

Specifications

Pressure Ranges	RP01	± 1 "wc, ± 0.5 "wc, ± 250 Pa, ± 125 Pa
	RP02	± 0.25 "wc, ± 0.125 "wc, ± 60 Pa, ± 30 Pa
Accuracy		$\pm 1\%$ FS of selected range ($\pm 2\%$ for 0.125 "wc and 30 Pa ranges)
Stability		$\pm 1\%$ FS max (1 year)
Thermal Effect		$< \pm 3.5\%$ FS max, 5 - 50 °C (41 - 122 °F)
Response Time		1 - 60 Seconds (menu selectable)
Proof Pressure		100 "wc (24.9 kPa)
Burst Pressure		200 "wc (49.8 kPa)
Operating Conditions		0 - 60 °C (32 - 140 °F), 0 - 90 %RH non-condensing
Storage Temperature		-40 - 70 °C (-40 - 158 °F)
Media Compatibility		Dry air or inert gas
Zero Adjust		Pushbutton auto-zero
Power Supply		24 Vac/dc $\pm 10\%$
Power Consumption		80 mA max with alarms on
Communication		2-wire RS-485, BACnet MS/TP protocol
Baud Rate		Locally set to 9600, 19200, 38400 or 76800
MAC Address Range		Locally set to 0-127 (factory default is 3)
LCD Display		3 ½ digit LCD, 0.45" digit height, unit symbols and backlight
Alarm Relay		NO contact, 2 Amps @ 120 Vac or 30 Vdc
Alarm Trip Point		Upper and Lower alarms adjustable over the pressure range
Alarm Delay		0 to 10 Minutes (menu selectable)
Wiring Connections		Screw terminal block (14 to 22 AWG)
Pressure Connections		Ports for 1/16" ID tubing (1/8" ID adapters included)
Enclosure		Wall mount enclosure, 3.3"w x 4.7"h x 1.15"d (84 x 119 x 29 mm)
Weight		115 g (4 oz)

BACnet Object List

Object Type	Dynamically Creatable	Dynamically Deletable	Object Identifier	Object Name
Device	No	No	381003	Room Pressure 003
Analog Input	No	No	AI 1	Pressure Sensor Value
Analog Value	No	No	AV 1 AV 2 AV 3 AV 4 AV 5 AV 6 AV 7	Pressure Averaging Time Alarm High Limit Alarm Low Limit Alarm On Delay Alarm Off Delay Alarm Silence Time Buzzer Volume
Binary Value	No	No	BV 1 BV 2 BV 3 BV 4 BV 5	Alarm Enable Alarm Test Backlight Enable Pressure Units Pressure Range
Binary Input	No	No	BI 1 BI 2 BI 3	Alarm Status Low Alarm Status High Alarm Status



BACnet Room Pressure Monitor – RPC Series

Installation and Operating Instructions

The **BACnet Device object** allows configuration of the room pressure device. Device object properties are shown below.

Property	Default Value	Property Data Type	Access
Object Identifier	381003	BACnetObjectIdentifier(numeric)	Read / Write
Object Name	Room Pressure Monitor 003	CharacterString (32)	Read / Write
Object Type	DEVICE (8)	BACnetObjectType	Read
System Status	OPERATIONAL (0)	BACnetDeviceStatus	Read
Vendor Name	Greystone Energy Systems	CharacterString	Read
Vendor Identifier	381	Unsigned16	Read
Model Name	RPC	CharacterString	Read
Firmware Revision	1.4	CharacterString	Read
Application Software Version	V1.0	CharacterString	Read
Location	150 English Dr, Moncton, NB	CharacterString (32)	Read / Write
Description	Greystone RP Monitor	CharacterString (32)	Read / Write
Protocol Version	1	Unsigned	Read
Protocol Revision	7	Unsigned	Read
Protocol Services Supported	See description below	BACnetServicesSupported	Read
Protocol Object Types Supported	See description below	BACnetObjectTypesSupported	Read
Object List	See description below	BACnetArray	Read
Maximum APDU Length Accepted	50, B'0000'	Unsigned	Read
Segmentation Supported	NO SEGMENTATION (3)	BACnetSegmentation	Read
APDU Timeout	10,000	Unsigned	Read / Write
Number of APDU Retries	3	Unsigned	Read / Write
Max Master	127	Unsigned	Read / Write
Max Info Frames	1	Unsigned	Read
Device Address Binding	Empty	BACnetAddressBinding	Read
Database Revision	0	Unsigned	Read

Object_Identifier Initial default number is 381003, where 381 is the vendor ID and 003 is the default network MAC address. When the MAC address is initially changed the value is updated and saved. For example, if the MAC address is set to 50 via the menu for startup, then the device instance will be set to 381050. This property is also writable via BACnet. If the Device:Object_Identifier is written to via BACnet then the MAC address is no longer appended to the vendor ID to create this value.

Object_Name Initial string is "Room_Pressure_Monitor_003" where 003 is the default network address. Can be written with a new string of maximum length of 32 characters and the value is saved. The "003" is the MAC address as set by the menu and is automatically changed if the MAC address is changed. Once written to via BACnet, the MAC address no longer gets appended to the value.

Protocol_Services_Supported readProperty, writeProperty, deviceCommunicationControl, who-Has, who-Is
Binary bit string = {00000000 00001001 01000000 00000000 01100000}

Protocol_Object_Types_Supported Analog_Input, Analog_Value, Binary_Input, Binary_Value, Device
Binary bit string = {10110100 10000000 00000000 00000000}

Object_List ((Device, Instance 3), (Analog Input, Instance 1), (Analog Value, Instance 1) ... (Analog Value, Instance 7)
(Binary Value, Instance 1) (Binary Value, Instance 5), (Binary Input, Instance 1).....(Binary Input, Instance 3)

APDU_Timeout Value is 10,000. Can be modified from 0 to 10,000.

Number_Of_APDU_Retries Value is 3. Can be modified from 0 to 10.

Max_Master Value is 127. Value is saved. Can be modified from 0 to 127.

Database_Revision Value is 0 to 255.



BACnet Room Pressure Monitor – RPC Series

Installation and Operating Instructions

The analog input BACnet object allows reading of current pressure sensor value. AI object properties are shown below.

Analog input object Pressure_Sensor_Value (Present Value is current sensor reading in the current units.)

Property	Default Value	Property Data Type	Access
Object Identifier	AI1 (Analog Input 1)	BACnetObjectIdentifier	Read
Object Name	Pressure_Sensor_Value	CharacterString (32)	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	current reading	Real	Read
Description	Pressure Value in Pa or "wc	CharacterString (32)	Read
Device Type	Room Pressure Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Pascals (53) or "wc (58)	BACnetEngineeringUnits	Read

The seven analog value BACnet objects allow configuration of the alarms, etc. AV object properties are shown below.

Analog value object Pressure_Averaging_Time (Present Value defaults to 5 seconds. Can be set from 1 to 60 sec. Resolution is 1 sec)

Property	Default Value	Property Data Type	Access
Object Identifier	AV1 (Analog Value 1)	BACnetObjectIdentifier	Read
Object Name	Pressure_Averaging_Time	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	5	Real	Read / Write
Description	Pressure Averaging Time (0-60 seconds)	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Seconds (73)	BACnetEngineeringUnits	Read

Analog value object Alarm_High_Limit (Present Value defaults to (+ range max x 50%).

Property	Default Value	Property Data Type	Access
Object Identifier	AV2 (Analog Value 2)	BACnetObjectIdentifier	Read
Object Name	Alarm_High_Limit	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0.5 (for example)	Real	Read / Write
Description	Alarm High Limit in Pa or "wc	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Pascals (53) or "wc (58)	BACnetEngineeringUnits	Read

Analog value object Alarm_Low_Limit (Present Value defaults to (- range max x 50%).

Property	Default Value	Property Data Type	Access
Object Identifier	AV3 (Analog Value 3)	BACnetObjectIdentifier	Read
Object Name	Alarm_Low_Limit	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	-0.5 (for example)	Real	Read / Write
Description	Alarm Low Limit in Pa or "wc	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Pascals (53) or "wc (58)	BACnetEngineeringUnits	Read



BACnet Room Pressure Monitor – RPC Series

Installation and Operating Instructions

Analog value object Alarm_On_Delay (Present_Value defaults to 5 seconds. Can be set from 1 to 59 seconds and 1 to 10 minutes).

Property	Default Value	Property Data Type	Access
Object Identifier	AV4 (Analog Value 4)	BACnetObjectIdentifier	Read
Object Name	Alarm_On_Delay	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	5	Real	Read / Write
Description	Alarm On Delay (1-59 sec or 1-10 min)	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Seconds (73) or Minutes (72)	BACnetEngineeringUnits	Read

Analog value object Alarm_Off_Delay (Present_Value defaults to 5 seconds. Can be set from 1 to 59 seconds and 1 to 10 minutes).

Property	Default Value	Property Data Type	Access
Object Identifier	AV5 (Analog Value 5)	BACnetObjectIdentifier	Read
Object Name	Alarm_Off_Delay	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	5	Real	Read / Write
Description	Alarm Off Delay (1-59 sec or 1-10 min)	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Seconds (73) or Minutes (72)	BACnetEngineeringUnits	Read

Analog value object Alarm_Silence_Time (Present_Value defaults to 30 minutes. Can be set from 1 to 60 minutes or 0 for no reset).

Property	Default Value	Property Data Type	Access
Object Identifier	AV6 (Analog Value 6)	BACnetObjectIdentifier	Read
Object Name	Alarm_Silence_Time	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	30	Real	Read / Write
Description	Alarm Silence Time (1-60 min, 0 = no reset)	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Minutes (72)	BACnetEngineeringUnits	Read

Analog value object Buzzer_Volume (Present_Value defaults to 2 (high volume). Can be set to 0 (off) or 1 (low volume)).

Property	Default Value	Property Data Type	Access
Object Identifier	AV7 (Analog Value 7)	BACnetObjectIdentifier	Read
Object Name	Buzzer_Volume	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	2	Real	Read / Write
Description	Buzzer Volume (0 = off, 1 = low, 2 = high)	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Out of Service	FALSE (0)	Boolean	Read
Units	No-units (95)	BACnetEngineeringUnits	Read



BACnet Room Pressure Monitor – RPC Series

Installation and Operating Instructions

The 5 binary value BACnet objects allow device parameter setting. Binary value object properties are shown below.

Binary value object Alarm_Enable (Present Value is normally 1, set to 0 to disable the alarm functions)

Property	Default Value	Property Data Type	Access
Object Identifier	BV1 (Binary Value 1)	BACnetObjectIdentifier	Read
Object Name	Alarm_Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	ACTIVE (1)	BACnetBinaryPV	Read / Write
Description	0 = Alarm Disable, 1 = Alarm Enable	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read

Binary value object Alarm_Test (Present Value is normally 0, set to 1 to test the alarm functions)

Property	Default Value	Property Data Type	Access
Object Identifier	BV2 (Binary Value 2)	BACnetObjectIdentifier	Read
Object Name	Alarm_Test	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read / Write
Description	0 = Normal Operation, 1 = Alarm Test	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read

Binary value object Backlight_Enable (Present Value is normally 1, set to 0 to disable the LCD backlight)

Property	Default Value	Property Data Type	Access
Object Identifier	BV3 (Binary Value 3)	BACnetObjectIdentifier	Read
Object Name	Backlight_Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	ACTIVE (1)	BACnetBinaryPV	Read / Write
Description	0 = Backlight Disable, 1 = Backlight Enable	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read

Binary value object Pressure_Units (Present Value is normally 0 for "wc pressure units, set to 1 for Pa units)

Property	Default Value	Property Data Type	Access
Object Identifier	BV4 (Binary Value 4)	BACnetObjectIdentifier	Read
Object Name	Pressure_Units	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read / Write
Description	0 = "wc, 1 = Pa	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read



BACnet Room Pressure Monitor – RPC Series

Installation and Operating Instructions

Binary value object Pressure_Range (Present_Value is normally 1 for the highest pressure range, set to 0 for the low pressure range)

Property	Default Value	Property Data Type	Access
Object Identifier	BV5 (Binary Value 5)	BACnetObjectIdentifier	Read
Object Name	Pressure_Range	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	ACTIVE (1)	BACnetBinaryPV	Read / Write
Description	0 = Low Pressure Range, 1 = High Pressure Range	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read

The 3 binary input BACnet objects indicates the alarm status.

Binary input object Alarm_Status (Present_Value is normally 0, will change to 1 if any alarm is present)

Property	Default Value	Property Data Type	Access
Object Identifier	BI1 (Binary Input 1)	BACnetObjectIdentifier	Read
Object Name	Alarm_Status	CharacterString (32)	Read
Object Type	BINARY_INPUT (3)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read
Description	Alarm Status	CharacterString (32)	Read
Device Type	0 = No Alarm, 1 = Pressure Alarm	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Polarity	NORMAL (0)	BACnetPolarity	Read

Binary input object Low_Alarm_Status (Present_Value is normally 0, will change to 1 if a low pressure alarm is present)

Property	Default Value	Property Data Type	Access
Object Identifier	BI2 (Binary Input 2)	BACnetObjectIdentifier	Read
Object Name	Low_Alarm_Status	CharacterString (32)	Read
Object Type	BINARY_INPUT (3)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read
Description	Low Alarm Status	CharacterString (32)	Read
Device Type	0 = No Low Alarm, 1 = Low Pressure Alarm	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Polarity	NORMAL (0)	BACnetPolarity	Read

Binary input object High_Alarm_Status (Present_Value is normally 0, will change to 1 if a high pressure alarm is present)

Property	Default Value	Property Data Type	Access
Object Identifier	BI3 (Binary Input 3)	BACnetObjectIdentifier	Read
Object Name	High_Alarm_Status	CharacterString (32)	Read
Object Type	BINARY_INPUT (3)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read
Description	High Alarm Status	CharacterString (32)	Read
Device Type	0 = No High Alarm, 1 = High Pressure Alarm	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0)	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Polarity	NORMAL (0)	BACnetPolarity	Read

**BACnet Protocol Implementation Conformance Statement (PICS)**

Date : Nov 8, 2013
Vendor Name : Greystone Energy Systems
Product Name : Room Pressure Monitor
Product Model Number : RP
Application Software Version : 1.0
Firmware Revision : 1.4
BACnet Protocol Revision : 7

Product Description : The Greystone Room Pressure Monitor is a smart room sensor with native BACnet MS/TP protocol for network communication. It measures room differential pressure levels and reports this value back to a building automation system (BAS). The device features an alarm function and has an LCD to display measured values.

BACnet Standardized Device Profile (Annex L) : BACnet Application Specific Controller (B-ASC)

BACnet Interoperability Building Blocks Supported (Annex K) : DS-RP-B, DS-WP-B,
DM-DDB-B, DM-DOB-B
DM-DCC-B

Segmentation Capability : Not supported

Standard Object Types Supported :

Object Type	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
Device	No	No	Location, Description, Max_Master, Max_Info_Frames	Object_Identifier, Object_Name, Location, Description, APDU_Timeout, Max_Master, Number_Of_APDU_Retries
Analog Input	No	No	Description, Reliability, Device_Type	
Analog Value	No	No	Description	Present_Value
Binary Value	No	No	Description, Reliability	Present_Value
Binary Input	No	No	Description, Reliability, Device_Type	

Data Link Layer Options : MS/TP master (Clause 9), baud rates : 9600, 19200, 38400, 76800

Device Address Binding : Not supported

Networking Options : None

Character Set Supported : ANSI X3.4