Evaporative Cooler

SKVF Series

BACnet Communication Module User Guide

Contents

Introduction

The SKVF BACnet Communication Module User Guide provides information about using the evaporative cooler with BACnet communications feature. The BACnet communication protocol for building automation and control networks enables communication between client devices within a network. The unit provides a BACnet network interface between BACnet client devices and Neptronic products. 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 evaporative cooler 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 evaporative cooler 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 evaporative cooler functions the same way as the B-ASC type profile server and supports the specific BIBB as per their relevant definitions.

o DS-RP-B	o DM-DDB-B	o DS-COV-B
o DS-RPM-B	o DM-DOB-B	o DS-COVP-B
o DS-WP-B	o DM-RD-B	o SCHED-WS-I-B
o DS-WPM-B	o DM-TS-B	
o DM-DCC-B	o DM-UTC-B	

- *Object Support.* The evaporative cooler 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 evaporative cooler 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	• Set to a unique address on the network between 000 and 254. • The value can be set manually via the menu. • The values from 128-254 represent MS/TP non-token passing slave devices.
Device Instance	Auto	• The evaporative cooler automatically configures its device instance to 153,000 + MAC address. • The value can be set manually via the menu. • The value can be set manually through the **WriteProperty** service to **Device Object.Object_Identifier**. • The device's **Object_Identifier** is a combination of the **Device Object_Type** (8) and the **Device_Instance** (0-4194302), therefore its decimal or hexadecimal representation tends to be incomprehensible. • For example, the **Device_Instance**=1000 has an equivalent **Object_Identifier** of 0x020003E8 hexadecimal or 33555432 decimal.
Baud Rate	0 = Auto	• The evaporative cooler configures its baud rate automatically by detecting the network upon connection. • The value can be set manually from the available values of (0) Auto, 9600, 19200, 38400, and 76800.
Max_Master	127	• Configure **Max_Master** value to increase network efficiency when there are less than 127 devices on the network. • The **Max_Master** value can be changed through the **WriteProperty** service to **Device Object.Max_Master**. For more information, refer to the MAC Address and Max_Master section.
Device Object.Object_Name	Name of the device	• Configure the name of the device through the **WriteProperty** service to **Device Object.Object_Name**. For example, SKVF.

Configuration Options

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

Quick Setup

Configure the evaporative cooler 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 evaporative cooler to the network and power it up.

3. The evaporative cooler 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 evaporative cooler for BACnet communication using the SKVF 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 evaporative cooler 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 evaporative cooler 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 evaporative cooler 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 evaporative cooler 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 evaporative cooler 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 evaporative cooler to its initial state.
- *Cold Reset.* The Cold Reset restarts the evaporative cooler.

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	• Programmable where the instance part of the Object_Identifier is in the range of 0-4194302 • The device instance must be unique system-wide • The default value for the device instance= 153001 (Vendor_Identifier*1000 + MAC)	W
Object_Name	SKVF, programmable up to 32 Bytes	W
Description	Programmable up to 32 Bytes (default: SKVF Controller)	W
Object_Type	Device	
System_Status	Operational	
Vendor_Identifier	Always 153	
Vendor_Name	Always Neptronic	
Model_Name	Example, SKVF	
Firmware_Revision	2.02.202207041130	
Application_Software_Version	1.04.20220704	
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	• confirmedCOVNotification • subscribeCOV • atomicReadFile • atomicWriteFile • readProperty • readPropertyMultiple • WriteProperty • writePropertyMultiple • deviceCommunicationControl • reinitializeDevice • i-Am • i-Have • unconfirmedCOVNotification • unconfirmedPrivateTransfer • timeSynchronization • who-Has • who-Is • utcTimeSynchronization • subscribeCOVProperty	
Protocol_Object_Types_Supported	• analog-input • analog-output • analog-value • binary-input • binary-output • binary-value • device • file • group • multi-state-input • multi-state-output • program • Schedule • multi-state-value • characterstring-value • date-value • datetime-value • positive-integer-value • time-value	
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	Value	Writable
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
		Note: Writable properties are different for some objects. Refer to the respective Object Table information to know the writable property for objects.		
Analog Input	☑	• Reliability • Description • Min_Present_Value • Max_Present_Value • Resolution • COV_Increment	• Out_of_Service • COV_Increment • Units	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	☑	• Reliability • Description • Min_Present_Value • Max_Present_Value • Resolution • COV_Increment • Priority_Array • Relinquish_Default	• Present_Value • Out_of_Service • COV_Increment • Relinquish_Default • Units	Refer to Out_of_Service Property section on page 7 for more information.
Analog Output	☑	• Description • Reliability • Min-Pres-Value • Max-Pres-Value • Resolution • COV_Increment	• Present_Value • COV_Increment • Out_of_Service • Relinquish_Default • Units	
Binary Input	☑	• Reliability • Active_Text • Inactive_Text • Description	• Out_of_Service • Polarity	• 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.
Binary Value	☑	• Reliability • Active_Text • Inactive_Text • Description • Priority_Array • Relinquish_Default • Minimum_Off_Time • Minimum_On_Time	• Present_Value • Out_of_Service • Relinquish_Default • Minimum_Off_Time • Minimum_On_Time	Refer to Out_of_Service Property section on page 7 for more information.
Binary Output	☑	• Description • Reliability • Inactive-text • Active-text • Minimum_Off_Time • Minimum_On_Time	• Present_Value • Out_of_Service • Polarity • Relinquish_Default • Minimum_Off_Time • Minimum_On_Time	
Device	☑	• Max_Master • Max_Info_Frame • Description • active-COV-subscriptions • Local_Time • Local_Date • UTC_Offset • Daylight_Savings_Status • Backup_Failure_Timeout • Configuration_Files • Last_Restore_Time • Backup_And_Restore_State • Backup_Preparation_Time • Restore_Completion_Time • Restore_Preparation_Time • Location • Serial_Number • Profile_Name	• Object_Identifier • Object_Name • Max_Master • Description • Local_Time • Local_Date • UTC_Offset • Daylight_Savings_Status • Apdu_Timeout • Backup_Failure_Timeout • Location	

Object Type	Enabled	Optional Properties Supported	Writable Properties	Notes
File	☑	• Description	File_Size	Only 0 is the accepted value to be written to the file size.
Group	☐	• Description		
Multi-State Input	☐	• Description • Reliability • State_Text	• Out_of_Service	
Multi-State Output	☐	• Description • Reliability • State_Text	• Present_Value • Out_of_Service • Relinquish_Default	
Program	☑	• Description • Reliability	• Program_Change • Out_of_Service	Only LOAD and RESTART are supported for program change. Use LOAD to apply the new firmware.
Schedule	☑	• Description • Weekly_Schedule	• Effective_Period • Schedule_Default • List_of_Object_Property _References • Priority_for_Writing • Out_of_Service • Weekly_Schedule	If Out_of_Service is True, Present_Value becomes writable.
Multi-State Value	☑	• Description • Reliability • States_Text • Priority_Array • Relinquish_Default	• Present_Value • Relinquish_Default • Out_of_Service	
CharacterString Value	☑	• Description	• Present_Value	
Date	☐	• Description • Reliability • Event_State • Out_of_Service	• Present_Value • Out_of_Service	
DateTime	☐	• Description • Reliability • Event_State • Out_of_Service	• Present_Value • Out_of_Service	
Positive-Integer Value	☐	• Description • Reliability • Event_State • Out_of_Service • Priority_Array • Relinquish_Default • Minimum_Present_Value • Maximum_Present_Value	• Present_Value • Units • Out_of_Service • Relinquish_Default	
Time	☐	• Description • Reliability • Event_State • Out_of_Service	• Present_Value • Out_of_Service	

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 SKVF 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 humidity demand control 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: 0.001V
AI.7	Supply RH Signal	Integrator	Value of the supply high limit humidity analog input signal.	Out_of_Service COV_Increment	0V to 15V, Resolution: 0.001V
AI.9	ECM Fan Feedback	Integrator	Feedback value from the ECM fan.	Out_of_Service COV_Increment	0Hz to 30,000Hz, Resolution 1Hz
AI.10	Float Switch Signal	Integrator	Value of the float sensor signal.	Out_of_Service COV_Increment	0V to 10V, Resolution 0.001V
AI.24	Board Temperature Signal	Integrator	Value of the water 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
AI.27	ECM Fan Feedback 2	Integrator	Feedback value from the second ECM fan.	Out_of_Service COV_Increment	0Hz to 30,000Hz, Resolution 1Hz
AI.28	Room Temperature Signal	Integrator	Value of the room temperature analog input signal.	Out_of_Service COV_Increment	0V to 15V, Resolution: 0.001V
AI.29	Supply Temperature Signal	Integrator	Value of the supply high limit temperature analog input signal.	Out_of_Service COV_Increment	0V to 15V, Resolution: 0.001V
AI.30	Control Signal	Integrator	Value of the temperature demand control analog input signal.	Out_of_Service COV_Increment	0V to 15V, Resolution: 0.001V

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.9	ECM Fan Signal	Integrator	Value of the control signal from the ECM fan.	Out_of_Service Relinquish_Default COV_Increment	0V to 10V, Resolution 0.001V

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.21	Demand	Integrator	Demand value of the evapora+tive cooler.	Out_of_Service COV_Increment	0% to 100%, Resolution 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 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 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 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 supply high limit humidity analog input.	Out_of_Service Present_Value COV_Increment	-10% RH to 10% RH, Resolution 0.1% RH
AV.69	Run Time	Integrator	Value of the total runtime of the unit.	Out_of_Service COV_Increment	0 to 21474836.47 hours, Resolution 0.01 hour
AV.70	On Time	Integrator	Value of the total operating time of the unit.	Out_of_Service COV_Increment	0 to 21474836.47 hours, Resolution 0.01 hour
AV.71	Water Treated Volume	Integrator	Displays the voulme of the water that has passed through the 5µm pre-filter and silver ion cartridges, since the last servicing.	Out_of_Service COV_Increment	0 to 999999999 Litres, Resolution 1 Litre
AV.72	Service On Time	Integrator	Value of the operating time of the unit since the last servicing.	Out_of_Service COV_Increment	0% to 100%, Resolution 1%
AV.73	Dead Band	Integrator	Deadband value for the humidity demand.	Out_of_Service Present_Value COV_Increment	0% to 100%, Resolution 1%
AV.76	Minimum Production Output	Integrator	Minimum production output value for the fan.	Out_of_Service Present_Value COV_Increment	0% to 100%, Resolution 1%
AV.77	Maximum Production Output	Integrator	Maximum production output value for the fan.	Out_of_Service Present_Value COV_Increment	0% to 100%, Resolution 1%
AV.79	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.	Out_of_Service COV_Increment	0 to 999999999 seconds, Resolution 1 second
AV.81	Idle Fan Speed	Integrator	Set the speed at while fan will run when the unit is in idle state. It can be used to maintain the airflow inside the duct, but it could lead to overshooting as the media is not dry.	Out_of_Service Present_Value COV_Increment	0 to 100%, Resolution 1%
AV.82	Service Interval	Integrator	Set the time of operation before the evaporative cooler calls for servicing.	Out_of_Service Present_Value COV_Increment	1000 to 3000 hours, Resolution 100 hours

ID	Name	List	Description	W?	Notes
AV.85	Power Output Feedback Bias	Integrator	Bias value for the power output feedback signal.	Out_of_Service Present_Value COV_Increment	0V to 10V, Resolution 0.001V
AV.86	Power Output Feedback Min	Integrator	Minimum value for 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 for the power output feedback signal.	Out_of_Service Present_Value COV_Increment	0V to 10V, Resolution 0.001V
AV.88	Power Output Feedback	Integrator	Value of the power output feedback signal.	Out_of_Service Present_Value COV_Increment	0% to 100%, Resolution 1%
AV.92	Dilution Ratio	Integrator	Set the dilution ratio to specify how much water will be drained during each dilution cycle.	Out_of_Service Present_Value COV_Increment	0% to 300%, Resolution 1%
AV.99	Drain Interval	Integrator	Set the frequency of the drain cycle when the unit is in operation. In general, a more frequent drain cycle is required as the water hardness level rises.	Out_of_Service Present_Value COV_Increment	1 to 24 hours, Resolution 1 hour
AV.100	Fixed Drain Time	Integrator	Set the amount of time after which the unit will have to drain regardless of whether it was in operation or not.	Out_of_Service Present_Value COV_Increment	4 to 72 hours, Resolution 6 hours
AV.101	Line Rinse Time	Integrator	Set the duration period for the pipe line rinse cycle performed upon start-up of the evaporative cooler.	Out_of_Service Present_Value COV_Increment	0 to 2000 seconds, Resolution 1 second
AV.103	Water Treatment Service Volume	Integrator	Set the volume limit of water used during operation before the 5µm pre-filter and silver ion cartridges call for replacement.	Out_of_Service Present_Value COV_Increment	2500 to 10000 Litres, Resolution 100 Litres
AV.104	Water Supply Duty Cycle	Integrator	Set the percentage of time that the water supply valve will stay on during the water supply period defined by **AV.105 Water Supply Period**.	Out_of_Service Present_Value COV_Increment	8% to 70%, Resolution 1%
AV.105	Water Supply Period	Integrator	Set the amount of time required to complete an on and off cycle for the water supply valve.	Out_of_Service Present_Value COV_Increment	0 to 180 seconds, Resolution 1 second
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

ID	Name	List	Description	W?	Notes
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 RH Demand Proportional Gain	Integrator	Value of the room humidity demand proportional gain.	Present_Value Out_of_Service COV_Increment	1 to 200, Resolution 0.1
AV.111	Room RH Demand Integral Time	Integrator	Value of the room humidity demand integral time.	Present_Value Out_of_Service COV_Increment	0 to 900 seconds, Resolution 0.5 seconds
AV.112	Room RH Demand Derivative Time	Integrator	Value of the room humidity demand derivative time.	Present_Value Out_of_Service COV_Increment	0 to 60 seconds, Resolution 0.1 second
AV.120	Room RH 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	RH Supply High Limit Network Reading	Integrator	Value of the supply high limit humidity reading received from the network.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% RH to 100% RH, Resolution 1% RH
AV.123	RH Supply High Limit Setpoint	Integrator	Value of the supply high limit humidity setpoint received from the network.	Present_Value Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 0.50% RH
AV.124	RH Supply High Limit Unoccupied Setpoint	Integrator	Value of the supply high limit humidity demand setpoint value used during Unoccupied state.	Present_Value Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 0.50% RH
AV.125	RH Supply High Limit Vacant Setpoint	Integrator	Value of the supply high limit humidity demand setpoint value used during Vacant state.	Present_Value Out_of_Service COV_Increment	0% RH to 100% RH, Resolution 0.50% RH
AV.126	RH Supply High Limit Proportional Gain	Integrator	Value of the supply high limit humidity demand proportional gain.	Present_Value Out_of_Service COV_Increment	1 to 200, Resolution 0.1
AV.127	RH Supply High Limit Integral Time	Integrator	Value of the supply high limit humidity demand integral time.	Present_Value Out_of_Service COV_Increment	0 to 900 seconds, Resolution 0.5 seconds
AV.128	RH Supply High Limit Derivative Time	Integrator	Value of the supply high limit humidity 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.136	RH 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	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	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	User Demand	Integrator	Value of the current humidity demand.	Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.150	Room Temperature	Integrator	Actual value of the room temperature analog input.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.151	Room Temperature Min	Integrator	Minimum value of the room temperature analog input.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.152	Room Temperature Max	Integrator	Maximum value of the room temperature analog input.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.153	Room Temperature Bias	Integrator	Bias value of the room temperature analog input.	Present_Value Out_of_Service COV_Increment	-18°F to 18°F or -10°C to 10°C Resolution 0.18°F or 0.10°C
AV.155	Room Temperature Network Reading	Integrator	Value of the room temperature reading received from the network.	Present_Value Out_of_Service COV_Increment	-40°F to 212°F or -40°C to 100°C Resolution 0.18°F or 0.10°C
AV.156	Room Temperature Setpoint	Integrator	Value of the room relative temperature setpoint received from the network.	Present_Value Out_of_Service COV_Increment	32°F to 104°F or 0°C to 40°C Resolution 0.9°F or 0.5°C
AV.157	Room Temperature Unoccupied Setpoint	Integrator	Value of the room relative temperature reading received from the network during no occupancy state.	Present_Value Out_of_Service COV_Increment	32°F to 104°F or 0°C to 40°C Resolution 0.9°F or 0.5°C
AV.158	Room Temperature Vacant Setpoint	Integrator	Value of the room relative temperature reading received from the network during vacancy.	Present_Value Out_of_Service COV_Increment	32°F to 104°F or 0°C to 40°C Resolution 0.9°F or 0.5°C

ID	Name	List	Description	W?	Notes
AV.159	Room Temperature Demand Proportional Gain	Integrator	Value of the room temperature demand proportional gain.	Present_Value Out_of_Service COV_Increment	1 to 200, Resolution 0.1
AV.160	Room Temperature Demand Integral Time	Integrator	Value of the room temperature demand integral time.	Present_Value Out_of_Service COV_Increment	0 to 900 seconds, Resolution 0.5 seconds
AV.161	Room Temperature Demand Derivative Time	Integrator	Value of the room temperature demand derivative time.	Present_Value Out_of_Service COV_Increment	0 to 60 seconds, Resolution 0.1 second
AV.169	Room Temperature Demand	Integrator	Value of the temperature demand within the room.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.170	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.171	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.174	Room Temp Demand Proportional Band	Integrator	Value of the room temperature demand proportional band.	Present_Value Out_of_Service COV_Increment	1% to 100%, Resolution 0.1%
AV.175	Temp Supply High Limit Network Reading	Integrator	Value of the supply high limit temperature reading received from the network.	Present_Value Out_of_Service COV_Increment	-40°F to 212°F or -40°C to 100°C Resolution 0.18°F or 0.10°C
AV.176	Temp Supply High Limit Setpoint	Integrator	Value of the supply high limit relative temperature setpoint received from the network.	Present_Value Out_of_Service COV_Increment	32°F to 104°F or 0°C to 40°C Resolution 0.18°F or 0.10°C
AV.177	Temp Supply High Limit Unoccupied Setpoint	Integrator	Value of the supply high limit relative temperature reading received from the network during no occupancy state.	Present_Value Out_of_Service COV_Increment	32°F to 104°F or 0°C to 40°C Resolution 0.9°F or 0.5°C
AV.178	Temp Supply High Limit Vacant Setpoint	Integrator	Value of the supply high limit relative temperature reading received from the network during vacancy.	Present_Value Out_of_Service COV_Increment	32°F to 104°F or 0°C to 40°C Resolution 0.9°F or 0.5°C
AV.179	Temp Supply High Limit Proportional Gain	Integrator	Value of the supply high limit temperature demand proportional gain.	Present_Value Out_of_Service COV_Increment	1 to 200, Resolution 0.1

ID	Name	List	Description	W?	Notes
AV.180	Temp Supply High Limit Integral Time	Integrator	Value of the supply high limit temperature demand integral time.	Present_Value Out_of_Service COV_Increment	0 to 900 seconds, Resolution 0.5 seconds
AV.181	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.182	Temp Supply High Limit Derivative Time	Integrator	Value of the supply high limit temperature demand derivative time.	Present_Value Out_of_Service COV_Increment	0 to 60 seconds, Resolution 0.1 second
AV.190	Temp Supply High Limit Demand	Integrator	Value of the supply high limit temperature demand within the room.	Present_Value Out_of_Service COV_Increment Relinquish_Default	0% to 100%, Resolution 1%
AV.193	Temp Supply High Limit Proportional Band	Integrator	Value of the supply high limit temperature demand proportional band.	Present_Value Out_of_Service COV_Increment	1% to 100%, Resolution 0.1%
AV.196	Supply High Limit Temperature	Integrator	Value of the supply high limit temperature analog input signal.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.197	Supply High Limit Temperature Min	Integrator	Minimum value of the supply high limit temperature analog input signal.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.198	Supply High Limit Temperature Max	Integrator	Maximum value of the supply high limit temperature analog input signal.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.199	Supply High Limit Temperature Bias	Integrator	Bias value of the supply high limit temperature analog input signal.	Present_Value Out_of_Service COV_Increment	-18°F to 18°F or -10°C to 10°C Resolution 0.18°F or 0.10°C
AV.207	Control Input	Integrator	Actual value of the temperature demand control analog input.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.208	Control Input Min	Integrator	Minimum value of the temperature demand control analog input.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.209	Control Input Max	Integrator	Maximum value of the temperature demand control analog input.	Present_Value Out_of_Service COV_Increment	-40°F to 302°F or -40°C to 150°C Resolution 0.18°F or 0.10°C
AV.210	Control Input Bias	Integrator	Bias value of the temperature demand control analog input.	Present_Value Out_of_Service COV_Increment	-18°F to 18°F or -10°C to 10°C Resolution 0.18°F or 0.10°C

ID	Name	List	Description	W?	Notes
AV.220	Demand Low Dead Band	Integrator	Value of the lower limit deadband for the humidity demand.	Present_Value Out_of_Service COV_Increment	1% RH to 100%, Resolution 0.01%
AV.223	Network Timeout	Integrator	Configuration value to define the amount of time the evaporative cooler 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.230	Room RH Demand Proportional Band	Integrator	Value of the room humidity demand proportional band.	Present_Value Out_of_Service COV_Increment	1% to 100%, Resolution 0.1%
AV.231	RH Supply High Limit Proportional Band	Integrator	Value of the supply high limit humidity demand proportional band.	Present_Value Out_of_Service COV_Increment	1% to 100%, Resolution 0.1%
AV.233	Complete Dry Delay	Integrator	Configuration value for the duration of time of the drying cycle for the evaporative media.	Present_Value Out_of_Service COV_Increment	0 to 24 hours, Resolution 1 hour
AV.234	Hours of Day Drying Cycle	Integrator	Configuration value for the hour of day during which the drying state of the evaporative media is verified, in order to initiate a drying cycle if necessary.	Present_Value Out_of_Service COV_Increment	0 to 24 hours, Resolution 1 hour
AV.235	Drying Fan Speed	Integrator	Set the speed of the fan when the unit is in the drying state.	Present_Value Out_of_Service COV_Increment	0 to 100%, Resolution 1%
AV.236	HRL Temperature Bias	Integrator	Bias value of the HRL temperature analog input signal.	Present_Value Out_of_Service COV_Increment	-18°F to 18°F or -10°C to 10°C Resolution 0.18°F or 0.10°C
AV.237	HRL Humidity Bias	Integrator	Bias value of the HRL humidity analog input signal.	Present_Value Out_of_Service COV_Increment	-10% RH to 10% RH, Resolution 0.10% RH

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 unit 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 the demand value when in On/Off control mode.	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.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	Relay 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
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.	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.	Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.4	Water Supply Valve	Integrator	Status value for the water supply valve.	Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.5	Drain Valve	Integrator	Status value for the normally open drain valve.	Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.7	Circulation Pump	Integrator	Status value for the circulation pump.	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.	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.	Out_of_Service Polarity Relinquish_Default Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BO.20	Buzzer	Integrator	Status value for the buzzer.	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.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	Float Switch	Integrator	Status value for the float switch.	Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Inactive 1 = Active
BV.16	Water Treatment Service Due	Integrator	Displays whether the 5µm pre-filter and silver ion cartridges are due for servicing.	Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = No 1 = Yes
BV.17	Service Due	Integrator	Displays whether the evaporative cooler is due for servicing.	Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = No 1 = Yes
BV.18	Run While Water Service Alarm	Integrator	Select whether to enable the unit to continue operating, even when the 5µm pre-filter and silver ion cartridges are due for servicing. When set to *Allowed*, the unit will continue 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.30	Startup Line Rinse	Integrator	Select whether to perform an automatic tank rinse cycle upon each start-up of the evaporative cooler.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.32	Run While Service Alarm	Integrator	Select whether to enable the unit to continue operating, even when it is due for servicing. When set to *Allowed*, the unit will continue 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.38	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
BV.44	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.52	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 *On*, SMTP Port value must be set to *587* and *SMTP Username* and *SMTP Password* settings must be filled out. If turned to Off, use SMTP Port *25* to use server without login account or SMTP Port *587* 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.53	SMTP Port	Integrator	Select the port number to be used for email transfer. If set to *25*, server to server email transfer is enabled (can only be used if SMTP SSL is set to *Off*). If set to *587*, client to server email transfer is enabled.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = 25 1 = 587

ID	Name	List	Description	W?	Notes
BV.54	Notify Alarm	Integrator	Select whether to get notified of all evaporative cooler alarm messages by email.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.55	Notify Warning	Integrator	Select whether to get notified of all evaporative cooler warning messages by email.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On
BV.56	Notify App Msg	Integrator	Select whether to get notified of all evaporative cooler event messages by email.	Present_Value Out_of_Service Minimum_Off_Time Minimum_On_Time	0 = Off 1 = On

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.22	SMTP Server IP Address	Integrator	Configure the server IP address for the email account.	Present_Value	-
CV.24	SMTP Mail From	Integrator	Set the email address that will be sending the evaporative cooler notification messages.	Present_Value	-
CV.25	SMTP Mail To	Integrator	Set the email address that will be receiving the evaporative cooler notification messages.	Present_Value	-
CV.26	SMTP Username	Integrator	Set the login username for the email account.	Present_Value	-
CV.37	EthernetMacAdd	Integrator	Value of the MAC address of the Ethernet interface.	Present_Value	-
CV.62	SMTP Password	Integrator	Set the login password for the email account.	Present_Value	-

Multi State Value (MSV)

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

ID	Name	List	Description	W?	Notes
MSV.9	BACnet Server Language	Integrator	Value of the BACnet server language.	Present_Value Out_of_Service	1 = English
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 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 = InternHumAnalog 4 = InternHumNetwork 5 = InternCoolNetwork 6 = HRL Hum 7 = HRL Cool 8 = Custom
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 = InternHumAnalog 5 = InternHumNetwork 6 = InternCoolAnalog 7 = InternCoolNetwork 8 = Custom
MSV.32	Occupancy State	Integrator	Displays the current occupancy state.	Out_of_Service	1 = Occupied 2 = Unoccupied 3 = Vacant 4 = Off

ID	Name	List	Description	W?	Notes
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	RH 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	RH 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	Control Demand Source	Integrator	Configuration value to select the humidity control demand source.	Present_Value Out_of_Service	1 = None 2 = ControlInput 3 = HumRoomDemand 4 = Network 5 = TempRoomDemand
MSV.44	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 = RHSupplyHLDemand 4 = Network 5 = TempSupplyHLDemand
MSV.51	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.58	State	Integrator	Displays the current state of operation of the evaporative cooler.	Out_of_Service	1 = Off 2 = Idle 3 = LineRinse 4 = Filling 5 = Draining 6 = Running 7 = Alarm 8 = Drying
MSV.61	System Alarm	Integrator	Displays the current status of the evaporative cooler alarm.	Out_of_Service	1 = Normal 2 = DrainTimeout 3 = FillTimeout 4 = WaterLeak 5 = FanDefect

ID	Name	List	Description	W?	Notes
MSV.63	Fan Request	Integrator	Perform one of the following actions for the fan: turn off the fan, default operation, turn on the fan at maximum speed.	Present_Value Out_of_Service	1 = Off 2 = Default 3 = On
MSV.64	Pump Request	Integrator	Perform one of the following actions for the circulation pump: turn off the pump, default operation, turn on the pump.	Present_Value Out_of_Service	1 = Off 2 = Default 3 = On
MSV.66	Water Supply Request	Integrator	Perform one of the following actions for the water supply valve: turn off the water supply valve, default operation, turn on the water supply valve.	Present_Value Out_of_Service	1 = Off 2 = Default 3 = On
MSV.67	Room Temperature Setpoint Source	Integrator	Select the room temperature demand setpoint source.	Present_Value Out_of_Service	1 = None 2 = Internal 3 = ControlInput
MSV.71	Temp Supply High Limit Reading Source	Integrator	Select the supply high limit temperature demand reading source.	Present_Value Out_of_Service	1 = None 2 = SupplyHLTemp 3 = Network
MSV.72	Temp Supply High Limit Setpoint Source	Integrator	Select the supply high limit temperature demand setpoint source.	Present_Value Out_of_Service	1 = None 2 = Internal 3 = ControlInput
MSV.76	Room Temperature Source	Integrator	Select the reading source for the room temperature demand.	Present_Value Out_of_Service	1 = None 2 = RoomTemp 3 = Network 4 = HRL
MSV.77	Room Temperature Signal Type	Integrator	Configuration value to select the signal type for the room temperature analog input.	Present_Value Out_of_Service	1 = 0-10Vdc 2 = 2-10Vdc 3 = 4-20mA 4 = 0-20mA
MSV.78	Supply Temperature 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.79	Control 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

ID	Name	List	Description	W?	Notes
MSV.83	System Power State	Integrator	Displays whether the system is powered on or off.	Present_Value Out_of_Service	1 = Off 2 = On
MSV.95	Recirculation Request	Integrator	Perform one of the following actions for the evaporative cooler: reset warning alarms, initiate a drain cycle, reset service counters for the unit, reset service counters for the 5µm pre-filter and silver ion cartridges or fill the unit with water.	Present_Value Out_of_Service	1 = None 2 = ResetAlarms 3 = Drain 4 = ResetServCnt 5 = ResetWtrServCnt 6 = Filling
MSV.96	DirectFeed Request	Integrator	Perform one of the following actions for the evaporative cooler: reset warning alarms, reset service counters for the unit, reset service counters for the 5µm pre-filter and silver ion cartridges.	Present_Value Out_of_Service	1 = None 2 = ResetAlarms 3 = ResetServCnt 4 = ResetWtrServCnt

Other

Tabl8e 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	SKVF Program	Advanced	SKVF 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.
PGM.15	Database Program	Advanced	Database Program.	Program_Change Out_of_Service	Program Change, only LOAD (1) and RESTART (4) are supported.

ID	Name	List	Description	W?	Notes
FIL.1	Core File	Integrator	Core File.	File_Size	File size is accepted for 0 value only.
FIL.2	SysLogAlarm	Integrator	System Log Alarm.	File_Size	File size is accepted for 0 value only.
FIL.7	USB System Log File	Integrator	USB System Log file.	File_Size	File size is accepted for 0 value only.
FIL.8	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.
FIL.19	UpdatePackageFile	Advanced	Update Package 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	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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