Rough Duty Sensor (NPI-56)
RH/T Transmitter

SETUP GUIDE BACnet® COMMUNICATION

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BACnet

Object Type	Dynamically Creatable	Dynamically Deletable	Object Identifier	Object Name
Device	No	No	381001	DP 001
Analog Input	No	No	AI 1	Temperature
			AI 2	Relative Humidity
			AI 3	Dewpoint Temperature
			AI 4	Wet Bulb Temperature
			AI 5	Enthalpy
			AI 6	Absolute Humidity
			AI7	Pipe Temperature
Analog Value	No	No	AV 1	Temperature Offset
			AV 2	T Calibration Point1
			AV 3	T Calibration Value on Point1
			AV 4	T Calibration Point2
			AV 5	T Calibration Value on Point2
			AV 6	RH Offset
			AV 7	RH Calibration Point1
			AV 8	RH Calibration Value on Point1
			AV 9	RH Calibration Point2
			AV 10	RH Calibration Value on Point2
			AV 11	Altitude
			AV12	Relay Low Setpoint
			AV13	Relay High Setpoint
			AV14	Relay Hysteresis
			AV15	Relay On Time
			AV16	Relay Off Time
			AV17	Relay Contact Time (for DI only)
Binary Value	No	No	BV 1	Units Select
			BV 2	Temperature Display Enable
			BV 3	RH Display Enable
			BV 4	DP Display Enable
			BV 5	WB Display Enable
			BV 6	EN Display Enable
			BV 7	AH Display Enable
			BV 8	Pipe Temperature Display Enable
			BV 9	Factory Restore
			BV 10	Relay Direct
			BV 11	Relay Controlled by BACnet
			BV 12	Relay Test
Binary Input	No	No	BI 1	DI Status
			BI 2	Condensation Status
Multi-State Value	No	No	MSV 1	Backlight Select
			MSV 2	Relay Assignment
			MSV 3	T(Probe) Adjust Method
			MSV 4	RH(Probe) Adjust Method
Multi-State Input	No	No	MSI 1	Relay Status
			MSI 2	Generic Error Codes
			MSI 3	Communication Error Codes
			MSI 4	Condensation Error Codes

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

Property	Default Value	Property Data Type	Access
Object Identifier	381001	BACnetObjectIdentifier(numeric)	Read / Write
Object Name	DP001	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	ROUGH DUTY	CharacterString	Read
Firmware Revision	1.0	CharacterString	Read
Application Software Version	V1.0	CharacterString	Read
Location	321 Desbrisay Ave, Moncton, NB	CharacterString (32)	Read / Write
Description	ROUGH DUTY Sensor,MAC001,9600Hz	CharacterString (32)	Read / Write
Protocol Version	1	Unsigned	Read
Protocol Revision	14	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	480	Unsigned	Read
Segmentation Supported	BOTH(0)	BACnetSegmentation	Read
APDU Segment Timeout	5,000	Unsigned	Read
APDU Timeout	6,000	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

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Active_COV_Subscriptions	Empty	ListOfBACnetCOVSubscriptions	Read
Property List		BACnetArray	Read

Object Identifier — Initial default number is 381003, 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 — Initial string is "DW 001" where DW is the device model name and 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.

Description — default as "ROUGH DUTY Sensor," + " MAC001,9600Hz" (for example, mac address & baud rate will attach automatically).

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Protocol Services Supported

readProperty, readPropertyMultiple, writeProperty, deviceCommunicationControl, who-Has, who-Is, subscribeCOV, subscribeCOVProperty
Binary bit string = {00000100 00001011 01000000 00000000 01100010 0}

Protocol Object Types Supported

((Device, Instance 1), (AI1…AI7), (AV1...AV17), (BV1…BV12), (BI1…2), (MSV1…4), (MSI1…4))
Binary bit string = {10100100 10000000 00010000 00000000 00000000 00000000 0000000}

Object List

(
(Device, Instance 1),
(Analog Input, Instance 1), …, (Analog Input, Instance 7),
(Analog Value, Instance 1), …, (Analog Value, Instance17),
(Binary Value, Instance 1), …, (Binary Value, Instance 12),
(Binary Input, Instance 1), …, (Binary Input, Instance 2),
(Multi State Value, Instance 1), (Multi State Value, Instance 4),
(Multi State Input, Instance 1), …, (Multi State Input, Instance 4)
)

APDU Timeout — Value is 6,000. Can be modified from 1 to 10,000.

Number Of APDU Retries — Value is 3. Can be modified from 1 to 10.
Max Master — Value is 127. Value is saved. Can be modified from 1 to 127.
Database Revision — Value is 0 to 255.

The analog input BACnet objects allow reading of sensor values. Analog input object properties are shown below.

Analog Input Object Temperature — (Present Value = Temperature sensor reading in °F or °C, resolution = 0.1°, range = -20 to 60 °C or -4 to 140 °F)

Property	Default Value	Property Data Type	Access
Object Identifier	AI1 (Analog Input 1)	BACnetObjectIdentifier	Read
Object Name	Temperature	CharacterString (32)	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	current reading	Real	Read
Description	-20.0 to 60.0C,resolution=0.1C or -4.0 to 140.0F,resolution=0.1F	CharacterString (32)	Read
Device Type	Temperature Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	degrees-Celsius (62) or degrees-Fahrenheit (64)	BACnetEngineeringUnits	Read
COV Increment	2 °C (cab be changed from 1 to 30°C, resolution=1), or 4 °F (cab be changed from 1 to 40°F, resolution=1)	Real	R / W
Property List		BACnetArray	Read

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Analog Input Object
Relative Humidity

(Present Value = RH sensor reading in %RH, resolution is 0.1%, range = 0 to 100 %RH)

Property	Default Value	Property Data Type	Access
Object Identifier	AI2 (Analog Input 2)	BACnetObjectIdentifier	Read
Object Name	Relative Humidity	CharacterString (32)	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	current reading	Real	Read
Description	0.0-100.0%RH,resolution=0.1%RH	CharacterString (32)	Read
Device Type	RH Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Percent-relative-humidity (29)	BACnetEngineeringUnits	Read
COV Increment	10%RH (cab be changed from 1 to 50%RH, resolution=1)	Real	R / W
Property List		BACnetArray	Read

Analog Input Object
Dewpoint Temperature

(Present Value = Dewpoint temperature sensor reading in °F or °C, resolution = 0.1°, range = -30 to 60 °C or -22 to 140 °F)

Property	Default Value	Property Data Type	Access
Object Identifier	AI3 (Analog Input 3)	BACnetObjectIdentifier	Read
Object Name	Dewpoint Temperature	CharacterString (32)	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	current reading	Real	Read
Description	-30.0 to 60.0C,resolution=0.1C or -22.0 to 122.0F,resolution=0.1F	CharacterString (32)	Read
Device Type	DP Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	degrees-Celsius (62) or degrees-Fahrenheit (64)	BACnetEngineeringUnits	Read
COV Increment	2 °C (cab be changed from 1 to 30°C, resolution=1), or 4 °F (cab be changed from 1 to 40°F, resolution=1)	Real	R / W
Property List		BACnetArray	Read

Analog Input Object
Wet Bulb Temperature

(Present Value = Wet bulb temperature sensor reading in °F or °C, resolution = 0.1°, range = -20 to 60 °C or -4 to 140 °F)

Property	Default Value	Property Data Type	Access
Object Identifier	AI4 (Analog Input 4)	BACnetObjectIdentifier	Read
Object Name	Wet Bulb Temperature	CharacterString (32)	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	current reading	Real	Read
Description	-20.0 to 60.0C,resolution=0.1C or -4.0 to 140.0F,resolution=0.1F	CharacterString (32)	Read
Device Type	WB Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	degrees-Celsius (62) or degrees-Fahrenheit (64)	BACnetEngineeringUnits	Read
COV Increment	2 °C (cab be changed from 1 to 30°C, resolution=1), or 4 °F (cab be changed from 1 to 40°F, resolution=1)	Real	R / W
Property List		BACnetArray	Read

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Analog Input Object Enthalpy (Present Value = Enthalpy sensor reading in kJ/Kg or BTU/lb., resolution = 1, range = -20 to 785 kJ/Kg or -1 to 345BTU/lb.)

Property	Default Value	Property Data Type	Access
Object Identifier	AI5 (Analog Input 5)	BACnetObjectIdentifier	Read
Object Name	Enthalpy	CharacterString (32)	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	current reading	Real	Read
Description	-20 to 785kJ/Kg, resolution=1 or -1 to 345BTU/lb., resolution=1	CharacterString (32)	Read
Device Type	EN Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	kilojoules-per-kilogram (125) or btud-per-pound (127)	BACnetEngineeringUnits	Read
COV Increment	4 kJ/Kg (cab be changed from 1 to 200kJ/Kg), or 2 BTU/lb. (cab be changed from 1 to 100BTU/lb.)	Real	R / W
Property List		BACnetArray	Read

Analog Input Object Absolute Humidity (Present Value = Absolute humidity sensor reading in g/m3, resolution = 1, range = 0 to 130 g/m3; or in lb./ft3, "0 to 0.0081lb./ft3, resolution=0.0001 lb./ft3)

Property	Default Value	Property Data Type	Access
Object Identifier	AI6 (Analog Input 6)	BACnetObjectIdentifier	Read
Object Name	Absolute Humidity	CharacterString (32)	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	current reading	Real	Read
Description	0 to 130 g/m3,resolution=1 g/m3 or 0-0.0081lb/ft3, resolution=0.0001	CharacterString (32)	Read
Device Type	AH Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	Grams-per-cubic-meter (217) or pounds-per-cubic-foot (257)	BACnetEngineeringUnits	Read
COV Increment	2 g/m3 (cab be changed from 1 to 50g/m3), or 0.0002 lb./ft3 (cab be changed from 0.0001 to 0.0030lb./ft3)	Real	R / W
Property List		BACnetArray	Read

Note, pounds-per-cubic-foot (lb./ft3, 257) as Greystone proprietary units.

Analog Input Object Pipe Temperature (Present Value = Pipe Temperature sensor reading in °F or °C, resolution = 0.1°, range = -20 to 60 °C or -4 to 140 °F)

Property	Default Value	Property Data Type	Access
Object Identifier	AI7 (Analog Input 7)	BACnetObjectIdentifier	Read
Object Name	Pipe Temperature	CharacterString (32)	Read
Object Type	ANALOG_INPUT (0)	BACnetObjectType	Read
Present Value	current reading	Real	Read
Description	-20.0 to 60.0C,resolution=0.1C or -4.0 to 140.0F,resolution=0.1F	CharacterString (32)	Read
Device Type	Pipe Temperature Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	degrees-Celsius (62) or degrees-Fahrenheit (64)	BACnetEngineeringUnits	Read
COV Increment	2 °C (cab be changed from 1 to 30°C, resolution=1), or 4 °F (cab be changed from 1 to 40°F, resolution=1)	Real	R / W

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Property List		BACnetArray	Read

The analog value BACnet objects allow sensor calibration and parameter selection. Analog value object properties are shown below.

Analog Value Object (Present Value defaults to 0. Can be set from -5.0 to +5.0 Δ°C or from –10 to +10 Δ°F)
Temperature Offset (Units depend on the device units, either °C or °F, resolution = 0.1°C/F)

Property	Default Value	Property Data Type	Access
Object Identifier	AV1 (Analog Value 1)	BACnetObjectIdentifier	Read
Object Name	Temperature Offset	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	-5.0 to 5.0C,resolution=0.1C or -10.0 to 10.0F,resolution=0.1F	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	delta-degrees-Fahrenheit (120) or Δ°C (121)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Analog Value Object (Present Value defaults to 25°C or 77°F. Can be set from 0 to 55°C or from 32 to 131°F)
T Calibration Point1 (Units depend on the device units, either °C or °F, resolution = 1°C/F)

Property	Default Value	Property Data Type	Access
Object Identifier	AV2 (Analog Value 2)	BACnetObjectIdentifier	Read
Object Name	T Calibration Point1	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	0 to 55C, resolution=1C or 32 to 131F, resolution=1F	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	degrees-Celsius (62) or degrees-Fahrenheit (64)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Note, T Calibration Point2 - T Calibration Point1 >=5°C or 10°F

Analog Value Object (Present Value defaults to 0. Can be set from -5.0 to +5.0 Δ°C or from –10 to +10 Δ°F)
T Calibration Value on Point1 (Units depend on the device units, either °C or °F, resolution = 0.1°C/F)

Property	Default Value	Property Data Type	Access
Object Identifier	AV3 (Analog Value 3)	BACnetObjectIdentifier	Read
Object Name	T Calibration Value on Point1	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	-5.0 to 5.0C,resolution=0.1C or -10.0 to 10.0F,resolution=0.1F	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	delta-degrees-Fahrenheit (120) or Δ°C (121)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

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Analog Value Object (Present Value defaults to 30°C or 86°F. Can be set from 5 to 60°C or from 42 to 140°F)
T Calibration Point2 (Units depend on the device units, either °C or °F, resolution = 1°C/F)

Property	Default Value	Property Data Type	Access
Object Identifier	AV4 (Analog Value 4)	BACnetObjectIdentifier	Read
Object Name	T Calibration Point2	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	5 to 60C, resolution=1C or 42 to 140F, resolution=1F	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	degrees-Celsius (62) or degrees-Fahrenheit (64)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Note, T Calibration Point2 - T Calibration Point1 >=5°C or 10°F

Analog Value Object (Present Value defaults to 0. Can be set from -5.0 to +5.0 Δ°C or from –10 to +10 Δ°F)
T Calibration Value on Point2 (Units depend on the device units, either °C or °F, resolution = 0.1°C/F)

Property	Default Value	Property Data Type	Access
Object Identifier	AV5 (Analog Value 5)	BACnetObjectIdentifier	Read
Object Name	T Calibration Value on Point2	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	-5.0 to 5.0C,resolution=0.1C or -10.0 to 10.0F,resolution=0.1F	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	delta-degrees-Fahrenheit (120) or Δ°C (121)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Analog Value Object (Present Value defaults to 0. Can be set from -20 to 20%RH, resolution=0.5%RH)
Humidity Offset

Property	Default Value	Property Data Type	Access
Object Identifier	AV6 (Analog Value 6)	BACnetObjectIdentifier	Read
Object Name	Humidity Offset	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	-20 to 20%RH, resolution=0.5%RH	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	percent-relative-humidity (29)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

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Analog Value Object (Present Value defaults to 40%RH. Can be set from 0 to 80 %RH, resolution = 1%RH)
RH Calibration Point1

Property	Default Value	Property Data Type	Access
Object Identifier	AV7 (Analog Value 7)	BACnetObjectIdentifier	Read
Object Name	RH Calibration Point1	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	0 to 80%RH, resolution=1%RH	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	percent-relative-humidity (29)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Note, RH Calibration Point2 - RH Calibration Point1 >=20%RH

Analog Value Object (Present Value defaults to 0. Can be set from -20 to 20%RH, resolution=0.5%RH)
RH Calibration Value on Point1

Property	Default Value	Property Data Type	Access
Object Identifier	AV8 (Analog Value 8)	BACnetObjectIdentifier	Read
Object Name	RH Calibration Value on Point1	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	-20 to 20%RH, resolution=0.5%RH	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	percent-relative-humidity (29)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Analog Value Object (Present Value defaults to 60%RH. Can be set from 20 to 100 %RH, resolution = 1%RH)
RH Calibration Point2

Property	Default Value	Property Data Type	Access
Object Identifier	AV9 (Analog Value 9)	BACnetObjectIdentifier	Read
Object Name	RH Calibration Point1	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	20 to 100%RH, resolution=1%RH	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	percent-relative-humidity (29)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Note, RH Calibration Point2 - RH Calibration Point1 >=20%RH

Analog Value Object (Present Value defaults to 0. Can be set from -20 to 20%RH, resolution=0.5%RH)
RH Calibration Value on Point2

Property	Default Value	Property Data Type	Access
Object Identifier	AV10 (Analog Value 10)	BACnetObjectIdentifier	Read
Object Name	RH Calibration Value on Point2	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	-20 to 20%RH, resolution=0.5%RH	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read

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Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	percent-relative-humidity (29)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Analog Value Object (Present Value defaults to 0. Can be set from 0 to 3500 meters or from 0 to 11500 ft.)
Altitude (Units depend on the device units, either m or ft., resolution = 100)

Property	Default Value	Property Data Type	Access
Object Identifier	AV11 (Analog Value 11)	BACnetObjectIdentifier	Read
Object Name	Altitude	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	0-3500 meters, resolution=100m or 0-11500 ft., resolution=100ft.	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	meters (31) or feet (33)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Analog Value Object
Relay Low Setpoint

Property	Default Value	Property Data Type	Access
Object Identifier	AV12 (Analog Value 12)	BACnetObjectIdentifier	Read
Object Name	Relay Low Setpoint	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	See below	Real	R / W
Description	See below	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	See below	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

1. For Relay Assignment =0 (to No Assignment), there is N/A on setpoint.

2. For Relay Assignment =1 (to free control by BACnet), there is N/A on setpoint.

3. For Relay Assignment =2 (to DI), there is N/A on setpoint.

4. For Relay Assignment =3 (to Temperature),
   Present Value defaults to -10°C. Set-point can be set from -20 to 55°C, resolution=1, condition as High Setpoint – Low Setpoint >=5°C. Or
   Present Value defaults to 14°F. Set-point can be set from -4 to 131°F, resolution=1, condition as High Setpoint – Low Setpoint >=10°F.

5. For Relay Assignment =4 (to RH),
   Present Value defaults to 20%RH. Set-point can be set from 0 to 95%RH, resolution=1, condition as High Setpoint – Low Setpoint >=5%RH.

6. For Relay Assignment =5 (to Dewpoint),
   Present Value defaults to -29°C. Set-point can be set from -30 to 55°C, resolution=1, condition as High Setpoint – Low Setpoint >=5°C. Or
   Present Value defaults to 20°F. Set-point can be set from -22 to 131°F, resolution=1, condition as High Setpoint – Low Setpoint >=10°F.

7. For Relay Assignment =6 (to Wet Bulb),
   Present Value defaults to -11°C. Set-point can be set from -20 to 55°C, resolution=1, condition as High Setpoint – Low Setpoint >=5°C. Or
   Present Value defaults to 11°F. Set-point can be set from -4 to 131°F, resolution=1, condition as High Setpoint – Low Setpoint >=10°F.

8. For Relay Assignment =7 (to Enthalpy),

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Present Value defaults to -10kJ/Kg. Set-point can be set from -20 to 780kJ/Kg, resolution=1, condition as High Setpoint – Low Setpoint >=5kJ/Kg. Or
Present Value defaults to 5Btu/lb., Set-point can be set from -1 to 340Btu/lb., resolution=1, condition as High Setpoint – Low Setpoint >=5Btu/lb.

9. For Relay Assignment =8 (to Absolute Humidity),
Present Value defaults to 1g/m3. Set-point can be set from 0 to 125g/m3, resolution=1, condition as High Setpoint – Low Setpoint >=5g/m3. Or
Present Value defaults to 0.0001lb./ft3, Set-point can be set from 0 to 0.0078lb./ft3, resolution=0.0001, condition as High Setpoint – Low Setpoint >=0.0003lb./ft3.

10. For Relay Assignment =9 (to Condensation),
Present Value defaults to 1.0°C. Set-point can be set from 0 to 5.0°C, resolution=0.1. Or
Present Value defaults to 2.0°F. Set-point can be set from 0 to 10.0°F, resolution=0.1.
If (Tpipe -DP) < SP, the relay will be activated. Then if (Tpipe -DP) >= SP +Hy, relay will be inactivated

Analog Value Object
Relay High Setpoint

Property	Default Value	Property Data Type	Access
Object Identifier	AV13 (Analog Value 13)	BACnetObjectIdentifier	Read
Object Name	Relay High Setpoint	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	See below	Real	R / W
Description	See below	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	See below	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

1. For Relay Assignment =0 (to No Assignment), there is N/A on setpoint.

2. For Relay Assignment =1 (to free control by BACnet), there is N/A on setpoint.

3. For Relay Assignment =2 (to DI), there is N/A on setpoint.

4. For Relay Assignment =3 (to Temperature),
Present Value defaults to 26°C. Set-point can be set from -15 to 60°C, resolution=1, condition as High Setpoint – Low Setpoint >=5°C. Or
Present Value defaults to 79°F. Set-point can be set from 6 to 140°F, resolution=1, condition as High Setpoint – Low Setpoint >=10°F.

5. For Relay Assignment =4 (to RH),
Present Value defaults to 70%RH. Set-point can be set from 5 to 100%RH, resolution=1, condition as High Setpoint – Low Setpoint >=5%RH.

6. For Relay Assignment =5(to Dewpoint),
Present Value defaults to 20°C. Set-point can be set from -25 to 60°C, resolution=1, condition as High Setpoint – Low Setpoint >=5°C. Or
Present Value defaults to 68°F. Set-point can be set from -12 to 140°F, resolution=1, condition as High Setpoint – Low Setpoint >=10°F.

7. For Relay Assignment =6 (to Wet Bulb),
Present Value defaults to 22°C. Set-point can be set from -15 to 60°C, resolution=1, condition as High Setpoint – Low Setpoint >=5°C. Or
Present Value defaults to 72°F. Set-point can be set from 6 to 140°F, resolution=1, condition as High Setpoint – Low Setpoint >=10°F.

8. For Relay Assignment =7 (to Enthalpy),
Present Value defaults to 64kJ/Kg. Set-point can be set from -15 to 785kJ/Kg, resolution=1, condition as High Setpoint – Low Setpoint >=5kJ/Kg. Or
Present Value defaults to 35Btu/lb. Set-point can be set from 4 to 345Btu/lb., resolution=1, condition as High Setpoint – Low Setpoint >=5Btu/lb.

9. For Relay Assignment =8 (to Absolute Humidity),
Present Value defaults to 17g/m3. Set-point can be set from 5 to 130g/m3, resolution=1, condition as High Setpoint – Low Setpoint >=5g/m3. Or
Present Value defaults to 0.001lb./ft3. Set-point can be set from 0.0003 to 0.0081lb./ft3, resolution=0.0001, condition as High Setpoint – Low Setpoint >=0.0003lb./ft3.

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Analog Value Object
Relay Hysteresis

Property	Default Value	Property Data Type	Access
Object Identifier	AV14 (Analog Value 14)	BACnetObjectIdentifier	Read
Object Name	Relay Hysteresis	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	See below	Real	R / W
Description	See below	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	See below	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

1. For Relay Assignment =0 (to No Assignment), there is N/A on setpoint.

2. For Relay Assignment =1 (to free control by BACnet), there is N/A on setpoint.

3. For Relay Assignment =2 (to DI), there is N/A on setpoint.

4. For Relay Assignment =3 (to Temperature),
   Present Value defaults to 2°C. Hysteresis can be set from 1 to 5°C, resolution=1. Or
   Present Value defaults to 4°F. Hysteresis can be set from 2 to 10°F, resolution=1.

5. For Relay Assignment =4 (to RH), Present Value defaults to 10%RH. Hysteresis can be set from 5 to 20%RH, resolution=1.

6. For Relay Assignment =5 (to Dewpoint),
   Present Value defaults to 2°C. Hysteresis can be set from 1 to 5°C, resolution=1. Or
   Present Value defaults to 4°F. Hysteresis can be set from 2 to 10°F, resolution=1.

7. For Relay Assignment =6 (to Wet Bulb),
   Present Value defaults to 2°C. Hysteresis can be set from 1 to 5°C, resolution=1. Or
   Present Value defaults to 4°F. Hysteresis can be set from 2 to 10°F, resolution=1.

8. For Relay Assignment =7 (to Enthalpy),
   Present Value defaults to 2kJ/Kg. Hysteresis can be set from 1 to 5kJ/Kg, resolution=1. Or
   Present Value defaults to 2Btu/lb., Hysteresis can be set from 1 to 3Btu/lb., resolution=1.

9. For Relay Assignment =8 (to Absolute Humidity),
   Present Value defaults to 2g/m3. Hysteresis can be set from 1 to 5g/m3, resolution=1. Or
   Present Value defaults to 0.002lb./ft3. Hysteresis can be set from 0.0001 to 0.0003lb./ft3, resolution=0.0001.

10. For Relay Assignment =9 (to Condensation),
    Present Value defaults to 0.2°C. Hysteresis can be set from 0 to 1.0°C, resolution=0.1. Or
    Present Value defaults to 0.4°F. Hysteresis can be set from 0 to 2.0°F, resolution=0.1.

Analog Value Object (Present Value defaults to 20. Can be set from 0 to 3600 seconds, resolution=10)
Relay On Time

Property	Default Value	Property Data Type	Access
Object Identifier	AV15 (Analog Value 15)	BACnetObjectIdentifier	Read
Object Name	Relay On Time	CharacterString (32)	Read

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Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	0 to 3600Seconds, resolution=10s	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	seconds (73)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Analog Value Object (Present Value defaults to 0. Can be set from 0 to 3600 seconds, resolution=10)
Relay Off Time

Property	Default Value	Property Data Type	Access
Object Identifier	AV16 (Analog Value 16)	BACnetObjectIdentifier	Read
Object Name	Relay Off Time	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	0 to 3600Seconds, resolution=10s	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	seconds (73)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Analog Value Object (Present Value defaults to 60. Can be set from 10 to 3600 seconds, resolution=10)
Relay Contact Time (For DI only)

Property	Default Value	Property Data Type	Access
Object Identifier	AV17 (Analog Value 17)	BACnetObjectIdentifier	Read
Object Name	Relay Contact Time (For DI only)	CharacterString (32)	Read
Object Type	ANALOG_VALUE (2)	BACnetObjectType	Read
Present Value	0	Real	R / W
Description	10 to 3600Seconds, resolution=10s	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Units	seconds (73)	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

The binary value BACnet object allows configuration of the device. Binary value object properties are shown below.

Binary Value Object (Present Value defaults to 0 (INACTIVE) for Metric. Can be set to 1 (ACTIVE) for Imperial)
Units Select

Property	Default Value	Property Data Type	Access
Object Identifier	BV1 (Binary Value 1)	BACnetObjectIdentifier	Read
Object Name	Units Select	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Metric(0) or Imperial(1)	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
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 1 (ACTIVE) for enabled. Can be set to 0 (INACTIVE) for disabled)

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Temperature Display Enable

Property	Default Value	Property Data Type	Access
Object Identifier	BV2 (Binary Value 2)	BACnetObjectIdentifier	Read
Object Name	Temperature Display Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Invisible(0) or Visible(1)	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
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 1 (ACTIVE) for enabled. Can be set to 0 (INACTIVE) for disabled)
RH Display Enable

Property	Default Value	Property Data Type	Access
Object Identifier	BV3 (Binary Value 3)	BACnetObjectIdentifier	Read
Object Name	RH Display Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Invisible(0) or Visible(1)	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
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE) for disabled. Can be set to 1(ACTIVE) for enabled)
DP Display Enable

Property	Default Value	Property Data Type	Access
Object Identifier	BV4 (Binary Value 4)	BACnetObjectIdentifier	Read
Object Name	DP Display Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Invisible(0) or Visible(1)	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
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE) for disabled. Can be set to 1(ACTIVE) for enabled)
WB Display Enable

Property	Default Value	Property Data Type	Access
Object Identifier	BV5(Binary Value 5)	BACnetObjectIdentifier	Read
Object Name	WB Display Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Invisible(0) or Visible(1)	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
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE) for disabled. Can be set to 1(ACTIVE) for enabled)
EN Display Enable

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Property	Default Value	Property Data Type	Access
Object Identifier	BV6 (Binary Value 6)	BACnetObjectIdentifier	Read
Object Name	EN Display Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Invisible(0) or Visible(1)	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
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE) for disabled. Can be set to 1(ACTIVE) for enabled)
AH Display Enable

Property	Default Value	Property Data Type	Access
Object Identifier	BV7(Binary Value 7)	BACnetObjectIdentifier	Read
Object Name	AH Display Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Invisible(0) or Visible(1)	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
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE) for disabled. Can be set to 1(ACTIVE) for enabled)
Pipe Temperature Display Enable

Property	Default Value	Property Data Type	Access
Object Identifier	BV8 (Binary Value 8)	BACnetObjectIdentifier	Read
Object Name	Pipe Temperature Display Enable	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Invisible(0) or Visible(1)	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE). Can be only set to 1(ACTIVE) for restore)
Factory Restore

Property	Default Value	Property Data Type	Access
Object Identifier	BV9 (Binary Value 9)	BACnetObjectIdentifier	Read
Object Name	Factory Restore	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	1=Restore(reset 0 automatically)	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
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE) for Direct. Can be set to 1(ACTIVE) for Reverse)
Relay Direct

Property	Default Value	Property Data Type	Access
Object Identifier	BV10 (Binary Value 10)	BACnetObjectIdentifier	Read
Object Name	Relay Direct	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Direct(0) or Reverse(1)	CharacterString (32)	Read

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Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE) for OFF. Can be set to 1(ACTIVE) for ON)
Relay Controlled by BACnet

Property	Default Value	Property Data Type	Access
Object Identifier	BV11 (Binary Value 11)	BACnetObjectIdentifier	Read
Object Name	Relay Controlled by BACnet	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Relay OFF(0) or Realy ON(1)	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Property List		BACnetArray	Read

Binary Value Object (Present Value defaults to 0 (INACTIVE) for OFF. Can be set to 1(ACTIVE) for ON)
Relay Test

Property	Default Value	Property Data Type	Access
Object Identifier	BV12(Binary Value 12)	BACnetObjectIdentifier	Read
Object Name	Relay Test	CharacterString (32)	Read
Object Type	BINARY_VALUE (5)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	R/ W
Description	Normal(0) or Test(1)	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Property List		BACnetArray	Read

The binary input BACnet object allows reading of the digital input status. Binary input object properties are shown below.

Binary Input Object (Present Value is 1 (ACTIVE) if the DI is activated (pulled to common. Or
DI Status Present Value is 0 (INACTIVE) if the DI is not activated (floating).

Property	Default Value	Property Data Type	Access
Object Identifier	BI1 (Binary Input 1)	BACnetObjectIdentifier	Read
Object Name	DI Status	CharacterString (32)	Read
Object Type	BINARY_INPUT (3)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read
Description	Inactive(0) or Active(1)	CharacterString (32)	Read
Device Type	DI Input	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no DI	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no DI	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Polarity	Normal (0)	BACnetPolarity	Read
Property List		BACnetArray	Read

Binary Input Object (Present Value is 1 (ACTIVE) if there is condensation.)
Condensation Status

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Property	Default Value	Property Data Type	Access
Object Identifier	BI2 (Binary Input 2)	BACnetObjectIdentifier	Read
Object Name	Condensation Status	CharacterString (32)	Read
Object Type	BINARY_INPUT (3)	BACnetObjectType	Read
Present Value	INACTIVE (0)	BACnetBinaryPV	Read
Description	Inactive(0) or Active(1)	CharacterString (32)	Read
Device Type	Condensation Sensor	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no Sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no Sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Polarity	Normal (0)	BACnetPolarity	Read
Property List		BACnetArray	Read

The Multi-State Value BACnet object allows configuration of the device. **Multi-State Value** object properties are shown below.

Multi-State Value object Backlight Select (Present Value defaults to 0 for AUTO. Can be changed to 1 for ON or 2 for OFF)

Property	Default Value	Property Data Type	Access
Object Identifier	MSV1(Multi-State Value 1)	BACnetObjectIdentifier	Read
Object Name	Backlight Select	CharacterString (32)	Read
Object Type	ANALOG_VALUE (19)	BACnetObjectType	Read
Present Value	0	Real	Read / Write
Description	0=Auto,1=ON,2=OFF	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
Number of States	3	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Multi-State Value object Relay Assignment (Present Value defaults to 0 for Free Control by BACnet. Can be changed from 0 to 9)

Property	Default Value	Property Data Type	Access
Object Identifier	MSV2(Multi-State Value 2)	BACnetObjectIdentifier	Read
Object Name	Relay Assignment	CharacterString (32)	Read
Object Type	ANALOG_VALUE (19)	BACnetObjectType	Read
Present Value	0	Real	Read / Write
Description	See below	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no relay	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no relay	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Number of States	10	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

This object assigns which source will associate to relay.
The available sources are:
0 = No Assignment,
1 = Free Control by BACnet,
2 = DI,
3 = Temperature,
4 = RH,
5 = Dew Point,
6 = Wet Bulb,
7 = Enthalpy,
8 = Absolute Humidity,

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9 = Condensation.

Multi-State Value object (Present Value defaults to 0 for None. Can be changed from 0 to 2)
T(Probe) Adjust Method

Property	Default Value	Property Data Type	Access
Object Identifier	MSV3(Multi-State Value 3)	BACnetObjectIdentifier	Read
Object Name	T(Probe) Adjust Method	CharacterString (32)	Read
Object Type	ANALOG_VALUE (19)	BACnetObjectType	Read
Present Value	0	Real	Read / Write
Description	0=None, 1=Offset, 2=2-point	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Number of States	3	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

Multi-State Value object (Present Value defaults to 0 for None. Can be changed from 0 to 2)
RH(Probe) Adjust Method

Property	Default Value	Property Data Type	Access
Object Identifier	MSV4(Multi-State Value 4)	BACnetObjectIdentifier	Read
Object Name	RH(Probe) Adjust Method	CharacterString (32)	Read
Object Type	ANALOG_VALUE (19)	BACnetObjectType	Read
Present Value	0	Real	Read / Write
Description	0=None, 1=Offset, 2=2-point	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000)	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Number of States	3	BACnetEngineeringUnits	Read
Property List		BACnetArray	Read

The Multi-State Input BACnet objects hold the status values. Multi-State Input object properties are shown below.

Multi-State Input Object
Relay Status

Property	Default Value	Property Data Type	Access
Object Identifier	MSI1(Multi-State Input 1)	BACnetObjectIdentifier	Read
Object Name	Relay Status	CharacterString (32)	Read
Object Type	MULTISTATE_INPUT (13)	BACnetObjectType	Read
Present Value	0	Unsigned	Read
Description	See below	CharacterString (32)	Read
Device Type	Relay Output	CharacterString (32)	Read
Status Flags	{false, false, false, false} (0000) or (1100) if no sensor	BACnetStatusFlags	Read
Event State	NORMAL (0) or FAULT (1) if no sensor	BACnetEventState	Read
Reliability	NO_FAULT_DETECTED (0) or NO_SENSOR (1)	BACnetReliability	Read
Out of Service	FALSE (0)	Boolean	Read
Number of States	7	Unsigned	Read
Property List		BACnetArray	Read

The available values are:
0=OFF,
1=ON, controlled by BACnet,
2=ON, controlled by DI,
3=ON, in TEST Status,
4=ON, Low Setpoint Alarm,
5=ON, HIGH Setpoint Alarm,
6=ON, Condensation Setpoint Alarm.

Multi-State Input Object
Generic Error Codes

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Property	Default Value	Property Data Type	Access
Object Identifier	MSI2(Multi-State Input 2)	BACnetObjectIdentifier	Read
Object Name	Generic Error Codes	CharacterString (32)	Read
Object Type	MULTISTATE_INPUT (13)	BACnetObjectType	Read
Present Value	0	Unsigned	Read
Description	0=No Error,1=Probe Comm Error	CharacterString (32)	Read
Device Type	Probe Comm Error Monitoring	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
Number of States	2	Unsigned	Read
Property List		BACnetArray	Read

Multi-State Input Object
Communication Error Codes

Property	Default Value	Property Data Type	Access
Object Identifier	MSI3(Multi-State Input 3)	BACnetObjectIdentifier	Read
Object Name	Communication Error Codes	CharacterString (32)	Read
Object Type	MULTISTATE_INPUT (13)	BACnetObjectType	Read
Present Value	0	Unsigned	Read
Description	0=No Error, 1=Unknown	CharacterString (32)	Read
Device Type	BACnet Comm Error Monitoring	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
Number of States	2	Unsigned	Read
Property List		BACnetArray	Read

Multi-State Input Object
Condensation Error Codes

Property	Default Value	Property Data Type	Access
Object Identifier	MSI4(Multi-State Input 4)	BACnetObjectIdentifier	Read
Object Name	Condensation Error Codes	CharacterString (32)	Read
Object Type	MULTISTATE_INPUT (13)	BACnetObjectType	Read
Present Value	0	Unsigned	Read
Description	See below	CharacterString (32)	Read
Device Type	Condensation Error Monitoring	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
Number of States	3	Unsigned	Read
Property List		BACnetArray	Read

0=No Error,
1=Pipe T Sensor not Connected,
2=Other.

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BACnet Protocol Implementation Conformance Statement (PICS)

Date : 2025/7/8
Vendor Name : Greystone Energy Systems
Product Name : Rough Duty Sensors
Product Model Number : DP0011
Application Software Version : 1.00
Firmware Revision : 1.0
BACnet Protocol Revision : 14

Product Description : The Greystone Rough Duty Sensors are RH/T Sensors with native BACnet MS/TP protocol for network communication. They measure room temperature, dewpoint temperature, wet bulb temperature, RH and enthalpy levels and reports values back to a building automation system (BAS). The device features an LCD to display measured values and for setup.

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

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

Segmentation Capability: Supported

Standard Object Types Supported :

Object Type	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
Device	No	No	PROP_DESCRIPTION, PROP_LOCATION, PROP_MAX_SEGMENTS_ACCEPTED, PROP_APDU_SEGMENT_TIMEOUT, PROP_MAX_MASTER, PROP_MAX_INFO_FRAMES, PROP_ACTIVE_COV_SUBSCRIPTIONS	Object_Identifier, Object_Name, Location, Description, APDU_Timeout, Max_Master, Number_Of_APDU_Retries
Analog Input	No	No	Description, Reliability, Device_Type, COV_Increment	Object_Name, Present_Value of COV_Increment

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Analog Value	No	No	Description, Reliability	Object_Name, Present_Value
Binary Value	No	No	Description, Reliability	Object_Name, Present_Value
Binary Input	No	No	Description, Reliability, Device_Type	Object_Name
Muti-State Value	No	No	Description, Reliability	Object_Name, Present_Value
Multi-State Input	No	No	Description, Reliability, Device_Type	Object_Name

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

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