



**neptronic®**

# **SKE4 Steam Humidifier**

## BACnet Communication Module User Guide



# Contents

Introduction .....	1
Pre-requisites .....	1
Advantages of BACnet .....	1
BACnet Properties Configuration .....	2
Configuration Options .....	3
Quick Setup .....	3
Manual Setup .....	3
IP Port .....	4
Network Reset .....	4
Device Object Properties .....	5
Object Types Supported .....	6
Out_of_Service Property .....	7
Object Table Information .....	8
Analog Input (AI) .....	8
Analog Output (AO) .....	9
Analog Value (AV) .....	9
Binary Input (BI) .....	15
Binary Output (BO) .....	16
Binary Value (BV) .....	18
Character String Value (CV) .....	20
Multi State Value (MSV) .....	21
Other .....	24

## Introduction

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The SKE4 Steam Humidifier BACnet Communication Module User Guide provides information about using the humidifiers with BACnet communications feature. The BACnet communication protocol for building automation and control networks enables communication between client devices within a network. The humidifier provides a BACnet network interface between BACnet client devices and Neptronic humidifiers. It uses the BACnet Master Slave/Token Passing (MS/TP) protocol and BACnet IP at the BACnet MAC layer.

## Pre-requisites

The BACnet communication user guide assumes that you are familiar with the concepts of BACnet and its terminology.

## Advantages of BACnet

BACnet enabled humidifiers have the following advantages:

- *Quick Message Transmission.* The humidifier uses a synchronous implementation for BACnet messages making it quick and efficient. Each BACnet confirmed service request is answered as quickly as possible without using the **Reply Postponed** frame. The MS/TP implementation is performed within **Tusage\_delay** of 15 minutes to ensure a **Tusage\_timeout** value within 20 minutes.
- *MS/TP Support.* The humidifier supports a Full Master Node state machine for MS/TP. The Max\_Master and the instances are configured to the device object through **BACnet WriteProperty** service or via the device's Programming Mode. The MAC address and the MS/TP baud rate setting of 9600, 19200, 38400, and 76800 are also set through the **BACnet Write Property** service or via the device's Programming Mode. In Programming mode, the device is configured through the device's keypad. For more information about the WriteProperty, refer to Table 3 - Object Types Supported.
- *BIBB Support.* The humidifier functions the same way as the B-ASC type profile server and supports the specific BIBB as per their relevant definitions.
  - DS-RP-B
  - DS-RPM-B
  - DS-WP-B
  - DS-WPM-B
  - DM-DCC-B
  - DM-DDB-B
  - DM-DOB-B
  - DM-RD-B
  - DM-TS-B
  - DM-UTC-B
  - DS-COV-B
  - DS-COVP-B
  - SCHED-WS-I-B
- *Object Support.* The humidifier supports a fixed list of BACnet visible values, which appear as Present\_Values of various BACnet standard object types in addition to a device object. For more information, refer to Table 3 - Object Types Supported.
- *Alarms.* The humidifier supports indication of various alarm conditions through value changes in properties of several objects. However, it does not generate BACnet event notifications.

## BACnet Properties Configuration

To establish communication on the network, and guarantee a unique ID of devices in a BACnet system, the following properties may have to be configured.

**Table 1 - BACnet Properties Configuration**

Property	Default Value	Configuration
MAC Address	001	<ul style="list-style-type: none"> <li>Set to a unique address on the network between 000 and 254.</li> <li>The value can be set manually via the menu.</li> <li>The values from 128-254 represent MS/TP non-token passing slave devices.</li> </ul>
Device Instance	Auto	<ul style="list-style-type: none"> <li>The humidifier automatically configures its device instance to 153,000 + MAC address.</li> <li>The value can be set manually via the menu.</li> <li>The value can be set manually through the <b>WriteProperty</b> service to <b>Device Object.Object_Identifier</b>.</li> <li>The device's <b>Object_Identifier</b> is a combination of the <b>Device Object_Type</b> (8) and the <b>Device_Instance</b> (0-4194302), therefore its decimal or hexadecimal representation tends to be incomprehensible.</li> <li>For example, the <b>Device_Instance</b>=1000 has an equivalent <b>Object_Identifier</b> of 0x020003E8 hexadecimal or 33555432 decimal.</li> </ul>
Baud Rate	0 = Auto	<ul style="list-style-type: none"> <li>The humidifier configures its baud rate automatically by detecting the network upon connection.</li> <li>The value can be set manually from the available values of (0) Auto, 9600, 19200, 38400, and 76800.</li> </ul>
Max_Master	127	<ul style="list-style-type: none"> <li>Configure <b>Max_Master</b> value to increase network efficiency when there are less than 127 devices on the network.</li> <li>The <b>Max_Master</b> value can be changed through the <b>WriteProperty</b> service to <b>Device Object.Max_Master</b>.</li> </ul> <p>For more information, refer to the MAC Address and Max_Master section.</p>
Device Object.Object_Name	Name of the device	<ul style="list-style-type: none"> <li>Configure the name of the device through the <b>WriteProperty</b> service to <b>Device Object.Object_Name</b>. For example, SKE4.</li> </ul>

# Configuration Options

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The following Configuration options enable you to configure and run the BACnet features of the humidifiers quickly.

## Quick Setup

Configure the humidifier for BACnet communication without programming.

1. Ensure that no other device on the network has a MAC address of 1 (the humidifier's default address).
2. Connect the humidifier to the network and power it up.
3. The humidifier automatically configures the baud rate and device instance allowing BACnet Property Configuration through the Write Property service. See Table 1 - BACnet Properties Configuration.
4. Repeat the steps for each humidifier.

## Manual Setup

Configure the humidifier for BACnet communication using the SKE4 controller, by using the following steps:

1. Press the Enter key.
2. Enter the Integration menu password: **5544**.
3. Select the Network or Communication sub-menus to set appropriate values.
4. Follow the instructions to configure the Device, BACnet Server, BACnet MSTP/IP and so on, manually.
5. Disconnect the power to the humidifier, connect the humidifier to the network, and connect the power again.

### MAC Address and Max\_Master

The MAC address must be unique on the entire MS/TP network. However, having a unique MAC address and a high baud rate does not guarantee efficient operation of the humidifier and other MS/TP units on the MS/TP network. Some MAC address and Max\_Master combinations are more efficient than others. BACnet requires token-passing units to occasionally “poll” for other masters based on the MAC address and Max\_Master.

A poor combination of MAC addresses and Max\_Master can lead to a slower network due to lost time polling for masters that are not present. Unless there are 126 other units on the MS/TP network, the default Max\_Master value of 127 is not the most efficient choice for the humidifier. The Max\_Master default value of 127 was selected to ensure that any master, specifically a BACnet client can be found when the humidifier is initially started.

### Examples of MAC Address and Max\_Master Configurations

The following are some of the examples to indicate the optimum combination of MAC address and Max\_Master configurations to ensure a quick and efficient output.

#### Example 1

- MAC=0. Max\_Master=127
- MAC=1, Max\_Master=127

This configuration is slow and inefficient because every time either unit is required to find another master unit, it has to poll 126 units until it finds the right one to pass the token.

#### Example 2

- MAC=0. Max\_Master=5
- MAC=1 to MAC=4 are not used
- MAC=5, Max\_Master=5

This configuration is better than Example 1 but it is still not optimal. The Max\_Master is set to the most efficient value but the gap between the two MAC addresses is high. Therefore, each unit must poll four units until it finds the right one to pass the token.

#### Example 3

- MAC=0, Max\_Master=1
- MAC=2, Max\_Master=2

This is an incorrect configuration. The MAC=0 will never find MAC=2 because it will never poll for the master MAC address=2.

#### Example 4

- MAC=0, Max\_Master=3
- MAC=1, Max\_Master=3
- MAC=2, Max\_Master=3
- MAC=3, Max\_Master=3

This is an efficient configuration as the units are numbered consecutively and the MAX\_Master is set to the most efficient value. As a general guideline, the most efficient setup for an MS/TP network is one in which the units are consecutively numbered starting at MAC address 0 and having Max\_Master=the maximum MAC address in the system. If consecutive numbering is not possible, then the next most efficient setup is one in which all units have Max\_Master=the maximum MAC address in the system.

## IP Port

For IP communication, a port number of **47808 (0xBAC0)** is used by default. Ensure that the BMS accesses the port with which the humidifier communicates. Generally, in situations with multiple networks, different ports may be used such as 47809 (0xBAC1) or 47810 (0xBAC2) to separate traffic.

## Network Reset

Reset the humidifier via BACnet using the **Reinitialize Device** service. The Reinitialize Device service can be accessed using the following password: **nep**.

The Reinitialize Device service has two types of reset such as:

- *Warm Reset*. The Warm Reset changes the humidifier to its initial state.
- *Cold Reset*. The Cold Reset restarts the humidifier.

# Device Object Properties

The following table lists all the BACnet properties supported for the device object. The W indicates that the property is writable using the BACnet **WriteProperty** service.

**Table 2 - Device Object Properties**

Property	Value	Writable
Object_Identifier	<ul style="list-style-type: none"> <li>Programmable where the instance part of the Object_Identifier is in the range of 0-4194302</li> <li>The device instance must be unique system-wide</li> <li>The default value for the device instance= 153001 (Vendor_Identifier*1000 + MAC)</li> </ul>	W
Object_Name	SKE4, programmable up to 32 Bytes	W
Description	Programmable up to 32 Bytes (default: SKE4 Controller)	W
Object_Type	Device	
System_Status	Operational	
Vendor_Identifier	Always 153	
Vendor_Name	Always Neptronic	
Model_Name	Example, SKE4	
Firmware_Revision	2.02.202305301120	
Application_Software_Version	2.07.20230531	
Protocol_Version	Always 1	
Protocol_Revision	Always 14	
DataBase_Revision	Default 0; incremented if Object Name, Object List and/or device ID change	
Max_APDU_Length_Accepted	Always 480	
Segmentation_Supported	(3) = No Segmentation	
APDU_Timeout	3,000	W
Number_of_APDU_Retries	Always 3	
Local_Time	00:00:00	W
Local_Date	01-Jan-2015 (Thu)	W
UtC_Offset	-300 minutes	W
Daylight_Savings_Status	False	W
Backup_Failure_Timeout	10	W
Configuration_Files	File-1 through File-17	
Last_Restore_Time	2015-01-01 (Thu), 00:00:00:00	
Backup_And_Restore_State	IDLE	
Backup_Preparation_Time	0	
Restore_Completion_Time	0	
Restore_Preparation_Time	0	
Protocol_Services_Supported	<ul style="list-style-type: none"> <li>confirmedCOVNotification</li> <li>subscribeCOV</li> <li>atomicReadFile</li> <li>atomicWriteFile</li> <li>readProperty</li> <li>readPropertyMultiple</li> <li>WriteProperty</li> <li>writePropertyMultiple</li> <li>deviceCommunicationControl</li> <li>reinitializeDevice</li> <li>i-Am</li> <li>i-Have</li> <li>unconfirmedCOVNotification</li> <li>unconfirmedPrivateTransfer</li> <li>timeSynchronization</li> <li>who-Has</li> <li>who-Is</li> <li>utcTimeSynchronization</li> <li>subscribeCOVProperty</li> </ul>	
Protocol_Object_Types_Supported	<ul style="list-style-type: none"> <li>analog-input</li> <li>analog-output</li> <li>analog-value</li> <li>binary-input</li> <li>binary-output</li> <li>binary-value</li> <li>device</li> <li>file</li> <li>group</li> <li>multi-state-input</li> <li>multi-state-output</li> <li>program</li> <li>Schedule</li> <li>multi-state-value</li> <li>characterstring-value</li> <li>date-value</li> <li>datetime-value</li> <li>positive-integer-value</li> <li>time-value</li> </ul>	
Object_List	132	
Device_Address_Binding	Depends on configuration	
Max_Master	Programmable in the range of 1 to 127 (default: 127)	W
Max_Info_Frames	Always 1	
Active_COV_Subscription	Empty by default. COV subscription will be lost on a power cycle.	
Property_List	List of properties that exist within the object.	

## Object Types Supported

The following table lists all the BACnet properties supported for each object type. Most of the properties are locked. The exception is **Present\_Value**, which represents the dynamic operating values of the device, and the Status\_Flag, Event\_State, and Reliability properties, which reflect the availability of the **Present\_Value**. Unless otherwise specified, properties are not changeable.

**Table 3 - Object Types Supported**

Object Type	Enabled	Optional Properties Supported	Writable Properties	Notes
<i>Note: Writable properties are different for some objects. Refer to the respective Object Table information to know the writable property for objects.</i>				
Analog Input	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Reliability</li> <li>Description</li> <li>Min_Present_Value</li> <li>Max_Present_Value</li> <li>Resolution</li> <li>COV_Increment</li> </ul>	<ul style="list-style-type: none"> <li>Out_of_Service</li> <li>COV_Increment</li> <li>Units</li> </ul>	If "Out_of_Service" is true, Present_Value becomes a writable property. Refer to Out_of_Service Property section on page 7 for more information.
Analog Value	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Reliability</li> <li>Description</li> <li>Min_Present_Value</li> <li>Max_Present_Value</li> <li>Resolution</li> <li>COV_Increment</li> <li>Priority_Array</li> <li>Relinquish_Default</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Out_of_Service</li> <li>COV_Increment</li> <li>Relinquish_Default</li> <li>Units</li> </ul>	Refer to Out_of_Service Property section on page 7 for more information.
Analog Output	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>Min-Pres-Value</li> <li>Max-Pres-Value</li> <li>Resolution</li> <li>COV_Increment</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>COV_Increment</li> <li>Out_of_Service</li> <li>Relinquish_Default</li> <li>Units</li> </ul>	
Binary Input	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Reliability</li> <li>Active_Text</li> <li>Inactive_Text</li> <li>Description</li> </ul>	<ul style="list-style-type: none"> <li>Out_of_Service</li> <li>Polarity</li> </ul>	<ul style="list-style-type: none"> <li>If "Out_of_Service" is true, Present_Value becomes a writable property. Refer to Out_of_Service Property section on page 7 for more information.</li> </ul>
Binary Value	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Reliability</li> <li>Active_Text</li> <li>Inactive_Text</li> <li>Description</li> <li>Priority_Array</li> <li>Relinquish_Default</li> <li>Minimum_Off_Time</li> <li>Minimum_On_Time</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Out_of_Service</li> <li>Relinquish_Default</li> <li>Minimum_Off_Time</li> <li>Minimum_On_Time</li> </ul>	Refer to Out_of_Service Property section on page 7 for more information.
Binary Output	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>Inactive-text</li> <li>Active-text</li> <li>Minimum_Off_Time</li> <li>Minimum_On_Time</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Out_of_Service</li> <li>Polarity</li> <li>Relinquish_Default</li> <li>Minimum_Off_Time</li> <li>Minimum_On_Time</li> </ul>	
Device	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Max_Master</li> <li>Max_Info_Frame</li> <li>Description</li> <li>active-COV-subscriptions</li> <li>Local_Time</li> <li>Local_Date</li> <li>UTC_Offset</li> <li>Daylight_Savings_Status</li> <li>Backup_Failure_Timeout</li> <li>Configuration_Files</li> <li>Last_Restore_Time</li> <li>Backup_And_Restore_State</li> <li>Backup_Preparation_Time</li> <li>Restore_Completion_Time</li> <li>Restore_Preparation_Time</li> <li>Location</li> <li>Serial_Number</li> <li>Profile_Name</li> </ul>	<ul style="list-style-type: none"> <li>Object_Identifier</li> <li>Object_Name</li> <li>Max_Master</li> <li>Description</li> <li>Local_Time</li> <li>Local_Date</li> <li>UTC_Offset</li> <li>Daylight_Savings_Status</li> <li>Apdu_Timeout</li> <li>Backup_Failure_Timeout</li> <li>Location</li> </ul>	
File	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> </ul>	File_Size	Only 0 is the accepted value to be written to the file size.
Group	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> </ul>		



Object Type	Enabled	Optional Properties Supported	Writable Properties	Notes
Multi-State Input	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>State_Text</li> </ul>	<ul style="list-style-type: none"> <li>Out_of_Service</li> </ul>	
Multi-State Output	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>State_Text</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Out_of_Service</li> <li>Relinquish_Default</li> </ul>	
Program	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> </ul>	<ul style="list-style-type: none"> <li>Program_Change</li> <li>Out_of_Service</li> </ul>	Only LOAD and RESTART are supported for program change. Use LOAD to apply the new firmware.
Schedule	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Weekly_Schedule</li> </ul>	<ul style="list-style-type: none"> <li>Effective_Period</li> <li>Schedule_Default</li> <li>List_of_Object_Property_References</li> <li>Priority_for_Writing</li> <li>Out_of_Service</li> <li>Weekly_Schedule</li> </ul>	If Out_of_Service is True, Present_Value becomes writable.
Multi-State Value	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>States_Text</li> <li>Priority_Array</li> <li>Relinquish_Default</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Relinquish_Default</li> <li>Out_of_Service</li> </ul>	
Character String Value	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> </ul>	
Date	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>Event_State</li> <li>Out_of_Service</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Out_of_Service</li> </ul>	
DateTime	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>Event_State</li> <li>Out_of_Service</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Out_of_Service</li> </ul>	
Positive-Integer Value	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>Event_State</li> <li>Out_of_Service</li> <li>Priority_Array</li> <li>Relinquish_Default</li> <li>Minimum_Present_Value</li> <li>Maximum_Present_Value</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Units</li> <li>Out_of_Service</li> <li>Relinquish_Default</li> </ul>	
Time	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Description</li> <li>Reliability</li> <li>Event_State</li> <li>Out_of_Service</li> </ul>	<ul style="list-style-type: none"> <li>Present_Value</li> <li>Out_of_Service</li> </ul>	

## Out\_of\_Service Property

Neptronic humidifiers offer the use of the Out\_of\_Service writable property. When the value of this property is set to True, it disconnects the object from the physical input, enabling you to input other values. This is useful for special applications or while troubleshooting. For example, you can ignore the temperature read from a sensor and input the desired temperature value in order to perform specific tests.



**Warning:** If the Out\_of\_Service property is set to **True**, Out\_of\_Service remains true until set to **False**.

## Object Table Information

The SKE4 uses the following BACnet object tables, categorized on the basis of their ID. The type is the BACnet Object type, the instance is the BACnet Object. Together, the type and instance form the **BACnet Object\_Identifier** for an object according to the following C-language algorithm:

- object\_identifier=(unsigned long)((unsigned long)type<<22)+instance

### Analog Input (AI)

**Table 4 - Object Table Information: Analog Input (AI)**

ID	Name	List	Description	W?	Notes
AI.5	Control Signal	Integrator	Value of the control demand analog input signal.	Out_of_Service COV_Increment	0V to 15V, Resolution: 0.001V
AI.6	Room RH Signal	Integrator	Value of the room humidity analog input signal.	Out_of_Service COV_Increment	0V to 15V, Resolution: 1V
AI.7	Supply RH Signal	Integrator	Value of the duct or supply high limit humidity analog input signal.	Out_of_Service COV_Increment	0V to 15V, Resolution: 0.001V
AI.9	Water Level Signal	Integrator	Value of the measured input frequency of the water level sensor.	Out_of_Service COV_Increment	0Hz to 30,000Hz, Resolution 1Hz
AI.10	Water Level Low Signal	Integrator	Value of the resistive low water level sensor signal.	Out_of_Service COV_Increment	0V to 10V, Resolution 0.001V
AI.11	Water Level High Signal	Integrator	Value of the resistive high water level sensor signal.	Out_of_Service COV_Increment	0V to 10V, Resolution 0.001V
AI.12	Water Temperature Signal	Integrator	Value of the water temperature sensor signal.	Out_of_Service COV_Increment	0V to 10V, Resolution 0.001V
AI.13	Foam Signal	Integrator	Value of the foam sensor signal.	Out_of_Service COV_Increment	0V to 10V, Resolution 0.001V
AI.15	SSR Temperature Signal	Integrator	Value of the SSR temperature sensor signal.	Out_of_Service COV_Increment	0V to 10V, Resolution 0.001V
AI.16	Cabinet Temperature Signal	Integrator	Value of the cabinet interior temperature sensor signal.	Out_of_Service COV_Increment	0V to 10V, Resolution 0.001V
AI.25	Main Power Supply	Integrator	Value of the measured voltage in the power supply.	Out_of_Service COV_Increment	0V to 40V, Resolution 0.1V

## Analog Output (AO)

**Table 5 - Object Table Information: Analog Output (AO)**

ID	Name	List	Description	W?	Notes
AO.1	Power Output Feedback Signal	Integrator	Value of the power output feedback signal.	Out_of_Service Relinquish_Default COV_Increment	0V to 10V, Resolution 0.001V
AO.16	Heater SSR Stage	Integrator	Value of the heater SSR stage output.	Out_of_Service Present_Value Relinquish_Default COV_Increment	0% to 100%, Resolution 0.01%

## Analog Value (AV)

**Table 6 - Object Table Information: Analog Value (AV)**

ID	Name	List	Description	W?	Notes
AV.10	MCU Load	Integrator	Value of the current microcontroller load.	Out_of_Service COV_Increment	0% to 100%, Resolution 0.1%
AV.11	Memory Load	Integrator	Value of the current memory load.	Out_of_Service COV_Increment	0% to 100%, Resolution 0.1%
AV.41	Control Input	Integrator	Value of the current control input reading.	Out_of_Service COV_Increment	0% to 100%, Resolution 1%
AV.42	Control Min	Integrator	Minimum value of the control demand analog input.	Out_of_Service Present_Value COV_Increment	0% to 100%, Resolution 1%
AV.43	Control Max	Integrator	Maximum value of the control demand analog input.	Out_of_Service Present_Value COV_Increment	0% to 100%, Resolution 1%
AV.44	Control Bias	Integrator	Bias value for the control demand analog input.	Present_Value Out_of_Service COV_Increment	-10% to 10%, Resolution 0.1%
AV.49	Room RH	Integrator	Value of the room humidity reading.	Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 1% RH
AV.50	Room RH Min	Integrator	Minimum value of the room humidity analog input.	Out_of_Service Present_Value COV_Increment	0% to 100%, Resolution 1%
AV.51	Room RH Max	Integrator	Maximum value of the room humidity analog input.	Out_of_Service Present_Value COV_Increment	0% to 100%, Resolution 1%

ID	Name	List	Description	W?	Notes
AV.52	Room RH Bias	Integrator	Bias value of the room humidity analog input.	Out_of_Service Present_Value COV_Increment	-10% RH to 10% RH, Resolution 0.1% RH
AV.57	Supply High Limit RH	Integrator	Value of the duct or supply high limit humidity analog input.	Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 1% RH
AV.58	Supply High Limit RH Min	Integrator	Minimum value of the duct or supply high limit humidity analog input.	Out_of_Service Present_Value COV_Increment	0% RH to 100% RH, Resolution 1% RH
AV.59	Supply High Limit RH Max	Integrator	Maximum value of the duct or supply high limit humidity analog input.	Out_of_Service Present_Value COV_Increment	0% RH to 100% RH, Resolution 1% RH
AV.60	Supply High Limit RH Bias	Integrator	Bias value of the duct or supply high limit humidity analog input.	Out_of_Service Present_Value COV_Increment	-10% RH to 10% RH, Resolution 0.1% RH
AV.69	Water Temperature	Integrator	Value of temperature of water in the evaporation chamber.	Out_of_Service COV_Increment Units	32°F to 257°F or 0°C to 125°C Resolution 0.18°F or 0.10°C
AV.72	Water Temperature Bias	Integrator	Bias value of the temperature of water in the evaporation chamber.	Out_of_Service Present_Value COV_Increment	-18.00Δ°F to 18.00Δ°F or -10.00Δ°C to 10.00Δ°C, Resolution 0.18Δ°F or 0.1Δ°C
AV.75	SSR Temperature	Integrator	Value of the temperature measured on the solid-state relay.	Out_of_Service COV_Increment Units	-4°F to 212°F or -20°C to 100°C Resolution 0.18°F or 0.10°C
AV.77	Cabinet Temperature	Integrator	Value of the temperature inside of the weather proof enclosure.	Present_Value Out_of_Service COV_Increment	-4°F to 212°F or -20°C to 100°C Resolution 0.18°F or 0.10°C
AV.79	Current Sensor 1	Integrator	Value of the measured electric current in the first current sensor.	Present_Value Out_of_Service COV_Increment Relinquish_Default Units	0A to 150A, Resolution 0.01 A
AV.81	Current Sensor 2	Integrator	Value of the measured electric current in the second current sensor.	Present_Value Out_of_Service COV_Increment Relinquish_Default Units	0A to 150A, Resolution 0.01 A
AV.85	Power Output Feedback Bias	Integrator	Bias value for the power output feedback signal.	Out_of_Service Present_Value COV_Increment	-1V to 1V, Resolution: 0.001V

ID	Name	List	Description	W?	Notes
AV.86	Power Output Feedback Min	Integrator	Minimum value of the power output feedback signal.	Out_of_Service Present_Value COV_Increment	0V to 10V, Resolution: 0.001V
AV.87	Power Output Feedback Max	Integrator	Maximum value of the power output feedback signal.	Out_of_Service Present_Value COV_Increment	0V to 10V, Resolution: 0.001V
AV.88	Power Output Feedback	Integrator	Feedback value of the power output analog output.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.97	Water Level	Integrator	Value of the percentage of water remaining in the evaporation chamber.	Out_of_Service COV_Increment	0% to 120%, Resolution 1%
AV.100	Water Probe Low Pos Reading	Integrator	Displays the low position value of the water level sensor.	COV_Increment	0Hz to 30000Hz, Resolution 1Hz
AV.101	Water Probe High Pos Reading	Integrator	Displays the high position value of the water level sensor.	COV_Increment	0Hz to 30000Hz, Resolution 1Hz
AV.104	Water Probe Abs Low Pos Reading	Integrator	Displays the absolute low position value of the water level sensor.	COV_Increment	0Hz to 30000Hz, Resolution 1Hz
Av.105	Water Probe Abs High Pos Reading	Integrator	Displays the absolute high position value of the water level sensor.	COV_Increment	0Hz to 30000Hz, Resolution 1Hz
AV.106	Room RH Network Reading	Integrator	Value of the room relative humidity reading received from the network.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% RH to 100% RH, Resolution 0.01% RH
AV.107	Room RH Setpoint	Integrator	Value of the room relative humidity setpoint received from the network.	Present_Value Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 0.10% RH
AV.108	Room RH Unoccupied Setpoint	Integrator	Value of the room relative humidity reading received from the network during no occupancy state.	Present_Value Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 0.10% RH
AV.109	Room RH Vacant Setpoint	Integrator	Value of the room relative humidity reading received from the network during vacancy.	Present_Value Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 0.10% RH
AV.110	Room Demand Proportional Gain	Integrator	Value of the room demand proportional gain.	Present_Value Out_of_Service COV_Increment	1 to 200, Resolution 0.1
AV.111	Room Demand Integral Time	Integrator	Value of the room demand integral time.	Present_Value Out_of_Service COV_Increment	0 to 900 seconds, Resolution 0.5 seconds
AV.112	Room Demand Derivative Time	Integrator	Value of the room demand derivative time.	Present_Value Out_of_Service COV_Increment	0 to 60 seconds, Resolution 0.1 second

ID	Name	List	Description	W?	Notes
AV.120	Room Demand	Integrator	Value of the humidity demand within the room.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.122	Supply High Limit Network Reading	Integrator	Value of the supply high limit reading received from the network.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% RH to 100% RH, Resolution 1% RH
AV.123	Supply High Limit Setpoint	Integrator	Value of the supply high limit setpoint received from the network.	Present_Value Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 0.50% RH
AV.126	Supply High Limit Proportional Gain	Integrator	Value of the supply high limit demand proportional gain.	Present_Value Out_of_Service COV_Increment	1 to 200, Resolution 0.1
AV.127	Supply High Limit Integral Time	Integrator	Value of the supply high limit demand integral time.	Present_Value Out_of_Service COV_Increment	0 to 900 seconds, Resolution 0.5 seconds
AV.128	Supply High Limit Derivative Time	Integrator	Value of the supply high limit demand derivative time.	Present_Value Out_of_Service COV_Increment	0 to 60 seconds, Resolution 0.1 second
AV.136	Supply High Limit Demand	Integrator	Supply high limit humidity demand value.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.138	Humidity Control Network Demand	Integrator	Value of the humidity control demand received from the network.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.139	Humidity Control Network High Limit	Integrator	Value of the humidity control high limit received from the network.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 0.01%
AV.143	Humidity Demand	Integrator	Value of the current humidity demand.	Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.144	SDU Fan Off Delay	Integrator	Configuration value of the time delay after which the SDU fan will close once the fan is no longer required.	Present_Value Out_of_Service COV_Increment	5 to 20 minutes, Resolution 1 minute

ID	Name	List	Description	W?	Notes
AV.147	Boiler Demand	Integrator	Value of the measured humidity demand of the humidifier.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.149	Boiler Power Output	Integrator	Value of the measured power output of the humidifier.	Out_of_Service COV_Increment	0% to 100%, Resolution 1%
AV.150	Boiler Run Time	Integrator	Value of the total runtime of the humidifier.	Out_of_Service COV_Increment	0 to 21474836.47 hours, Resolution 0.01 hours
AV.151	Boiler On Time	Integrator	Value of the total operating time of the humidifier.	Out_of_Service COV_Increment	0 to 21474836.47 hours, Resolution 0.01 hours
AV.152	Boiler Service Run Time	Integrator	Value of the run time of the humidifier since the last servicing.	Out_of_Service COV_Increment	0 to 21474836.47 hours, Resolution 0.01 hours
AV.153	Boiler Service On Time	Integrator	Value of the operating time of the humidifier since the last servicing.	Out_of_Service COV_Increment	0 to 21474836.47 hours, Resolution 0.01 hours
AV.162	Boiler Minimum Steam Output	Integrator	Configuration value of the minimum steam production demand value, below which no steam will be produced	Present_Value Out_of_Service COV_Increment	1% to 25%, Resolution 1%
AV.163	Boiler Drain Interval	Integrator	Configuration value to define the drain cycle.	Present_Value Out_of_Service COV_Increment	0 to 24 hours, Resolution 1 hour
AV.164	Boiler Drain Volume	Integrator	Configuration value to define the volume of water that is drained from the chamber, relative to the total capacity of the chamber.	Present_Value Out_of_Service COV_Increment	25% to 100%, Resolution 5%
AV.165	Boiler Max Steam Output	Integrator	Configuration value of the maximum steam output of a modulating humidifier relative to its total capacity.	Present_Value Out_of_Service COV_Increment	0% to 100%, Resolution 1%
AV.166	Boiler Idle Time Drain	Integrator	Configuration value of the amount of time the humidifier can remain in standby mode until an automatic drain cycle is performed.	Present_Value Out_of_Service COV_Increment	0 to 72 hours, Resolution 1 hour
AV.167	Boiler Idle Temperature Setpoint	Integrator	Configuration value of the idle temperature setpoint for the evaporation chamber when there is no demand.	Present_Value Out_of_Service COV_Increment Units	32°F to 140°F or 0°C to 60°C, Resolution 2°F or 1°C
AV.173	Boiler Blowdown Rate	Integrator	Configuration value of the rate of boiler blowdown or water dilution in order to minimize water impurities.	Present_Value Out_of_Service COV_Increment	0% to 100%, Resolution 1%
AV.174	Boiler Service Interval	Integrator	Configuration value to define the time of operation before the humidifier calls for servicing.	Present_Value Out_of_Service COV_Increment	1000 to 3000 hours, Resolution 100 hours

ID	Name	List	Description	W?	Notes
AV.228	Runtime	Integrator	Displays the number of seconds that the system has been powered on. This value is reset every time the system is shut off.	Present_Value Out_of_Service COV_Increment Relinquish_Default Units	0 to 999999999 seconds, Resolution 1 second
AV.230	Room Demand Proportional Band	Integrator	Value of the room demand proportional band.	Present_Value Out_of_Service COV_Increment	1% to 100%, Resolution 0.1%
AV.234	HRL Temperature	Integrator	Value of the room temperature measured by the HRL24 controller.	Present_Value Out_of_Service COV_Increment Relinquish_Default Units	-40°F to 500°F or -40°C to 260°C Resolution 0.18°F or 0.10°C
AV.235	Supply High Limit Proportional Band	Integrator	Value of the supply high limit demand proportional band.	Present_Value Out_of_Service COV_Increment	1% to 100%, Resolution 0.1%
AV.236	HRL Humidity	Integrator	Value of the room humidity measured by the HRL24 controller.	Present_Value Out_of_Service COV_Increment Relinquish_Default Units	0% RH to 100% RH, Resolution 0.1% RH
AV.238	Modbus TCP IP Keep Alive Time Out	Integrator	Configuration value to define the amount of time the communication to the Modbus TCP/IP server stays open before connection is cut out, when no signal is received from the device.	Present_Value Out_of_Service COV_Increment	1 to 1440 minutes, Resolution 1 minute
AV.239	Humidity Demand Low Dead Band	Integrator	Value of the lower limit deadband for the humidity demand.	Present_Value Out_of_Service COV_Increment	0% RH to 100%, Resolution 0.01%
AV.242	Network Timeout	Integrator	Configuration value to define the amount of time the humidifier may attempt to connect to the BACnet network before it stops operating due to a communication error.	Present_Value Out_of_Service COV_Increment	1 to 900 seconds, Resolution 1 second
AV.243	Water Level Replace Interval	Integrator	Configuration value to define the amount of time the humidifier may run using only the resistive water level probes, if there is an issue with the capacitive probe, before an alarm message is displayed.	Present_Value Out_of_Service COV_Increment	0 to 7 days, Resolution 1 day
AV.250	Boiler Manual Calibration Time	Integrator	Amount of time that has been elapsed since the last manual calibration of the water level sensor.	Read Only	0 to 21474836.47 hours, Resolution 0.01 hours



ID	Name	List	Description	W?	Notes
AV.253	HRL Temperature Bias	Integrator	Bias value of the temperature measured on the HRL controller.	Out_of_Service Present_Value COV_Increment	-18.0Δ°F to 18.0Δ°F or -10.0Δ°C to 10.0Δ°C, Resolution 0.18Δ°F or 0.1Δ°C
AV.254	HRL Humidity Bias	Integrator	Bias value of the humidity measured on the HRL controller.	Out_of_Service Present_Value COV_Increment	-10.0%RH to 10.0%RH, Resolution 0.1%RH
AV.255	Fill Delay	Integrator	Displays the value that is added to the calculated delay for the alarm fill timeout.	Out_of_Service Present_Value COV_Increment	0 to 15 minutes, Resolution 0 minute
AV.256	Clean Valve Delay	Integrator	Configuration value of the proportion of the total drain duration the clean valve will be open.	Out_of_Service Present_Value COV_Increment	0% RH to 80%, Resolution 1%

## Binary Input (BI)

**Table 7 - Object Table Information: Binary Input (BI)**

ID	Name	List	Description	W?	Notes
BI.1	Air Flow	Integrator	Displays the status of the airflow switch. If the switch is Open, it indicates that the airflow is not detected by the air pressure switch.	Out_of_Service Polarity	0 = Closed 1 = Open
BI.2	Supply High Limit	Integrator	Displays the status of the high limit contact. If the switch is Open, it indicates that the humidity level has exceeded the setpoint on the high limit humidistat.	Out_of_Service Polarity	0 = Closed 1 = Open
BI.3	Interlock	Integrator	Displays the status of the interlock. If the switch is Open, it indicates that the humidifier is stopped as a result of the interlock safety being open.	Out_of_Service Polarity	0 = Closed 1 = Open
BI.4	Binary External Demand	Integrator	Displays whether there is currently a humidity demand, when an On/Off humidifier is used.	Out_of_Service Polarity	0 = 0% 1 = 100%
BI.8	Water Leak Detection	Integrator	Displays whether a water leak has been detected.	Out_of_Service Polarity	0 = OK 1 = Leak
BI.14	Thermal Cutout	Integrator	Displays the status of the high temperature switch. If the switch is Open, it indicates that an abnormal temperature has been detected.	Out_of_Service Polarity	0 = Closed 1 = Open
BI.20	RS485 Interface	Integrator	Displays whether the RS485 interface is available or not.	Out_of_Service Polarity	0 = No 1 = Yes
BI.21	Ethernet Interface	Integrator	Displays whether the Ethernet interface is available or not.	Out_of_Service Polarity	0 = No 1 = Yes
BI.22	Contactors PCB Fuse	Integrator	Displays the current status of the contactors PCB fuse. If Blown Fuse is displayed, the fuse must be replaced.	Out_of_Service Polarity	0 = Normal 1 = Blown Fuse

ID	Name	List	Description	W?	Notes
BI.23	Control PCB Fuse	Integrator	Displays the current status of the control PCB fuse. If Blown Fuse is displayed, the fuse must be replaced.	Out_of_Service Polarity	0 = Normal 1 = Open Fuse

## Binary Output (BO)

**Table 8 - Object Table Information: Binary Output (BO)**

ID	Name	List	Description	W?	Notes
BO.2	Alarm Warning Relay	Integrator	Status value for the alarm warning relay.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.3	Service Warning Relay	Integrator	Status value for the service warning relay.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.4	Water Level Valve	Integrator	Status value for the water level sensor supply valve.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.5	Tank Water Valve	Integrator	Status value for the evaporation chamber water supply valve.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.6	Drain Cooler Valve	Integrator	Status value for the internal drain cooler valve.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.7	Drain Pump	Integrator	Status value for the drain pump.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On

ID	Name	List	Description	W?	Notes
BO.8	Drain Valve	Integrator	Status value for the normally open drain valve.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.11	Main Contactor	Integrator	Status value for the main contractor.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.12	Heater Stage 1	Integrator	Status value for the first stage contactor.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.13	Heater Stage2	Integrator	Status value for the second stage contactor.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.14	Heater Stage 3	Integrator	Status value for the third stage contactor.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.15	SDU Fan	Integrator	Status value for the SDU fan.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.18	Alarm LED	Integrator	Status value for the alarm LED.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.19	Power LED	Integrator	Status value for the power LED.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On

ID	Name	List	Description	W?	Notes
BO.20	Buzzer	Integrator	Status value for the buzzer.	Present_Value Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On

## Binary Value (BV)

**Table 9 - Object Table Information: Binary Value (BV)**

ID	Name	List	Description	W?	Notes
BV.1	Manual Water Calibration State	Integrator	Status value to indicate that the water level sensor must be manually calibrated.	Read Only	0 = Ok 1 = Required
BV.3	Alarm Buzzer	Integrator	Configuration value that enables or disables the alarm buzzer sound when there is a system warning.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Normal 1 = Disabled
BV.14	Water Level Low	Integrator	Status value for the resistive low water level sensor.	Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Inactive 1 = Active
BV.15	Water Level High	Integrator	Status value for the resistive high water level sensor.	Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Inactive 1 = Active
BV.16	Foam Sensor	Integrator	Displays whether foam has been detected within the evaporation chamber. If Foam is displayed, it indicates that the Anti-Foaming Energy Conservation (AFEC) system has detected foam.	Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = No Foam 1 = Foam
BV.28	SDU Fan Fault	Integrator	Displays if there is a problem with the SDU fan.	Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.30	Boiler Service Operation	Integrator	Select whether to enable the humidifier to continue producing steam, even when it is due for servicing. When set to Allowed, the humidifier continues operating even when a service alarm is active.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Not Allowed 1 = Allowed
BV.32	Boiler Service Due	Integrator	Status value that indicates whether the humidifier is due for servicing.	Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = No 1 = Yes
BV.34	Foam	Integrator	Displays whether the humidifier has currently detected foam or not. If foam has been detected, the humidifier will perform a drain cycle.	Read Only	0 = Ok 1 = Detected
BV.39	HRL Lock Setpoint	Integrator	Select whether the setpoint obtained from the HRL24 controller can be modified.	Present_Value Out_of_Service Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Unlock 1 = Lock

ID	Name	List	Description	W?	Notes
BV.46	Network Control State	Integrator	Indicates the state of the control communication between the device and the BACnet network.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Normal 1 = Fault
BV.50	Inhibit Resistive Probe	Integrator	Select whether or not to disable the resistive water level sensor probes. When performing a manual calibration procedure for the water level sensor or when using the ultrapure humidifier option, this setting must be set to <i>Yes</i> .	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = No 1 = Yes
BV.54	SMTP SSL	Integrator	Select whether to use a secure socket layer encrypt the communication between the device and the email server or to use the default socket. If turned to <i>On</i> , SMTP Port value must be set to <i>587</i> and <i>SMTP Username</i> and <i>SMTP Password</i> settings must be filled out. If turned to <i>Off</i> , use SMTP Port <i>25</i> to use server without login account or SMTP Port <i>587</i> if login details for email account have been entered.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.55	SMTP Port	Integrator	Select the port number to be used for email transfer. If set to <i>25</i> , server to server email transfer is enabled (can only be used if SMTP SSL is set to <i>Off</i> ). If set to <i>587</i> , client to server email transfer is enabled.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = 25 1 = 587
BV.56	Notify Alarm	Integrator	Select whether to get notified of all humidifier alarm messages by email.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.57	Notify Warning	Integrator	Select whether to get notified of all humidifier warning messages by email.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.58	Notify App Msg	Integrator	Select whether to get notified of all humidifier event messages by email.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.63	Boiler Line Rinse	Integrator	Select whether to perform an automatic pipe line rinse cycle upon each start-up of the humidifier.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.67	AntiFreeze Warning	Integrator	Displays the status of the anti freeze warning indicating if the drain valve is open or closed.	Read Only	0 = Inactive 1 = Drain

## Character String Value (CV)

**Table 10 - Object Table Information: Character String Value (CV)**

ID	Name	List	Description	W?	Notes
CV.10	HMI Overwrite	Integrator	Overwrite the value displayed on the local display menu.	Present_Value	-
CV.21	SMTP Server IP Address	Integrator	Configure the server IP address for the email account.	Present_Value	-
CV.22	SMTP Mail From	Integrator	Set the email address that will be sending the humidifier notification messages.	Present_Value	-
CV.24	SMTP Mail To	Integrator	Set the email address that will be receiving the humidifier notification messages.	Present_Value	-
CV.25	SMTP Username	Integrator	Set the login username for the email account.	Present_Value	-
CV.26	SMTP Password	Integrator	Set the login password for the email account.	Present_Value	-
CV.37	EthernetMacAdd	Integrator	Value of the MAC address of the Ethernet interface.	Present_Value	-

## Multi State Value (MSV)

**Table 11 - Object Table Information: Multi State Value (MSV)**

ID	Name	List	Description	W?	Notes
MSV.5	System Log Verbose Level	Integrator	Configuration value to select the type of information to be stored on the log file.	Present_Value Out_of_Service	1 = None 2 = Emergency 3 = Alert 4 = Critical 5 = Error 6 = Warning 7 = Notice 8 = Info 9 = Debug
MSV.9	BACnet Server Language	Integrator	Value of the BACnet server language.	Present_Value Out_of_Service	1 = English 2 = French 3 = Spanish
MSV.10	BACnet Server List Mode	Integrator	Configuration value to select the category of BACnet objects to display.	Present_Value Out_of_Service	1 = Integrator 2 = Advanced 3 = Factory
MSV.11	BACnet Server Units	Integrator	Configuration value to select the display units for the BACnet server.	Present_Value Out_of_Service	1 = Metric 2 = Imperial
MSV.24	Control Signal Type	Integrator	Configuration value to select the signal type for the control demand analog input.	Present_Value Out_of_Service	1 = 0-10Vdc 2 = 2-10Vdc 3 = 4-20mA 4 = 0-20mA
MSV.25	Room RH Signal Type	Integrator	Configuration value to select the signal type for the room humidity analog input.	Present_Value Out_of_Service	1 = 0-10Vdc 2 = 2-10Vdc 3 = 4-20mA 4 = 0-20mA
MSV.26	Supply RH Signal Type	Integrator	Configuration value to signal type for the duct or supply high limit humidity analog input.	Present_Value Out_of_Service	1 = 0-10Vdc 2 = 2-10Vdc 3 = 4-20mA 4 = 0-20mA
MSV.28	Control Profile	Integrator	Configuration value to select a preconfigured control mode profile for the modulating humidity demand. Select the Custom option to configure individual settings.	Present_Value Out_of_Service	1 = ExternAnalog 2 = ExternNetwork 3 = InternAnalog 4 = InternNetwork 5 = HRL 6 = Custom

ID	Name	List	Description	W?	Notes
MSV.29	Modulating High Limit Profile	Integrator	Configuration value to select a preconfigured control mode profile for the modulating high limit demand. Select the Custom option to configure individual settings.	Present_Value Out_of_Service	1 = Disabled 2 = ExternAnalog 3 = ExternNetwork 4 = InternAnalog 5 = InternNetwork 6 = Custom
MSV.32	Occupancy State	Integrator	Displays the current occupancy state.	Out_of_Service	1 = Occupied 2 = Unoccupied 3 = Vacant 4 = Off
MSV.33	Room RH Source	Integrator	Configuration value to select the reading source for the room demand.	Present_Value Out_of_Service	1 = None 2 = RoomRH 3 = Network 4 = HRL
MSV.34	Room RH Setpoint Source	Integrator	Configuration value to select the room demand setpoint source.	Present_Value Out_of_Service	1 = None 2 = Internal 3 = ControlInput
MSV.38	Supply High Limit Reading Source	Integrator	Configuration value to select the reading source for the supply high limit demand.	Present_Value Out_of_Service	1 = None 2 = SupplyHLRH 3 = Network
MSV.39	Supply High Limit Setpoint Source	Integrator	Configuration value to select the supply high limit demand setpoint source.	Present_Value Out_of_Service	1 = None 2 = Internal 3 = ControlInput
MSV.43	Humidity Control Demand Source	Integrator	Configuration value to select the humidity control demand source.	Present_Value Out_of_Service	1 = None 2 = ControlInput 3 = RoomDemand 4 = Network
MSV.44	Humidity Control High Limit Source	Integrator	Configuration value to select the humidity control high limit source.	Present_Value Out_of_Service	1 = None 2 = ControlInput 3 = SupplyHLDemand 4 = Network
MSV.51	Humidity Control Cutout State	Integrator	Displays the current state of the safety control circuit and whether the circuit has been disconnected due to a safety switch.	Out_of_Service	1 = Off 2 = Normal 3 = LowLimit 4 = HighLimit 5 = NoAirFlow 6 = Interlock
MSV.52	SDU Fan Target	Integrator	Configuration value to select whether to enable the SDU option.	Present_Value Out_of_Service	1 = None 2 = SDU Fan



ID	Name	List	Description	W?	Notes
MSV.59	Boiler Request	Integrator	Select whether to perform one of the following actions for the humidifier: reset service counters, initiate a drain cycle, reset warning alarms, fill the evaporation chamber or calibrate the water level sensor.	Present_Value Out_of_Service	1 = None 2 = Reset Alarms 3 = Drain 4 = Reset Counters 5 = Filling 6 = WaterCalib
MSV.60	Boiler State	Integrator	Displays the current state of operation of the humidifier.	Out_of_Service	1 = Off 2 = Idle 3 = LineRinse 4 = TankRinse 5 = Filling 6 = Draining 7 = Heating 8 = Boiling 9 = Alarm
MSV.63	Boiler Fill Mode	Integrator	Configuration value to select the water filling method for the fill valve: When set to OneShot, water will continuously flow. When set to Pulsed, water will flow in short bursts.	Present_Value Out_of_Service	1 = OneShot 2 = Pulsed
MSV.64	Boiler Alarm	Integrator	Displays the current status of the humidifier alarm.	Out_of_Service	1 = Normal 2 = FailedPump 3 = FillTimeout 4 = BlockedPiping 5 = HeatTimeout 6 = Overheat 7 = WaterLeak 8 = Service 9 is Reserved 10 = TankBlocked 11 = RefillDelay
MSV.65	Boiler Idle Tank Rinse On	Integrator	Configuration value to define whether to enable automatic rinse cycles while the humidifier is turned on and remains in "Idle" or stand-by mode. To select the amount of time the humidifier remains inactive before a rinse cycle is performed, configure the value of the <i>Boiler Idle Tank Rinse Interval</i> setting.	Present_Value Out_of_Service	1 = Off 2 = On
MSV.66	Boiler Idle Tank Rinse Off	Integrator	Configuration value to define whether to enable automatic rinse cycles while the humidifier is turned off and remains inactive. To select the amount of time the humidifier remains inactive before a rinse cycle is performed, configure the value of the <i>Boiler Idle Tank Rinse Interval</i> setting.	Present_Value Out_of_Service	1 = Off 2 = On
MSV.67	Water Probe Auto Calib	Integrator	Configuration value to select whether to enable or disable the automatic calibration of the water level sensor.	Present_Value Out_of_Service	1 = Off 2 = On
MSV.83	System Power State	Integrator	Displays whether the system is powered on or off.	Present_Value Out_of_Service	1 = Off 2 = On

ID	Name	List	Description	W?	Notes
MSV.95	Water Level Probe Warning	Integrator	Displays whether there is currently a warning message associated with the water level sensor, in order to indicate that there is a calibration error or a drifting error with the capacitive probe.	Read Only	1 = Ok 2 = Replace
MSV.96	Water Level probe Failure	Integrator	Displays which one of the water level sensor's probes is currently not functioning properly.	Read Only	1 = None 2 = Capacitive 3 = Resistive 4 = Both
MSV.97	Water Level Probe Alarm	Integrator	Displays whether there is currently an alarm message to indicate that the water level sensor is defective and must be replaced or must be calibrated.	Read Only	1 = Ok 2 = Defect 3 = NoCalib
MSV.115	Boiler Startup Tank Rinse	Integrator	Configuration value to define whether to perform an automatic tank rinse cycle upon each start-up of the humidifier.	Present_Value Out_of_Service	1 = Off 2 = On

## Other

**Table 12 - Object Table Information: Other**

ID	Name	List	Description	W?	Notes
PGM.1	NSDF Core Program	Advanced	NSDF Core Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.2	BACnet Server Program	Advanced	BACnet Server Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.3	LCD_Display Program	Advanced	LCD Display Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.4	Modbus Server Program	Advanced	Modbus Server Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.5	RMHI Program	Advanced	RHMI Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.6	SKE Program	Advanced	SKE Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.7	Universal Humidifier Manager Program	Advanced	Universal Humidifier Manager Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.8	Universal User Control Program	Advanced	Universal User Control Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.9	Web Server Program	Advanced	Web Server Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
PGM.10	Water Level Probe Program	Advanced	Water Level Probe Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.

ID	Name	List	Description	W?	Notes
PGM.15	Database Program	Advanced	Database Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.
FIL.2	UpdatePackageFile	Advanced	Update Package file.	File_Size	File size is accepted for 0 value only.
FIL.4	SysLogAlarm	Integrator	System Log Alarm.	File_Size	File size is accepted for 0 value only.
FIL.9	USB System Log File	Integrator	USB System Log file.	File_Size	File size is accepted for 0 value only.
FIL.10	USB System Alarm Log File	Integrator	USB System Alarm Log file.	File_Size	File size is accepted for 0 value only.
FIL.16	System Log File	Integrator	System Log file.	File_Size	File size is accepted for 0 value only.
SCH.1	Occupancy Schedule	Integrator	Weekly occupancy schedule to specify which occupancy state is active during specific periods of day. Create a customized occupancy schedule with up to six events per day.	Effective_Period Schedule_Default List_of_Object_Property_ References Priority_for_Writing Out_of_Service Weekly_Schedule	Monday to Sunday, Event 1 to Event 6
SCH.2	Boiler Drain Schedule	Integrator	Customized draining schedule with up to six events per day.	Effective_Period Schedule_Default List_of_Object_Property_ References Priority_for_Writing Out_of_Service Weekly_Schedule	Monday to Sunday, Event 1 to Event 6



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