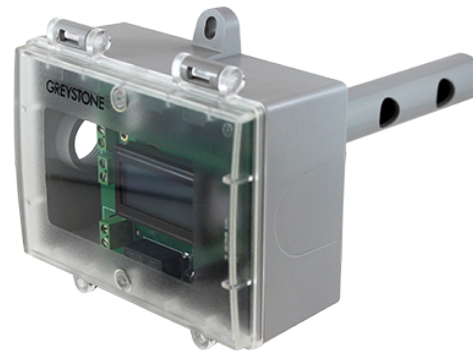




VOC SERIES

Air Quality Transmitter

Setup Guide for BACnet® Communication



Object Type (BACnetObjectType)	Object Identifier (BACnetObjectIdentifier)	Object Name (CharacterString (32))	Notes	Present Value (Real)	Description (CharacterString(32))	Device Type (CharacterString(32))	Status Flags (BACnetStatusFlags)	Event State (BACnetEventState)	Reliability (BACnetReliability)	Out of Service (Boolean)	Units (BACnetEngineering Units)	COV increment (Real)	Number of States	Property List (BACnet Array)
Device	381003	VOC-003		381003			{false, false, false, false} (0000) or (1100) if no sensor	NORMAL (0) or FAULT (1) if no sensor	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	FALSE (0)	no units (95) or parts-per-billion (97)	50		
Analog Input	AI 1	VOC Sensor Value	0-500 VOC Index, resolution 1 or 0-1000ppb, resolution 1ppb Sensor Error = -1000	Current Reading	VOC Sensor Value	VOC Sensor	{false, false, false, false} (0000) or (1100) if no sensor	NORMAL (0) or FAULT (1) if no sensor	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	FALSE (0)	percent-relative-humidity (29)	10		
	AI 2	RH Sensor Value	0-100%RH, Resolution = 0.1%RH Sensor Error = -1000	Current Reading	RH Sensor Value	RH Sensor	{false, false, false, false} (0000) or (1100) if no sensor	NORMAL (0) or FAULT (1) if no sensor	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	FALSE (0)	degrees-Celsius (62) or degrees-Fahrenheit (64)	2/4		
	AI 3	Temperature Sensor Value	0 to 50 °C, Resolution = 0.1 °C -32 to122 °F, Resolution = 0.1 °F Sensor Error = -1000	Current Reading	Temperature Sensor Value	Temperature Sensor	{false, false, false, false} (0000) or (1100) if no sensor	NORMAL (0) or FAULT (1) if no sensor	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	FALSE (0)				
Analog Value	AV 1	Temperature Offset	-5 to 5 Δ°C, Resolution = 0.1 Δ°C -10 to 10 Δ°F, Resolution = 0.1 Δ°F	0	Temperature Offset	NA	{false, false, false, false} (0000) or (1100) if no sensor	NORMAL (0) or FAULT (1) if no sensor	NA	FALSE (0)	D°F (120) or Δ°C (121)			
	AV 2	Humidity Offset	+/-10 %RH, Resolution = 1 %RH	0	RH Offset	NA	{false, false, false, false} (0000) or (1100) if no sensor	NORMAL (0) or FAULT (1) if no sensor	NA	FALSE (0)	percent-relative-humidity (29)			
	AV3	Relay Setpoint	Setpoint to activate Relay, VOC Index, range 100-500, resolution 10 TVOC, range 100-1000ppb, resolution 10 ppb RH range 20 to 90%RH 1%RH Temperature 5 to 40 °C, Resolution = 1 °C 40 to100 °F, Resolution =1 °F No Relay = 0	20 VOC Index	100-500 VOC Index, 0-1000ppb TVOC 20 to 90%RH 5 to 40 °C, 40 to100 °F	NA	{false, false, false, false} (0000) or (1100) if no relay	NORMAL (0) or FAULT (1) if no relay	NA	FALSE (0)	VOC Index - no units (95) TVOC - ppb (97) RH - %RH (29) Temperature - C (62) or F (64)			
	AV4	Relay Hysteresis	Hysteresis for relay activation, VOC Index, range 10-50 resolution 1 TVOC, 10-50ppb, resolution 1ppb 1%RH, range 5 to 20%RH, 1 C/F, range 1 to 5 C,or 2-10F No Relay = 0	20 VOC Index	10-50 VOC Index 10-50 ppb 5 to 20%RH (1 to 5 C or 2-10/F)	NA	{false, false, false, false} (0000) or (1100) if no relay	NORMAL (0) or FAULT (1) if no relay	NA	FALSE (0)	VOC Index - no units (95) TVOC - ppb (97) RH - %RH (29) Temperature - C (62) or F (64)			
	AV5	Relay On Time	Delay time before relay activated/deactivated, resolution 1second, range 255 seconds	0	0 to 255 Seconds	NA	{false, false, false, false} (0000) or (1100) if no relay	NORMAL (0) or FAULT (1) if no relay	NA	FALSE (0)	seconds (73)			
Binary Value	BV 1	VOC Units	VOC Index (0) TVOC ppb (1)	INACTIVE (0) - BACnetBinaryPV	VOC Index - no units (0) TVOC - ppb (1)	NA	{false, false, false, false} (0000)	NORMAL (0)	NA	FALSE (0)	NA			
	BV 2	Temperature Units	0 = °C, 1 = °F	INACTIVE (0) - BACnetBinaryPV	Celsius (0) or Fahrenheit (1)	NA	{false, false, false, false} (0000) or (1100) if no sensor	NORMAL (0) or FAULT (1) if no sensor	NA	FALSE (0)	NA			
	BV 3	Relay Test	0 = Inactive, 1 = Test	INACTIVE (0) - BACnetBinaryPV	Normal (0) or Test (1)	NA	{false, false, false, false} (0000)	NORMAL (0) or FAULT (1) if no relay	NA	FALSE (0)	NA			
	BV 4	Set Override	0 = Inactive, 1 = Active	INACTIVE (0) - BACnetBinaryPV	Inactive (0) or Active (1)	NA	{false, false, false, false} (0000) or (1100) if no Override	NORMAL (0) or FAULT (1) if no Override	NA	FALSE (0)	NA			
	BV 5	Set New TVOC Reference	0 = Inactive, 1 = Active Used to reset reference for TVOC reading, will read as 50ppb when reset assuming clear air	INACTIVE (0) - BACnetBinaryPV	Inactive (0) or Active (1)	NA	{false, false, false, false} (0000) or (1100) if not ppb unit	NORMAL (0) or FAULT (1) if not ppb unit	NA	FALSE (0)	NA			
	BV 6	Set Wireless Enable	0 = Disable, 1 = Enable Used to enable the BLE wireless link	DISABLED (0) - BACnetBinaryPV	Disable (0) or Enable (1)	NA	{false, false, false, false} (0000)	NORMAL (0)	NA	FALSE (0)	NA			
Binary Input	BI 1	Relay Status	0 = Normal, 1 = Alarm	INACTIVE (0) - BACnetBinaryPV	Normal (0) or Alarm (1)	NA	{false, false, false, false} (0000) or (1100) if no relay	NORMAL (0) or FAULT (1) if no relay	NA	FALSE (0)	NA			
	BI 2	Override Status	0 = Inactive, 1 = Active	INACTIVE (0) - BACnetBinaryPV	Inactive (0) or Active (1)	NA	{false, false, false, false} (0000) or (1100) if no Override	NORMAL (0) or FAULT (1) if no Override	NA	FALSE (0)	NA			
	BI 3	Wireless Connect Status	0 = Disconnected, 1 = Connected	INACTIVE (0) - BACnetBinaryPV	Disconnected (0) or Connected (1)	NA	{false, false, false, false} (0000) or (1100) if Wireless Disabled	NORMAL (0) or FAULT (1) if disabled	NA	FALSE (0)	NA			
Multi-State Value	MSV 1	Relay Assignment	1 = VOC 2 = RH 3 = Temperature 0 = No Relay	1	Relay Assignment	NA	{false, false, false, false} (0000) or (1100) if no relay	NORMAL (0) or FAULT (1) if no relay	NA	FALSE (0)	NA		3	
	MSV 2	LCD Backlight	1 = Auto 2= Off 3 = On	1	LCD Backlight	NA	{false, false, false, false} (0000)	NORMAL (0)	NA	FALSE (0)	NA		3	
	MSV 3	LCD Format	1= VOC Index 2= RH 3= Temperature 4= VOC/TRH	1	LCD Format	NA	{false, false, false, false} (0000)	NORMAL (0)	NA	FALSE (0)	NA		4	

The BACnet Device object

Property	Default Value	Property Data Type	Access	Notes
Object Identifier	381003	BACnetObjectIdentifier(numeric)	Read / Write	Initial default number is 381001, where 381 is the vendor ID and 001 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	VOC-001	CharacterString (32)	Read / Write	Initial string is "VOC-001" where 001 is the default network address. Can be written with a new string of maximum length of 32 characters and the value is saved. The "001" is the MAC address 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.
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	VOC	CharacterString	Read	
Firmware Revision	1	CharacterString	Read	
Application Software Version	V1.0	CharacterString	Read	
Location	150 English Drive, Moncton, NB	CharacterString (32)	Read / Write	
Description	VOC Sensor	CharacterString (32)	Read / Write	
Protocol Version	1	Unsigned	Read	
Protocol Revision	14	Unsigned	Read	
Protocol Services Supported	See Notes	BACnetServicesSupported	Read	readProperty, readPropertyMultiple, writeProperty, deviceCommunicationControl, who-Has, who-Is, subscribeCOV, subscribeCOVProperty, Binary bit string = {00000100 00001011 01000000 00000000 01100010 0}
Protocol Object Types Supported	See Notes	BACnetObjectTypesSupported	Read	Analog_Input, Analog_Value, Binary_Value, Binary_Input, Device Binary bit string = {10110100 10000000 00000000 00000000 00000000 00000000}
Object List	See Notes	BACnetArray	Read	{{(Device, Instance 1), (AI1..AI2), (AV1..AV5), (BV1..BV3), (BI1)}}
Maximum APDU Length Accepted	50, B'0000'	Unsigned	Read	
Segmentation Supported	NO_SEGMENTATION (3)	BACnetSegmentation	Read	
APDU Timeout	6,000	Unsigned	Read / Write	Value is 6,000. Can be modified from 1 to 10,000.
Number of APDU Retries	3	Unsigned	Read / Write	Value is 3. Can be modified from 1 to 10.
Max Master	127	Unsigned	Read / Write	Value is 127. Can be modified from 1 to 127.
Max Info Frames	1	Unsigned	Read	
Device Address Binding	Empty	BACnetAddressBinding	Read	
Database Revision	0	Unsigned	Read	Value is 0 to 255.
Property List		BACnetArray	Read	

BACnet Protocol Implementation Conformance Statement (PICS)

Date	19-Jul-21
Vendor Name	Greystone Energy Systems
Product Name	VOC Sensor
Product Model Number	VOC
Application Software Revision	1.0
Firmware Revision	1.0
BACnet Protocol Revision	14

Product Description The Greystone VOC Sensor is a sensor with native BACnet MS/TP protocol for network communication. It measures VOC levels and reports values back to a building automation system (BAS).

BACnet Standardized Device Profile (Annex L)	BACnet Application Specific Controller (B-ASC)
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BACnet Interoperability Building Blocks Supported (Annex K)	DS-RP-B, DS-RPM-B, DS-WP-B, DS-COV-B, DS-COVP-B, DM-DDB-B, DM-DOB-B, DM-DCC-B
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Segmentation Capability	Not Supported
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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, COV_Increment	Units
Analog Value	No	No	Description	Present_Value
Binary Value	No	No	Description	Present_Value
Binary Input	No	No	Description, Reliability	
Multi-State Value	No	No	Description	Present_Value

Data Link Layer Options	MS/TP master (Clause 9), Baud rates : 9600, 19200, 38400, 57600, 76800, 115200
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Device Address Binding	Not supported
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Networking Options	None
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Character Set Supported	ISO 10646 (UTF-8)
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