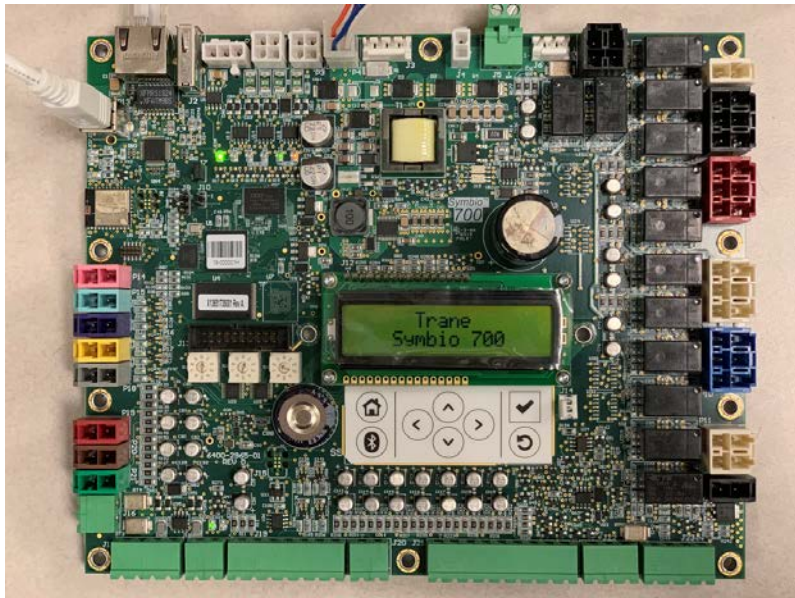




Integration Guide

BACnet® Integration to Odyssey Units

with Symbio™ 700 Controls



⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.



Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.



Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs and HCFCs such as saturated or unsaturated HFCs and HCFCs.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

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Overview

Purpose

The purpose of this document is to provide instructions for integrating the Symbio™ 800700 controller into Non-Trane building automation systems. This document is targeted to system integrators and controls contractors.

Symbio 800700 Controller Overview

The Symbio 800700 controller has been installed, programmed, wired, commissioned, and tested in the factory prior to shipment. While some sensors and end devices are normally wired in the field, nearly all other wiring is factory-provided. Power for the controller is provided and connected from within the RTU control panel.

The RTU unit and associated controller can be applied as standalone or as part of a building automation system.

Note: For communicating applications to third-party control systems, network communication wiring must be provided by others.

Communication Options

The Symbio™ 700800 controller supports the following communication protocol options for integration to either Trane or Non-Trane control systems:

- BACnet MS/TP
- BACnet IP
- BACnet Zigbee (Air-Fi)™
- BACnet/IP
 - Ethernet
 - Wi-Fi
- Modbus RTU
- Modbus TCP
- LonTalk

For information pertaining to the integration of the Symbio™ 700800 controller using either Modbus or LonTalk communication, refer to the integration guides specific to those applications.

Units of Measure

The communicated data of the Symbio 700 controller will be passed in the factory-configured units of measure, inch-pound (I-P) by default. The Symbio™ Service and Installation mobile app allows the user to change and customize the Data Display Units Preferences.

Regardless of the communicated (system) units of measure, the user may change the displayed units of measure on their smart device – user preference. These user preference units of measure are independent of the communicated units.



Communication Setup and Configuration

The Symbio controller can be factory ordered with a specific protocol configuration. The Symbio 700 controller supports BACnet MS/TP, BACnet IP, BACnet/Zigbee (Air-Fi™ Wireless) and LonTalk and can be ordered from the factory with all of these configured.

Depending on the protocol of use and associated parameter definition, use of the mobile application may be necessary. Refer to the following section for additional information on using the mobile application.

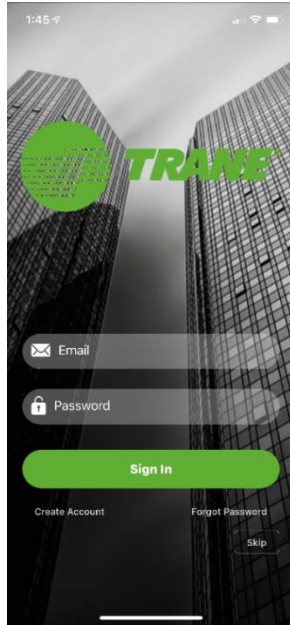


Mobile Application

The Trane Symbio™ Service and Installation mobile app is required to setup, edit, and confirm the communication protocol and associated settings.

The free download of Trane Symbio Service and Installation mobile app is available on the App Store® for iOS, and on Google Play® for Android™.



Figure 1. Trane Symbio™ Service and Installation mobile app




Bluetooth Pairing

Quick Connection Instructions

Follow these instructions to quickly connect the mobile app to the Symbio 700 controller:

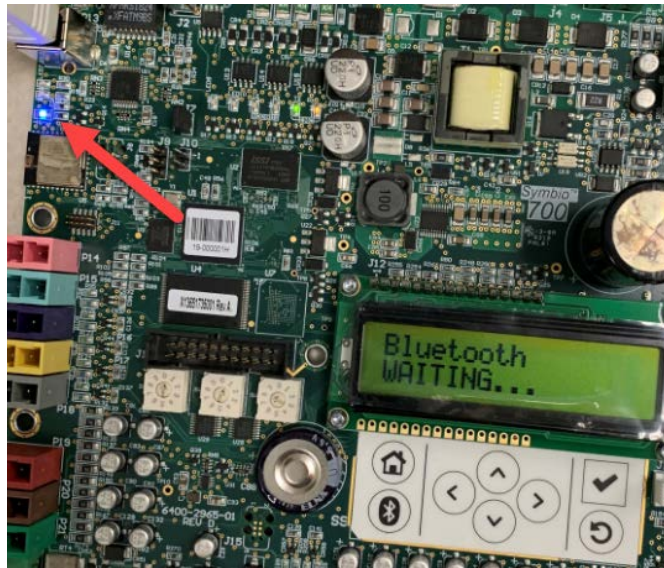
Step	Smart Device	Symbio 700
1	Turn on Bluetooth	
2		Press 
3	Start the app; press Skip	
4	Select the controller	
5	Press OK or Pair	
6		Press 

Connecting to the Symbio 700 controller

1. Enable **Bluetooth** on your smart device.
2. Press  on Symbio 700 keyboard/display to turn on Bluetooth.
3. Confirm the status of Bluetooth communications.

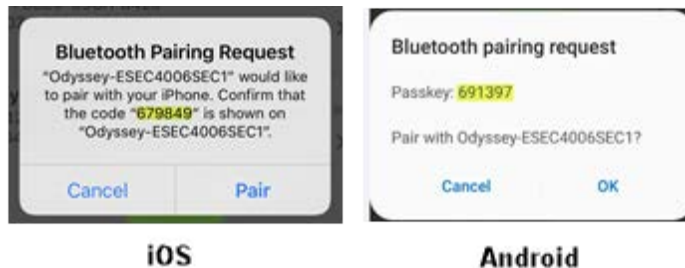
	Blue LED	Display	Description
Press for On/Off	Off	NOT CONNECTED	Bluetooth Off
	Blinking	WAITING...	Bluetooth On — Not Paired
	On Solid	CONNECTED	Bluetooth On — Connected/ Paired

Figure 2. Symbio 700 Bluetooth status



4. Start the mobile app on your smart device.
5. On the login screen, press **Skip** in the lower right-hand corner of the screen. Or Trane personnel can login using their Trane Connect username and password.
6. On the Unit List page, select the Symbio 700 controller that you want to pair with. If the controller is not listed, press the refresh arrow in the upper right-hand corner of the screen.
7. When prompted, pair the app to the Symbio 700 controller. A popup message displays a 6-digit random number. The same number is shown on the display of the Symbio 700 controller until the pairing is complete, allowing the user to confirm connection to the intended controller.

Figure 3. Bluetooth pairing



8. Press on the Symbio 700 on-board keyboard/display to complete the connection.

Important: To keep the list of previously-connected devices manageable, the Bluetooth smart devices list is limited to 10 devices. When 10 or more Bluetooth devices are defined on the smart device, connection to the Symbio 700 controller is not allowed.

- **iOS devices** - delete any unused devices until there are less than 10 items.
- **Android devices** - the devices list is automatically limited to 10 items.

The Symbio Installation and Service tool is required to view and configure the following:

- Building Automation System configuration (Advanced Controller Configuration)
 - BACnet over Zigbee® (Air-Fi™ Wireless)
 - BACnet IP (Internet Protocol)
 - BACnet MS/TP
 - LonTalk
- Historical Alarms
- Firmware Updates
- Backup & Restore

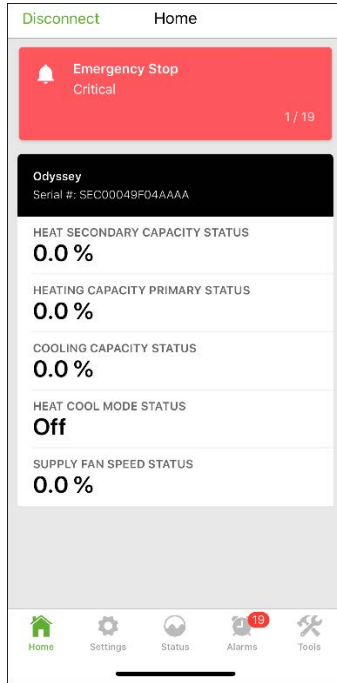
For more detailed information on the Symbio Service and Installation Mobile Application, refer to the Quick Start Guide for Symbio Service and Installation - BAS-SVN043.

Protocol Configuration

After completing Bluetooth pairing, the mobile app main screen displays. From here, configure the Symbio 700 protocols.

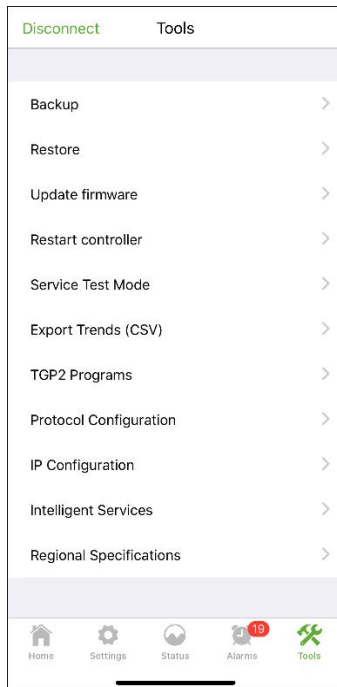
1. On the bottom of the home screen, tap **Tools**.

Figure 4. Tools



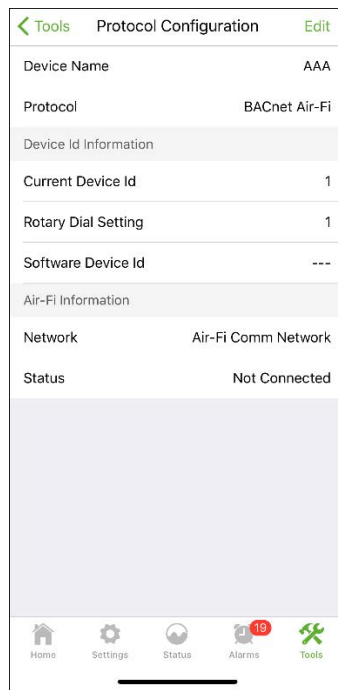
2. Tap **Protocol Configuration** to select the appropriate protocol.

Figure 5. Protocol Configuration



3. Tap Edit.

Figure 6. Edit



4. Edit according to the connectivity requirement of the building automation system.

BACnet MS/TP Protocol Setup

The Symbio 700 controller rotary address sets the BACnet MS/TP MAC address. Each BACnet MS/TP device on the same MS/TP link must have a unique MAC address. The valid range of BACnet MS/TP MAC addresses for the Symbio 700 is 001–127.

Changing the rotary address will immediately take effect and does NOT require a power cycle to the Symbio 700 controller.

The rotary address also sets the BACnet Device ID which gives a range of 1-127. All BACnet devices must have a unique BACnet Device ID. The Device ID can be edited using the mobile app.

To configure the Symbio 700 controller for BACnet MS/TP Protocol:

1. Set the **Protocol** selection to **BACnet MS/TP**.
2. Verify the **Baud Rate** (default is 76,800 bps). All BACnet MS/TP devices on an MS/TP link must communicate at the same baud rate.
3. Verify the **Current Device ID**. To change the device ID, tap **Use Software Device ID** and enter the desired device ID (See [Figure 7, p. 12](#)).

Note: The valid Device ID range using a software Device ID is 1 – 4194302 as defined by the BACnet standard.

Figure 7. Edit Protocol Configuration

Cancel	Edit Protocol Configuration	Apply
Device Name	AAA	
Protocol	BACnet MS/TP >	
Baud Rate	76800 bps >	
Device Id Information		
Current Device Id	1	
Rotary Dial Setting	1	
Use Software Device Id	No <input type="checkbox"/>	

4. Tap **Apply** to save your changes.






BACnet IP Protocol Setup

The Symbio 700 controller can communicate BACnet/IP using a standard Ethernet cable. Connect the Ethernet cable (RJ-45 connectors) between the Ethernet port on the Symbio 700 controller and the BACnet network.

Set up the IP address of the Symbio 700 controller before changing other BACnet/IP configuration parameters:

1. From the **Tools** page, tap **IP Configuration**.

Figure 8. IP Configuration

< Tools	IP Configuration	Edit
Host Name	MM_Sofia	
Ethernet 1		
Port State	Enabled	
Configure IP Address	DHCP	
MAC Address	B2:90:29:DA:5F:C1	
IP Address	192.168.7.189	
Subnet Mask	255.255.240.0	
Default Gateway	192.168.0.1	
DNS		
Configure Server Address	Automatic DNS	
Primary DNS Server	192.168.4.1	
Secondary DNS Server	192.168.4.2	
Tertiary DNS Server	--	
    		
Home	Settings	Tools

2. Tap **Edit**.
3. Configure IP Address to either obtain the IP address automatically using DHCP or define a Static IP Address. If Static IP Address has been selected, manually enter the applicable **IP Address, Subnet Mask, and Default Gateway**.
4. Setup the DNS section if using a Domain Name System server to identify the Symbio 700 controller by host name.

Figure 9. Host Name

Cancel	Edit	Save
Host Name	MM_Sofia	
ETHERNET 1		
Configure IP Address	DHCP >	
IP Address	192.168.7.189	
Subnet Mask	255.255.240.0	
Default Gateway	192.168.0.1	
DNS		
Configure Server Address	Automatic DNS >	
Primary DNS Server	192.168.4.1	
Secondary DNS Server	192.168.4.2	
Tertiary DNS Server	---	

5. Tap **Save**.

To configure the Symbio 700 controller for BACnet IP Protocol:

1. Set the Protocol select to **BACnet IP**.
2. Verify the current Device ID. To change the Device ID, click **Use Software Device ID** and enter the desired **Device ID**. Most installations will not require you to manually change the BACnet Device ID.

***Note:** The valid Device ID range using a software Device ID is 1 – 4194302 as defined by the BACnet standard.*

3. Tap **Apply** to save your changes.
4. Set the **UDP Port** to match the port number used by the BACnet IP network.
5. Select **BBMD** only if the Symbio 700 controller is the only BACnet IP device on the IP subnet.

Figure 10. Edit Protocol Configuration

Cancel	Edit Protocol Configuration	Apply
Device Name	AAA	
Protocol	BACnet/IP >	
Device Id Information		
Current Device Id	1	
Rotary Dial Setting	1	
Use Software Device Id	No <input type="checkbox"/>	
BACnet/IP Configuration		
UDP Port	---	
BBMD	Off <input type="checkbox"/>	

6. Tap **Apply**.

Air-Fi® Wireless

Air-Fi Wireless – Conforms to ANSI/ASHRAE Standard 135-2016 (BACnet®/ZigBee®1). Air-Fi Wireless provides reliable and secure, and location-flexible communication between equipment controls, sensors, and service tools to the system controller.

Air-Fi networks will be setup by a Trane technician. Integration to a Symbio 700 controller setup for Air-Fi communications uses BACnet IP communication through a Tracer SC+ system controller. Contact your local Trane office for additional information if the Symbio 700 controller is setup for Air-Fi Wireless.

BACnet Wiring

BACnet MS/TP

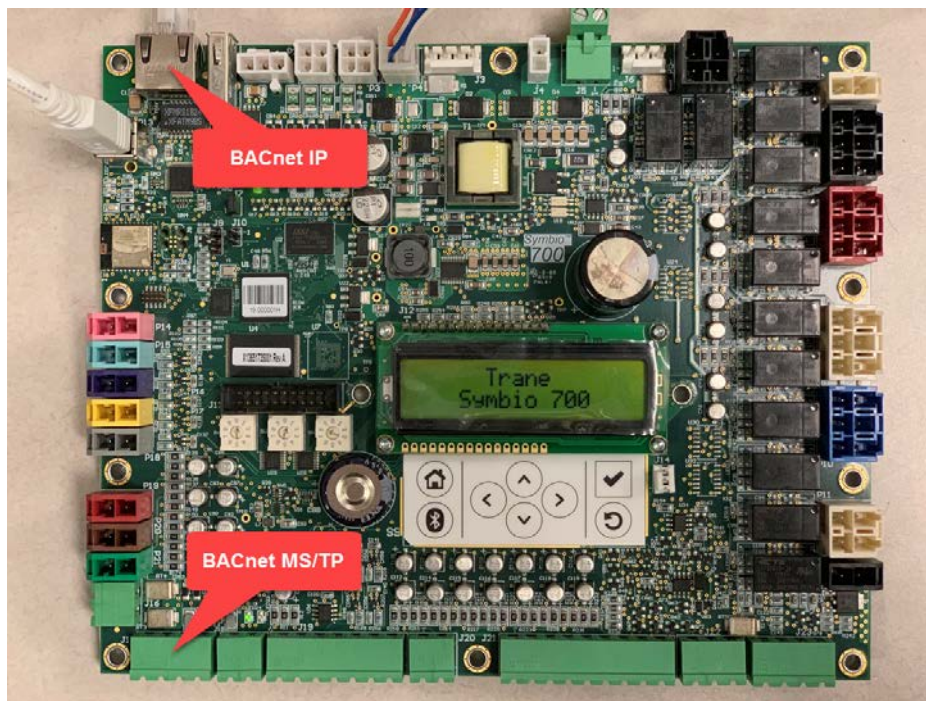
The BACnet MS/TP communication wire is connected to the J17 Connector. Observe wire polarity when connecting to the + and – terminals. The + terminals and the – terminals are internally connected. The second set of + and – terminals on the J17 Connector are used to make it easier to wire the next BACnet MS/TP device in the daisy chain.

BACnet IP

If using BACnet/IP using a standard Ethernet cable, connect the Ethernet cable with RJ-45 connectors to the Ethernet port and the BACnet network.

Refer to the BACnet standard or BACnet® MS/TP Wiring and Link Performance Best Practices and Troubleshooting guide (BAS-SVX51-EN) for detailed information on MS/TP wiring.

Figure 11. BACnet Wiring





BACnet Points List

Object Naming Conventions

The communicated points for the Symbio™ controllers are generally named according to their function. While many of the points are read-only, others include both read and write capability. The established naming convention helps to identify the capabilities of each point. For most points, the suffix identifies the capability according to the following definition.

While there are some exceptions, the majority of the points have been defined according to these guidelines.

Suffix	Description
Status	Points with the Status suffix are defined as read-only. The status point reports the value being used by the controller.
Local	Points with the Local suffix are defined as read-only. The local point reports values associated with controller sensors, both wired and wireless. The local value may or may not be actively used by the controller, depending on the presence or absence of a communicated value (BAS). When both a local and communicated value exist, the communicated value is used.
Active	Points with the Active suffix are defined as read-only. Points designated as active are normally the result of the arbitration between a communicated value (BAS) and at least one value local to the equipment, such as a sensor or default setpoint. The active point reports the value being used by the controller.
Setpoint	Points with the Setpoint suffix are defined as either read-only or read/write. For BACnet, the binary input, analog input and multi-state input points are all read-only. These setpoints report the value currently in use by the controller. The analog value, binary value and multi-state value points are all read/write. These points are provided for use by the building automation system (BAS). When used, these points are written internally to arbitration logic. This defines the interaction with hardwired points, editable software configuration points and the relinquish default value/state. Refer to the Appendix for additional information.
Input	Points with the Input suffix are defined as read-only. These points normally reflect the status of a sensor input, either hardwired or communicating wirelessly (Air-Fi). However, the input point reflects the arbitrated result of the controller sensor input and a communicated value, if present. When both a controller sensor and communicated value exist, the controller will use and report the communicated value.
Arbitrator	Points with the "Arbitrator" suffix are to be used as read-only. The arbitrator prioritizes inputs from communicating points, hardwired points and stored defaults points. The priority array of the arbitration point displays each of the values provided, including the active status, indicating which of the input sources is being used. Refer to the Appendix for additional information.
BAS	Points with the BAS suffix are defined as read/write. These points are provided for use by the building automation system (BAS). When used, these points are written to arbitration logic. This defines the interaction with hardwired points, editable software configuration points and the relinquished default value/state. Refer to the Appendix for additional information.
Command	Points with the Command suffix are defined as read/write. These points are written to change the default behavior of the controller. Once written, these point values may be persisted.
Request	Points with the Request suffix are defined as read/write. These points are written to change the operating behavior of the controller.

Object Data Points and Diagnostic Data Points

The following tables are sorted as follows:

- Tables are listed by input/output type and sorted by object identifier. These tables provide the user with the units type for each object type.



BACnet Points List

- Tables are sorted by object name and provide a complete list of object names, types, values/ ranges, and descriptions.

Note: Not all points are available to the user. The available data points are defined during self-configuration and are dependent on the type of equipment.

Table 1. Analog Inputs

Object Identifier	Object Name	Description	Units	When Exists
AI-11100	Coil Temperature Sensor 1	Outdoor Coil Temperature Sensor for Circuit 1 on HP units	DEGREES_FAHRENHEIT	All Heat Pumps
AI-11101	Coil Temperature Sensor 2	Outdoor Coil Temperature Sensor for Circuit 2 on Independent Circuit Controlled HP units	DEGREES_FAHRENHEIT	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
AI-10101	Cooling Capacity Status	Indicates the actual operating unit cooling capacity, in percent	PERCENT	Always
AI-11140	Customer Options Module Firmware Major Version	Software Major Version for Customer Connection Options Module	NO_UNITS	Customer Options Module Installed and In-Use
AI-11141	Customer Options Module Firmware Minor Version	Customer Options Module Software build number	NO_UNITS	Customer Options Module Installed and In-Use
AI-10124	Discharge Air Temperature Local	Indicates the discharge air temperature value from a sensor connected to the controller	DEGREES_FAHRENHEIT	System Type Configured as VVZT or Discharge Temperature Sensor is Configured
AI-10102	Heating Capacity Primary Status	Indicates the unit (primary) heating capacity, in percent	PERCENT	Primary Heating Source Installed
AI-11134	Indoor Options Module Firmware Major Version	Software Major Version for Indoor Options Module	NO_UNITS	Indoor Options Module Installed and In-Use
AI-11135	Indoor Options Module Firmware Minor Version	Indoor Options Module Software build number	NO_UNITS	Indoor Options Module Installed and In-Use
AI-11132	On-Board I/O Firmware Major Version	Software Major Version for On-Board I/O Module	NO_UNITS	Always
AI-11133	On-Board I/O Firmware Minor Version	On-Board I/O Module Software build number	NO_UNITS	Always
AI-10118	Outdoor Air Temperature Active	Indicates the active OA temperature currently being used by the controller	DEGREES_FAHRENHEIT	Always
AI-10156	Outdoor Air Temperature Local	Indicates the OA temp value from a sensor connected to the controller	DEGREES_FAHRENHEIT	Always
AI-11150	Sensor Battery Status Air-Fi	Status percentage of connected AirFi sensor (s).	PERCENT	Air-Fi Sensor Installed and Enabled
AI-11151	Space CO2 Concentration Air-Fi	Indicates the space CO2 concentration from a wireless sensor connected to the controller.	PARTS_PER_MILLION	CO2 Sensor Configured
AI-11103	Space CO2 Concentration Input	Indicates the space CO2 concentration from a sensor hardwired to the controller.	PARTS_PER_MILLION	CO2 Sensor Configured
AI-10116	Space Humidity Active	Indicates the active space relative humidity being used by the controller	PERCENT	Humidity Sensor Configured
AI-11152	Space Humidity Air-Fi	Indicates the space relative humidity from a connected wireless sensor.	PERCENT	Humidity Sensor Configured
AI-11104	Space Humidity Input	Indicates the space relative humidity from a sensor wired to the controller.	PERCENT	Humidity Sensor Configured
AI-11154	Space Temperature Air-Fi	Indicates the space temp from a connected wireless (AirFi) sensor	DEGREES_FAHRENHEIT	Space Controller Not Configured as Conventional TStat
AI-11155	Space Temperature Cooling Setpoint Air-Fi	Indicates the (occupied) cooling setpoint from the connected wireless space sensor	DEGREES_FAHRENHEIT	Space Controller Configured as Dual Setpoint Zone Sensor
AI-11159	Space Temperature Cooling Setpoint Input	Indicates the (occupied) cooling setpoint from the connected wired space sensor	DEGREES_FAHRENHEIT	Space Controller Configured as Dual Setpoint Zone Sensor

Table 1. Analog Inputs (continued)

Object Identifier	Object Name	Description	Units	When Exists
AI-11156	Space Temperature Heating Setpoint Air-Fi	Indicates the (occupied) heating setpoint from the connected wireless space sensor	DEGREES_FAHRENHEIT	Heating Source Installed and Space Controller Configured as Dual Setpoint Zone Sensor and Air-Fi Installed
AI-11160	Space Temperature Heating Setpoint Input	Indicates the (occupied) heating setpoint from the connected wired space sensor	DEGREES_FAHRENHEIT	Heating Source Installed and Space Controller Configured as Dual Setpoint Zone Sensor
AI-10218	Space Temperature Input	Indicates the space temp from a wired sensor.	DEGREES_FAHRENHEIT	Space Controller Not Configured as Conventional TStat
AI-11157	Space Temperature Setpoint Air-Fi	Space Temperature Setpoint from a connected wireless sensor.	DEGREES_FAHRENHEIT	Space Controller Configured as Single Setpoint Zone Sensor
AI-11161	Space Temperature Setpoint Input	Space Temperature Setpoint from a connected wired sensor.	DEGREES_FAHRENHEIT	Space Controller Configured as Single Setpoint Zone Sensor
AI-11106	Supply Fan Speed Command Status	Indicates the unit commanded supply fan speed output. Typically reflects commands to a speed control device.	PERCENT	Indoor Fan Type Configured as Multi Speed or Variable Speed

Table 2. Analog Values

Object Identifier	Object Name	Description	Units	Valid Range	When Exists	Heartbeat Interval (sec)
AV-11266	Auxiliary Heating P-Gain (%/F)	Proportional gain for single loop Electric Heating PI controller (%/F)	PERCENT	0.1 to 100	Space Controller not Configured as Conventional TStat and Auxiliary heat installed.	0
AV-11267	Auxiliary Heating Reset Time (seconds)	Reset time for single loop Electric Heating PI controller (second)	NO_UNITS	90 to 3600	Space Controller not Configured as Conventional TStat and Auxiliary heat installed.	0
AV-11108	Cabinet Style	Indicates the cabinet style of the unit	NO_UNITS	0 to 255	Always	0
AV-11268	Compressor Cooling P-Gain - 1 (%/F)	Proportional gain for 1st loop Cooling PI controller (%/F)	PERCENT	0.1 to 100	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-11270	Compressor Cooling P-Gain - 2 (%/F)	Proportional gain for 2nd loop compressor cooling PI controller (%/F)	PERCENT	0.1 to 100	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-11256	Compressor Cooling P-Gain (%/F)	Proportional gain for single loop Compressor Cooling PI controller (%/F)	PERCENT	0.1 to 100	System Type Configured as CVZT or VVZT and Space Controller not Configured as Conventional TStat	0
AV-11269	Compressor Cooling Reset Time - 1 (seconds)	Reset time for 1st loop Cooling PI controller (second)	NO_UNITS	90 to 3600	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-11271	Compressor Cooling Reset Time - 2 (seconds)	Reset time for 2nd loop compressor cooling PI controller (second)	NO_UNITS	1 to 1000	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-11257	Compressor Cooling Reset Time (seconds)	Reset time for single loop compressor Cooling PI controller (second)	NO_UNITS	90 to 3600	System Type Configured as CVZT or VVZT and Space Controller not Configured as Conventional TStat	0
AV-11264	Compressor Heating P-Gain (%/F)	Proportional gain for single loop Heat Pump Heating PI controller (%/F)	PERCENT	0.1 to 100	Heat Pumps with Space Controller not Configured as Conventional TStat	0
AV-11265	Compressor Heating Reset Time (seconds)	Reset time for single loop Heat Pump Heating PI controller (second)	NO_UNITS	90 to 3600	Heat Pumps with Space Controller not Configured as Conventional TStat	0
AV-11202	Cool Type	Describes the type of cooling in the unit	NO_UNITS	0 to 255	Always	0



BACnet Points List

Table 2. Analog Values (continued)

Object Identifier	Object Name	Description	Units	Valid Range	When Exists	Heartbeat Interval (sec)
AV-10139	Cooling Capacity Enable	Used to limit the cooling capacity of the unit; 0% = no cooling possible	PERCENT	0 to 100	Always	0
AV-11185	Cooling Capacity Enable - Active	Active value for Cooling Capacity Enable point being used for control.	PERCENT	0 to 100	Always	0
AV-11112	Cooling Capacity Setpoint BAS	Remote cooling capacity request	PERCENT	0 to 100	Always	0
AV-11189	Cooling Capacity Setpoint BAS - Active	Active value for Cooling Capacity Setpoint BAS point being used for control.	PERCENT	0 to 100	Always	0
AV-11168	Cooling Demand Limit Capacity Enable Setpoint	Cooling Demand Limit Capacity Enable Setpoint	PERCENT	0 to 100	Demand Management Configured as Demand Limit	0
AV-11247	Cooling Demand Limit Capacity Enable Setpoint - Active	Active value for Cooling Demand Limit Capacity Enable Setpoint point being used for control.	PERCENT	0 to 100	Demand Management Configured as Demand Limit	0
AV-11167	Demand Shed Offset Setpoint	Demand Shed Offset Setpoint	DELTA_DEGREES_FAHRENHEIT	0 to 10	Demand Management Configured as Demand Shed	0
AV-11209	Demand Shed Offset Setpoint - Active	Active value for Demand Shed Offset Setpoint point being used for control.	DELTA_DEGREES_FAHRENHEIT	0 to 10	Demand Management Configured as Demand Shed	0
AV-11140	Discharge Air Cooling Setpoint (Target)	Discharge Air Cooling Setpoint (Target)	DEGREES_FAHRENHEIT	40 to 80	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-11236	Discharge Air Cooling Setpoint (Target) - Active	Active value for Discharge Air Cooling Setpoint (Target) point being used for control.	DEGREES_FAHRENHEIT	40 to 80	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-11121	Discharge Air Temperature Maximum Cool Limit	Maximum discharge air temperature allowed during space temperature cooling mode of operation.	DEGREES_FAHRENHEIT	40 to 200	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-11200	Discharge Air Temperature Maximum Cool Limit - Active	Active value for Discharge Air Temperature Maximum Cool Limit point being used for control.	DEGREES_FAHRENHEIT	40 to 200	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-10167	Discharge Air Temperature Minimum Cool Limit	Used to define the discharge air temperature minimum cool limit	DEGREES_FAHRENHEIT	40 to 100	(System Type Configured as VVZT or Supply Air Tempering Configured as Enabled and Space Controller not Configured as Conventional TStat	0
AV-11193	Discharge Air Temperature Minimum Cool Limit - Active	Active value for Discharge Air Temperature Minimum Cool Limit point being used for control.	DEGREES_FAHRENHEIT	40 to 100	(System Type Configured as VVZT or Supply Air Tempering Configured as Enabled and Space Controller not Configured as Conventional TStat	0
AV-10281	Discharge Air Temperature Setpoint Active	Indicates the discharge air temp setpoint actively being used for control.	DEGREES_FAHRENHEIT	40 to 200	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat	0
AV-11115	Exhaust Or Return Fan Type	Identifies the product exhaust or return fan type	NO_UNITS	0 to 255	Always	0
AV-11116	Filter Runtime Hours	Indicates the number of hours air has flowed through the filter	NO_UNITS	0 to 10000	Always	0
AV-10138	Filter Runtime Hours Setpoint	The setpoint value used by the filter run hours calculation	NO_UNITS	0 to 10000	Always	0
AV-11217	Filter Runtime Hours Setpoint - Active	Active value for Filter Runtime Hours Setpoint point being used for control.	NO_UNITS	0 to 10000	Always	0

Table 2. Analog Values (continued)

Object Identifier	Object Name	Description	Units	Valid Range	When Exists	Heartbeat Interval (sec)
AV-10140	Heat Primary Enable BAS	Used to demand limit the heating capacity; 0% = No Heating Possible	PERCENT	0 to 100	Primary Heating Source Configured	0
AV-11218	Heat Primary Enable BAS - Active	Active value for Heat Primary Enable BAS point being used for control.	PERCENT	0 to 100	Primary Heating Source Configured	0
AV-11274	Heat Pump Heating Lockout Setpoint	Setpoint at which to disable heat pump heating based on outdoor air temperature.	DEGREES_FAHRENHEIT	-40 to 45	Heat Pump Systems	0
AV-11275	Heat Pump Heating Lockout Setpoint - Active	Setpoint at which to disable heat pump heating based on outdoor air temperature.	DEGREES_FAHRENHEIT	-40 to 45	Heat Pump Systems	0
AV-11249	Heat Secondary Capacity Status	Indicates the unit secondary heating capacity being utilized.	PERCENT	0 to 100	Secondary Heating Source Configured	0
AV-11164	Heating Capacity Setpoint BAS	Setpoint to command the unit to a given heating capacity output	PERCENT	0 to 100	Primary Heating Source Configured	0
AV-11219	Heating Capacity Setpoint BAS - Active	Active value for Heating Capacity Setpoint BAS point being used for control.	PERCENT	0 to 100	Primary Heating Source Configured	0
AV-11120	Heating Demand Limit Capacity Enable Setpoint	Heating Demand Limit Capacity Enable Setpoint	PERCENT	0 to 100	Demand Management Configured as Demand Limit and Primary Heating Source Configured	0
AV-11199	Heating Demand Limit Capacity Enable Setpoint - Active	Active value for Heating Demand Limit Capacity Enable Setpoint point being used for control.	PERCENT	0 to 100	Demand Management Configured as Demand Limit and Primary Heating Source Configured	0
AV-10169	Occupied Bypass Time	Used to configure the occupied bypass time (occupancy override)	NO_UNITS	0 to 240	Space Controller not Configured as Conventional TStat	0
AV-10159	Occupied Cooling Setpoint BAS	Used to define the occ cooling setpt when both heat and cool setpoints are used	DEGREES_FAHRENHEIT	52 to 90	Space Controller Configured as Dual Setpoint Zone Sensor	0
AV-10160	Occupied Heating Setpoint BAS	Used to define the occ heating setpt when both heat and cool setpoints are used	DEGREES_FAHRENHEIT	50 to 88	Heating Installed and Space Controller Configured as Dual Setpoint Zone Sensor	0
AV-10130	Occupied Offset	Difference between the occ cool and heat setpts when a single setpoint is used	DELTA_DEGREES_FAHRENHEIT	1 to 5	Space Controller Configured As Single Setpoint Zone Sensor	0
AV-10161	Occupied Standby Cooling Setpoint BAS	Defines the occ standby cooling setpt when both heat/cool setpoints are provided	DEGREES_FAHRENHEIT	52 to 90	Space Controller Configured as Dual Setpoint Zone Sensor	0
AV-11250	Occupied Standby Cooling Setpoint BAS - Active	Active value for Occupied Standby Cooling Setpoint BAS	DEGREES_FAHRENHEIT	52 to 90	Space Controller Configured as Dual Setpoint Zone Sensor	0
AV-10162	Occupied Standby Heating Setpoint BAS	Defines the occ standby heating setpt when both heat/cool setpoints are provided	DEGREES_FAHRENHEIT	50 to 88	Heating Installed and Space Controller Configured as Dual Setpoint Zone Sensor	0
AV-11251	Occupied Standby Heating Setpoint BAS - Active	Active value for Occupied Standby Heating Setpoint BAS	DEGREES_FAHRENHEIT	50 to 88	Heating Installed and Space Controller Configured as Dual Setpoint Zone Sensor	0
AV-10142	Occupied Standby Offset	Difference between the occ standby cool and heat setpts when a single setpoint is used	DELTA_DEGREES_FAHRENHEIT	1 to 10	Space Controller Configured as Single Setpoint Zone Sensor	0
AV-10103	Outdoor Air Temperature Arbitrator	Indicates the OA temp determined by arbitration	DEGREES_FAHRENHEIT	-40 to 200	Always	0
AV-10113	Outdoor Air Temperature BAS	Used to send the outdoor air temperature sensor value	DEGREES_FAHRENHEIT	-40 to 200	Always	900
AV-11252	Preheat Type	Identifies the product preheat type	NO_UNITS	0 to 255	Always	0
AV-11253	Reheat Type	Identifies the product reheat type	NO_UNITS	0 to 255	Always	0
AV-11169	Run Time - Compressor 1 (Hours)	Compressor 1 Runtime	NO_UNITS	0 to 200000	Always	0
AV-11170	Run Time - Compressor 2 (Hours)	Compressor 2 Runtime	NO_UNITS	0 to 200000	Multi-Compressor Systems	0



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Table 2. Analog Values (continued)

Object Identifier	Object Name	Description	Units	Valid Range	When Exists	Heartbeat Interval (sec)
AV-11122	Run Time - Condenser Fan 1 (Hours)	Condenser Fan 1 Runtime	NO_UNITS	0 to 200000	Always	0
AV-11123	Run Time - Condenser Fan 2 (Hours)	Condenser Fan 2 Runtime	NO_UNITS	0 to 200000	Dual Condenser Fan Systems	0
AV-11125	Run Time - Electric Heat Stage 1 (Hours)	Electric Heat Stage 1 Runtime	NO_UNITS	0 to 200000	One or more stages of Staged Electric Heat configured	0
AV-11126	Run Time - Electric Heat Stage 2 (Hours)	Electric Heat Stage 2 Runtime	NO_UNITS	0 to 200000	Two or more stages of Staged Electric Heat configured	0
AV-11127	Run Time - Supply Fan (Hours)	Supply Fan Runtime	NO_UNITS	0 to 200000	Always	0
AV-11153	Service Test Timeout (Minutes)	Timer (minutes) to indicate when the unit should cease service test.	NO_UNITS	1 to 120	Always	0
AV-11254	Space CO2 Concentration Active	Indicates the active space CO2 concentration being used by the controller	PARTS_PER_MILLION	0 to 2000	CO2 Sensor Configured	0
AV-10108	Space CO2 Concentration Arbitrator	Indicates the space CO2 concentration being used by the controller	PARTS_PER_MILLION	50 to 2000	CO2 Sensor Configured	0
AV-10118	Space CO2 Concentration BAS	Used to send the space CO2 concentration value	PARTS_PER_MILLION	0 to 2000	CO2 Sensor Configured	900
AV-10154	Space Cooling Setpoint High Limit BAS	Space Cooling Setpoint High Limit BAS	DEGREES_FAHRENHEIT	50 to 90	Space Controller not Configured as Conventional TStat	0
AV-10155	Space Cooling Setpoint Low Limit BAS	Space Cooling Setpoint Low Limit BAS	DEGREES_FAHRENHEIT	50 to 90	Space Controller not Configured as Conventional TStat	0
AV-10157	Space Heating Setpoint High Limit BAS	Space Heating Setpoint High Limit BAS	DEGREES_FAHRENHEIT	50 to 90	Heating Installed and Space Controller not Configured as Conventional TStat	0
AV-10158	Space Heating Setpoint Low Limit BAS	Space Heating Setpoint Low Limit BAS	DEGREES_FAHRENHEIT	50 to 90	Heating Installed and Space Controller not Configured as Conventional TStat	0
AV-10109	Space Humidity Arbitrator	Indicates the space relative humidity, determined by the arbitration	PERCENT	0 to 100	Space Humidity Sensor Configured	0
AV-10119	Space Humidity BAS	Used to send the space relative humidity value	PERCENT	0 to 100	Space Humidity Sensor Configured	900
AV-11128	Space Temp Cooling Setpoint Status	Indicates the space cooling setpoint, determined by arbitration	DEGREES_FAHRENHEIT	52 to 91	Space Controller not Configured as Conventional TStat	0
AV-11129	Space Temp Heating Setpoint Status	Indicates the space heating setpoint, determined by arbitration	DEGREES_FAHRENHEIT	49 to 88	Heating Installed and Space Controller not Configured as Conventional TStat	0
AV-11178	Space Temperature Active	Indicates the active space temperature being used by the controller	DEGREES_FAHRENHEIT	-40 to 200	Space Controller not Configured as Conventional TStat	0
AV-10106	Space Temperature Arbitrator	Indicates the space temp determined by arbitration	DEGREES_FAHRENHEIT	-40 to 200	Space Controller not Configured as Conventional TStat	0
AV-10114	Space Temperature BAS	Used to send the space temperature value	DEGREES_FAHRENHEIT	-40 to 200	Space Controller not Configured as Conventional TStat	900
AV-11277	Space Temperature Cooling Setpoint Input Active	Active cooling space temperature input setpoint as determined by arbitrating the cooling setpoint inputs (wired and air-fi) with the occupied setpoint BAS.	DEGREES_FAHRENHEIT	52 to 91	Space Controller Configured as Dual Setpoint Zone Sensor	0
AV-11180	Space Temperature Heating Setpoint Input Active	Active heating space temperature input setpoint as determined by arbitrating the heating setpoint inputs (wired and air-fi) with the occupied setpoint BAS.	DEGREES_FAHRENHEIT	49 to 88	Heating Installed and Space Controller Configured as Dual Setpoint Zone Sensor	0

Table 2. Analog Values (continued)

Object Identifier	Object Name	Description	Units	Valid Range	When Exists	Heartbeat Interval (sec)
AV-11181	Space Temperature Setpoint Active	Indicates the active space temperature setpoint being used by the controller	DEGREES_FAHRENHEIT	49 to 91	Space Controller not Configured as Conventional TStat	0
AV-10127	Space Temperature Setpoint BAS	BAS-supplied space temperature setpoint value	DEGREES_FAHRENHEIT	50 to 90	Space Controller Configured as Single Setpoint Zone Sensor	0
AV-11276	Space Temperature Setpoint Input Active	Active space temperature input setpoint as determined by arbitrating the space temperature setpoint inputs (wired and air-fi) with the space temperature setpoint BAS.	DEGREES_FAHRENHEIT	49 to 91	Space Controller Configured as Single Setpoint Zone Sensor	0
AV-11183	Starts - Compressor 1	Compressor 1 Starts	NO_UNITS	0 to 1500000	Always	0
AV-11184	Starts - Compressor 2	Compressor 2 Starts	NO_UNITS	0 to 1500000	Multi-Compressor Systems	0
AV-11155	Starts - Condenser Fan 1	Condenser Fan 1 Starts	NO_UNITS	0 to 1500000	Always	0
AV-11156	Starts - Condenser Fan 2	Condenser Fan 2 Starts	NO_UNITS	0 to 1500000	Dual Condenser Fan Systems	0
AV-11158	Starts - Electric Heat Stage 1	Electric Heat Stage 1 Starts	NO_UNITS	0 to 1500000	One or more stages of Staged Electric Heat configured	0
AV-11159	Starts - Electric Heat Stage 2	Electric Heat Stage 2 Starts	NO_UNITS	0 to 1500000	Two or more stages of Staged Electric Heat configured	0
AV-11160	Starts - Supply Fan	Counter for Supply Fan Starts	NO_UNITS	0 to 1500000	Always	0
AV-11279	Supply Fan Current	Supply Fan Drive Output Current	AMPERES	0 to 120	Indoor Fan Type Configured as Multi Speed or Variable Speed	0
AV-11244	Supply Fan Maximum Output Frequency Status	Active value for Supply Fan Maximum Output Frequency point being used for control.	NO_UNITS	0 to 120	Indoor Fan Type Configured as Multi Speed or Variable Speed	0
AV-11174	Supply Fan Maximum Speed Setpoint	Maximum supply fan speed command.	PERCENT	67 to 100	Indoor Fan Type Configured as Multi Speed or Variable Speed	0
AV-11243	Supply Fan Maximum Speed Setpoint - Active	Active value for Supply Fan Maximum Speed Setpoint point being used for control.	PERCENT	67 to 100	Indoor Fan Type Configured as Multi Speed or Variable Speed	0
AV-11246	Supply Fan Minimum Output Frequency Status	Active value for Supply Fan Minimum Output Frequency point being used for control.	NO_UNITS	0 to 120	Indoor Fan Type Configured as Multi Speed or Variable Speed	0
AV-11173	Supply Fan Minimum Speed Setpoint	Minimum supply fan speed command.	PERCENT	0 to 100	Indoor Fan Type Configured as Multi Speed or Variable Speed	0
AV-11245	Supply Fan Minimum Speed Setpoint - Active	Active value for Supply Fan Minimum Speed Setpoint point being used for control.	PERCENT	0 to 100	Indoor Fan Type Configured as Multi Speed or Variable Speed	0
AV-11278	Supply Fan Power	Supply Fan Drive Output Power	KILOWATTS	0 to 120	Indoor Fan Type Configured as Multi Speed or Variable Speed	0
AV-11110	Supply Fan Speed Command	Remote supply fan speed request	PERCENT	0 to 100	Always	0
AV-11187	Supply Fan Speed Command - Active	Active value for Supply Fan Speed Command point being used for control.	PERCENT	0 to 100	Always	0
AV-11163	Supply Fan Speed Status	Estimated supply fan speed being utilized.	PERCENT	0 to 100	Always	0
AV-11161	Supply Fan Type	Indicates the unit supply fan type	NO_UNITS	0 to 255	Always	0
AV-10123	Unoccupied Cooling Setpoint	Used to define the cooling temp setpoint used for control in unoccupied mode	DEGREES_FAHRENHEIT	50 to 90	Space Controller not Configured as Conventional TStat	0
AV-10124	Unoccupied Heating Setpoint	Used to define the heating temp setpoint used for control in unoccupied mode	DEGREES_FAHRENHEIT	50 to 90	Heating Installed and Space Controller not Configured as Conventional TStat	0



BACnet Points List

Table 3. Binary Inputs

Object Identifier	Object Name	Description	Object States	Reverse Polarity	When Exists
BI-11101	Circuit 1 LPC Status	Circuit 1 LPC Input Status	false = Open true = Closed	False	Always
BI-11104	Circuit 2 LPC Status	Circuit 2 LPC Input Status	false = Open true = Closed	False	Multi-Circuit Systems
BI-11100	Compressor 1 Command Status	Compressor 1 Run Command Status	false = Off true = On	False	Always
BI-11102	Compressor 1 Proving Status	Status of input for monitoring Compressor 1 proof of operation circuit.	false = Not Proved true = Proved	False	Always
BI-11109	Compressor 1 Unloader Command Status	Compressor 1 Unloader Command Status	false = Off true = On	False	Unloading Compressors Installed
BI-11103	Compressor 2 Command Status	Compressor 2 Run Command Status	false = Off true = On	False	Multi-Compressor Systems
BI-11105	Compressor 2 Proving Status	Status of input for monitoring Compressor 2 proof of operation circuit.	false = Not Proved true = Proved	False	Multi-Compressor Systems
BI-11111	Compressor 2 Unloader Command Status	Compressor 2 Unloader Command Status	false = Off true = On	False	Unloading Compressors Installed
BI-11116	Condenser Fan 1 Command Status	Condenser Fan 1 Run Command Status	false = Off true = On	False	Always
BI-11117	Condenser Fan 2 Command Status	Condenser Fan 2 Run Command Status	false = Off true = On	False	Dual Condenser Fan Systems
BI-11113	Demand Limit Input	Configurable, hardwired input to command Demand Limit	false = Not Limited true = Limited	False	Demand Management Configured as Demand Limit
BI-11114	Demand Shed Input	Configurable, hardwired input to command Demand Shed	false = Off true = On	False	Demand Management Configured as Demand Shed
BI-11144	Diagnostic: VFD Fault Supply Fan - 1	Diagnostic: VFD Fault Supply Fan - 1	false = Inactive true = Active	False	Indoor Fan Type Configured as Multi Speed or Variable Speed
BI-11145	Diagnostic: VFD Supply Fan Ground Fault - 1	Diagnostic: VFD Supply Fan Ground Fault - 1	false = Inactive true = Active	False	Indoor Fan Type Configured as Multi Speed or Variable Speed
BI-11147	Diagnostic: VFD Supply Fan Motor Current Overload - 1	Diagnostic: VFD Supply Fan Motor Current Overload - 1	false = Inactive true = Active	False	Indoor Fan Type Configured as Multi Speed or Variable Speed
BI-11148	Diagnostic: VFD Supply Fan Short Circuit - 1	Diagnostic: VFD Supply Fan Short Circuit - 1	false = Inactive true = Active	False	Indoor Fan Type Configured as Multi Speed or Variable Speed
BI-11128	Electric Heat Stage 1 Status	Status of Electric Heat Stage 1 command	false = Off true = On	False	One or more stages of Staged Electric Heat configured
BI-11129	Electric Heat Stage 2 Status	Status of Electric Heat Stage 2 command	false = Off true = On	False	Two or more stages of Staged Electric Heat configured
BI-10210	Equipment Shutdown Input Status	Indicates the status of the equipment shutdown function of the unit	false = Equipment Run true = Equipment Shutdown	False	Always
BI-10211	External Auto Stop Input Status	Indicates the status of the externally-wired auto/stop input	false = Stop true = Auto	True	External Auto/Stop Configured as Installed
BI-11149	Fan Mode - AirFi	Supply Fan Mode as set from a wireless sensor connected to the controller.	false = Cycling true = Continuous	False	Space Controller not Configured as Conventional TStat
BI-11151	Fan Mode Input	Supply Fan Mode as set from a wired sensor connected to the controller.	false = Cycling true = Continuous	False	Space Controller not Configured as Conventional TStat
BI-11127	FroStat Input	Status of Hardwired Froststat Input	false = Open true = Closed	False	FroStat Configured as Installed
BI-10172	Occupancy Input	Indicates the status of the wired occupancy input	false = Occupied true = Unoccupied	False	Space Controller not Configured as Conventional TStat
BI-11150	Occupancy Input - AirFi	Local Occupancy Input as detected by a wireless sensor connected to the controller.	false = Occupied true = Unoccupied	False	Space Controller not Configured as Conventional TStat
BI-11115	Phase Monitor Status	Status of local Phase Monitor Input	false = Tripped true = Okay	False	Always
BI-10226	Supply Fan Status	Indicates the status of the supply fan output of the controller	false = Off true = On	False	Always
BI-11118	Switchover Valve 1 Command Status	Status of Switchover Valve Command for HP Circuit 1	false = Off true = On	False	Heat Pump Systems

Table 3. Binary Inputs (continued)

Object Identifier	Object Name	Description	Object States	Reverse Polarity	When Exists
BI-11119	Switchover Valve 2 Command Status	Status of Switchover Valve Command for HP Circuit 2	false = Off true = On	False	Multi-Circuit HP Systems
BI-11120	Thermostat G Input	Thermostat Fan Request	false = Open true = Closed	False	Space Controller Configured as Conventional TStat
BI-11121	Thermostat W1/O Input	Thermostat Heat Stage 1 Request or Thermostat Heat/Cool Mode Request for HP	false = Open true = Closed	False	Space Controller Configured as Conventional TStat
BI-11122	Thermostat W2 Input	Thermostat Heat Stage 2 Request (or Emergency Heat)	false = Open true = Closed	False	Space Controller Configured as Conventional TStat
BI-11123	Thermostat X2 Input	Thermostat Emergency Heat Request	false = Open true = Closed	False	Space Controller Configured as Conventional TStat
BI-11124	Thermostat Y1 Input	Thermostat Compressor Stage 1 Request	false = Open true = Closed	False	Space Controller Configured as Conventional TStat
BI-11125	Thermostat Y2 Input	Thermostat Compressor Stage 2 Request	false = Open true = Closed	False	Space Controller Configured as Conventional TStat
BI-11133	Ventilation Override Exhaust Status	Hardwired input VOM Exhaust	false = Open true = Closed	False	Ventilation Override Configured as Installed
BI-11134	Ventilation Override Pressurize Status	Hardwired input VOM Pressurize	false = Open true = Closed	False	Ventilation Override Configured as Installed
BI-11135	Ventilation Override Purge Status	Hardwired input VOM Purge	false = Open true = Closed	False	Ventilation Override Configured as Installed

Table 4. Binary Values

Object Identifier	Object Name	Description	Relinquish Default	Object States	When Exists
BV-11100	Alarm Indicator Status	Indicates the state of the alarm output of the controller		false = Off true = On	Always
BV-11219	Circuit 1 Defrost Status	Status point to indicate circuit 1's defrost status on an Independent Circuit Heat Pump		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11220	Circuit 2 Defrost Status	Status point to indicate circuit 2's defrost status on an Independent Circuit Heat Pump		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11121	Compressor 1 Run Time Reset	Compressor 1 Runtime Reset	Accumulating	false = Accumulating true = Reset	Always
BV-11122	Compressor 1 Starts Reset	Compressor 1 Starts Reset	Accumulating	false = Accumulating true = Reset	Always
BV-11123	Compressor 2 Run Time Reset	Compressor 2 Runtime Reset	Accumulating	false = Accumulating true = Reset	Multi-Compressor Systems
BV-11124	Compressor 2 Starts Reset	Compressor 2 Starts Reset	Accumulating	false = Accumulating true = Reset	Multi-Compressor Systems
BV-11112	Condenser Defrost Status	Status point to indicate when defrost is active on any circuit within a heat pump unit.		false = Inactive true = Active	Heat Pump Systems
BV-11127	Condenser Fan 1 Run Time Reset	Condenser Fan 1 Runtime Reset	Accumulating	false = Accumulating true = Reset	Always
BV-11128	Condenser Fan 1 Starts Reset	Condenser Fan 1 Starts Reset	Accumulating	false = Accumulating true = Reset	Always
BV-11129	Condenser Fan 2 Run Time Reset	Condenser Fan 2 Runtime Reset	Accumulating	false = Accumulating true = Reset	Dual Condenser Fan Systems
BV-11130	Condenser Fan 2 Starts Reset	Condenser Fan 2 Starts Reset	Accumulating	false = Accumulating true = Reset	Dual Condenser Fan Systems
BV-11115	Cooling Capacity Setpoint Enable BAS	Commands the unit to use Cooling Capacity Setpoint BAS value to override internal algorithm's cooling capacity output request.	Disabled	false = Disabled true = Enabled	Always



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Table 4. Binary Values (continued)

Object Identifier	Object Name	Description	Relinquish Default	Object States	When Exists
BV-11202	Cooling Capacity Setpoint Enable BAS - Active	Active value for Cooling Capacity Setpoint Enable BAS point being used for control.		false = Disabled true = Enabled	Always
BV-10115	Cooling Lockout BAS	Used to prevent all mechanical cooling	Normal	false = Normal true = Locked out	Always
BV-11203	Cooling Lockout BAS - Active	Active value for Cooling Lockout BAS point being used for control.		false = Normal true = Locked out	Always
BV-11227	Demand Limit Request - Active	Active Demand Limit Request value used by the equipment.		false = Not Limited true = Limited	Demand Management Configured as Demand Limit
BV-11226	Demand Limit Request BAS	Used to demand limit the unit remotely.	Not Limited	false = Not Limited true = Limited	Demand Management Configured as Demand Limit
BV-11162	Diagnostic: Circuit 1 LPC Lockout	Diagnostic: Circuit 1 LPC Lockout		false = Inactive true = Active	Always
BV-11158	Diagnostic: Circuit 1 LPC Trip	Diagnostic: Circuit 1 LPC Trip		false = Inactive true = Active	Always
BV-11175	Diagnostic: Circuit 2 LPC Lockout	Diagnostic: Circuit 2 LPC Lockout		false = Inactive true = Active	Multi-Compressor Systems
BV-11159	Diagnostic: Circuit 2 LPC Trip	Diagnostic: Circuit 2 LPC Trip		false = Inactive true = Active	Multi-Compressor Systems
BV-11155	Diagnostic: Comp 1 Proving Trip	Diagnostic: Comp 1 Proving Trip		false = Inactive true = Active	Always
BV-11156	Diagnostic: Comp 2 Proving Trip	Diagnostic: Comp 2 Proving Trip		false = Inactive true = Active	Multi-Compressor Systems
BV-11161	Diagnostic: Compressor 1 Contactor Failure	Diagnostic: Compressor 1 Contactor Fail Lockout		false = Inactive true = Active	Always
BV-11172	Diagnostic: Compressor 1 Proving Lockout	Diagnostic: Compressor 1 Proving Lockout		false = Inactive true = Active	Always
BV-11174	Diagnostic: Compressor 2 Contactor Failure	Diagnostic: Compressor 2 Contactor Fail Lockout		false = Inactive true = Active	Multi-Compressor Systems
BV-11176	Diagnostic: Compressor 2 Proving Lockout	Diagnostic: Compressor 2 Proving Lockout		false = Inactive true = Active	Multi-Compressor Systems
BV-11177	Diagnostic: Demand Defrost Disabled	Diagnostic: Demand Defrost Disabled		false = Inactive true = Active	Non-Independent Condenser Air Stream Heat Pumps
BV-11178	Diagnostic: Demand Defrost Disabled - Circuit 1	Diagnostic: Demand Defrost Disabled - Circuit 1		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11179	Diagnostic: Demand Defrost Disabled - Circuit 2	Diagnostic: Demand Defrost Disabled - Circuit 2		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11180	Diagnostic: Demand Defrost Fault A	Diagnostic: Demand Defrost Fault A		false = Inactive true = Active	Single Circuit Heat Pumps or Multi-Circuit Heat Pumps without Independent Condenser Airstreams
BV-11181	Diagnostic: Demand Defrost Fault A - Circuit 1	Diagnostic: Demand Defrost Fault A - Circuit 1		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11182	Diagnostic: Demand Defrost Fault A - Circuit 2	Diagnostic: Demand Defrost Fault A - Circuit 2		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11183	Diagnostic: Demand Defrost Fault B	Diagnostic: Demand Defrost Fault B		false = Inactive true = Active	Single Circuit Heat Pumps or Multi-Circuit Heat Pumps without Independent Condenser Airstreams
BV-11184	Diagnostic: Demand Defrost Fault B - Circuit 1	Diagnostic: Demand Defrost Fault B - Circuit 1		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11185	Diagnostic: Demand Defrost Fault B - Circuit 2	Diagnostic: Demand Defrost Fault B - Circuit 2		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams

Table 4. Binary Values (continued)

Object Identifier	Object Name	Description	Relinquish Default	Object States	When Exists
BV-11186	Diagnostic: Demand Defrost Fault C	Diagnostic: Demand Defrost Fault C		false = Inactive true = Active	Single Circuit Heat Pumps or Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11187	Diagnostic: Demand Defrost Fault C - Circuit 1	Diagnostic: Demand Defrost Fault C - Circuit 1		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11188	Diagnostic: Demand Defrost Fault C - Circuit 2	Diagnostic: Demand Defrost Fault C - Circuit 2		false = Inactive true = Active	Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11189	Diagnostic: Demand Defrost Fault D	Diagnostic: Demand Defrost Fault D		false = Inactive true = Active	Single Circuit Heat Pumps or Multi-Circuit Heat Pumps with Independent Condenser Airstreams
BV-11146	Diagnostic: FroStat Trip	Diagnostic: FroStat Trip		false = Inactive true = Active	FroStat Configured as Installed
BV-11190	Diagnostic: Maintenance Required	Diagnostic: Maintenance Required		false = Inactive true = Active	Always
BV-11141	Diagnostic: Supply Fan Failure	Diagnostic: Fan Failure		false = Inactive true = Active	Indoor Fan Type Configured as Multi Speed or Variable Speed
BV-11225	Diagnostic: Supply Fan VFD Communication Loss	Diagnostic: Supply Fan VFD Communication Loss		false = Inactive true = Active	Indoor Fan Type Configured as Multi Speed or Variable Speed
BV-11192	Diagnostic: Unit Communications Failure	Diagnostic: Unit Communications Failure		false = Inactive true = Active	Always
BV-11135	Electric Heat Stage 1 Run Time Reset	Electric Heat Stage 1 Runtime Reset	Accumulating	false = Accumulating true = Reset	One or more stages of Staged Electric Heat configured
BV-11136	Electric Heat Stage 1 Starts Reset	Electric Heat Stage 1 Starts Reset	Accumulating	false = Accumulating true = Reset	One or more stages of Staged Electric Heat configured
BV-11137	Electric Heat Stage 2 Run Time Reset	Electric Heat Stage 2 Runtime Reset	Accumulating	false = Accumulating true = Reset	Two or more stages of Staged Electric Heat configured
BV-11138	Electric Heat Stage 2 Starts Reset	Electric Heat Stage 2 Starts Reset	Accumulating	false = Accumulating true = Reset	Two or more stages of Staged Electric Heat configured
BV-11223	Evaporator Defrost Status	Status to indicate when the unit is performing Evaporator Defrost control.		false = Inactive true = Active	Evaporator Defrost Control Configured as Enabled
BV-10109	Filter Timer Reset	Command the unit to reset the accumulated filter run hours.	Accumulating	false = Accumulating true = Reset	Always
BV-10103	Heat Lockout Command	Normally used by the BMS to command the unit to prevent heating operation	Normal	false = Normal true = Locked out	Primary Heating Source Installed
BV-11216	Heat Lockout Command - Active	Active value for Heat Lockout Command point being used for control.		false = Normal true = Locked out	Primary Heating Source Installed
BV-11116	Heating Capacity Setpoint Enable BAS	Commands the unit to use Heating Capacity Setpoint BAS value to override internal algorithm's heating capacity output request.	Disabled	false = Disabled true = Enabled	Primary Heating Source Installed
BV-11204	Heating Capacity Setpoint Enable BAS - Active	Active value for Heating Capacity Setpoint Enable point being used for control.		false = Disabled true = Enabled	Primary Heating Source Installed
BV-11173	Occupancy Input Active	Occupancy Input being actively used for status determination.		false = Occupied true = Unoccupied	Space Controller not Configured as Conventional TStat
BV-11224	Occupancy Input Arbitrator	Indicates the status of the arbitrated occupancy inputs	Occupied	false = Occupied true = Unoccupied	Space Controller not Configured as Conventional TStat
BV-10113	Occupancy Input BAS	Normally used by the BMS to provide the requested occupancy state to the unit		false = Occupied true = Unoccupied	Space Controller not Configured as Conventional TStat



BACnet Points List

Table 4. Binary Values (continued)

Object Identifier	Object Name	Description	Relinquish Default	Object States	When Exists
BV-10110	Reset Diagnostic	Used to initiate a request to reset any controller diagnostics	Normal	false = Normal true = Reset	Always
BV-10119	Supply Air Tempering Enable	Used to enable the supply (discharge) air tempering feature of the unit	Disable	false = Disable true = Enable	Supply Air Tempering Configured as Enabled
BV-11222	Supply Air Tempering Enable - Active	Active value for Supply Air Tempering Enable point being used for control.		false = Disable true = Enable	Supply Air Tempering Configured as Enabled
BV-11221	Supply Air Tempering Status	Indicates the status of the Supply Air Tempering function		false = Disable true = Enable	Supply Air Tempering Configured as Enabled
BV-10104	Supply Fan Configuration Command	Used to command the supply fan configuration as either cycling or continuous	Continuous	false = Cycling true = Continuous	Space Controller not Configured as Conventional TStat
BV-11199	Supply Fan Configuration Status	Indicates the supply fan configuration		false = Cycling true = Continuous	Space Controller not Configured as Conventional TStat
BV-11139	Supply Fan Run Time Reset	Supply Fan Runtime Reset	Accumulating	false = Accumulating true = Reset	Always
BV-11114	Supply Fan Speed Command Enable	Enables the unit to use Supply Fan Speed Command to override the units internally determined fan speed.	Disabled	false = Disabled true = Enabled	Always
BV-11201	Supply Fan Speed Command Enable - Active	Active value for Supply Fan Speed Command Enable point being used for control.		false = Disabled true = Enabled	Always
BV-11140	Supply Fan Starts Reset	Supply Fan Starts Reset	Accumulating	false = Accumulating true = Reset	Always
BV-11200	Timed Override Timer Is Active	Indicates whether or not the timed override timer is active		false = Inactive true = Active	Space Controller not Configured as Conventional TStat
BV-11113	Unit Stop Command	Point used to force the unit into an immediate stop condition. Primary use-case is at local or mobile service tool UI.	Auto	false = Auto true = Stop	Always
BV-11166	VVZT DAT Control Mode	Determines Auto or Manual mode for discharge air temperature control for VVZT applications.	Auto	false = Auto true = Manual	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat
BV-11211	VVZT DAT Control Mode - Active	Active value for VVZT DAT Control Mode point being used for control.		false = Auto true = Manual	System Type Configured as VVZT and Space Controller not Configured as Conventional TStat

Table 5. Multistate Inputs

Object Identifier	Object Name	Description	Object States	When Exists
MI-10101	Heat Cool Mode Status	Indicates the current heat cool mode of the controller	1 = Auto 2 = Heat 3 = Morning Warm-up 4 = Cool 5 = Night Purge 6 = Pre Cool 7 = Off 8 = Test 9 = Emergency Heat 10 = Fan Only 11 = Free Cool 12 = Ice-Making 13 = Max Heat 14 = Economizer 15 = Dehumidify 16 = Calibrate	Always
MI-11100	System Mode Switch Air-Fi	Indicates the status of the wireless system mode switch connected to the controller.	1 = Off 2 = Auto 3 = Cool 4 = Heat 5 = Emergency Heat	Space Controller not Configured as Conventional TStat
MI-11102	System Mode Switch Input	Indicates the status of the wired system mode switch connected to the controller.	1 = Off 2 = Auto 3 = Cool 4 = Heat 5 = Emergency Heat	Space Controller not Configured as Conventional TStat
MI-11101	Timed Override Air-Fi	Indicates the status of the Timed Override wireless input.	1 = Idle 2 = On 3 = Cancel	Space Controller not Configured as Conventional TStat
MI-11103	Timed Override Input	Indicates the status of the Timed Override wired input.	1 = Idle 2 = On 3 = Cancel	Space Controller not Configured as Conventional TStat

Table 6. Multistate Values

Object Identifier	Object Name	Description	Object States	When Exists
MV-11100	Arbitration Method Request	Setting for unit to use "Enable External/BAS Control" or "Standalone Control" data prioritization.	1 = Enable External/BAS Control 2 = Standalone Control	Always
MV-11101	Customer Options Module Communication Status	Communication Status of the Customer Options Module	1 = Not Configured 2 = Not Communicating 3 = Communicating	Customer Options Module Installed and In-Use



BACnet Points List

Table 6. Multistate Values (continued)

Object Identifier	Object Name	Description	Object States	When Exists
MV-11102	Economizer Type	Indicates the general description of the type of economizer system	1 = None 2 = 2 Position Ventilation 3 = Modulation Economizer 4 = 2 Position Ventilation/Waterside Economizer 5 = Waterside Economizer 6 = Airside/Waterside Economizer 7 = TRAQ Damper 8 = Airside Economizer and TRAQ Damper/Sensor 9 = Waterside Economizer and TRAQ Damper/Sensor 10 = Airside/Waterside Economizer and TRAQ Damper/Sensor	Always
MV-10102	Emergency Override BAS	Used to command the unit into an emergency mode of operation	1 = Normal 2 = Pressurize 3 = Depressurize 4 = Purge 5 = Shutdown 6 = Fire	Always
MV-11116	Emergency Override BAS - Active	Active value for Emergency Override BAS point being used for control.	1 = Normal 2 = Pressurize 3 = Depressurize 4 = Purge 5 = Shutdown 6 = Fire	Always
MV-10104	Heat Cool Mode Request	Used to command the unit into a heat/cool mode	1 = Auto 2 = Heat 3 = Morning Warm-up 4 = Cool 5 = Night Purge 6 = Pre Cool 7 = Off 8 = Test 9 = Emergency Heat 10 = Fan Only 11 = Free Cool 12 = Ice-Making 13 = Max Heat 14 = Economizer 15 = Dehumidify 16 = Calibrate	Space Controller not Configured as Conventional TStat
MV-11121	Heat Cool Mode Request - Active	Active value for Heat Cool Mode Request point being used for control.	1 = Auto 2 = Heat 3 = Morning Warm-up 4 = Cool 5 = Night Purge 6 = Pre Cool 7 = Off 8 = Test 9 = Emergency Heat 10 = Fan Only 11 = Free Cool 12 = Ice-Making 13 = Max Heat 14 = Economizer 15 = Dehumidify 16 = Calibrate	Space Controller not Configured as Conventional TStat

Table 6. Multistate Values (continued)

Object Identifier	Object Name	Description	Object States	When Exists
MV-11105	Indoor Options Module Communication Status	Communication Status of the Indoor Options Module	1 = Not Configured 2 = Not Communicating 3 = Communicating	
MV-10106	Occupancy Request	Normally used by the BMS to command the unit into an occupancy mode	1 = Occupied 2 = Unoccupied 3 = Occupied Bypass 4 = Occupied Standby 5 = Auto	Space Controller not Configured as Conventional TStat
MV-11125	Occupancy Request Active	Active Occupancy mode being requested of the unit.	1 = Occupied 2 = Unoccupied 3 = Occupied Bypass 4 = Occupied Standby 5 = Auto	Space Controller not Configured as Conventional TStat
MV-11123	Occupancy Status	Indicates the active occupancy mode of the controller	1 = Occupied 2 = Unoccupied 3 = Occupied Bypass 4 = Occupied Standby 5 = Auto	Space Controller not Configured as Conventional TStat
MV-11106	On-Board I/O Communication Status	Communication Status of the On-Board Inputs and Outputs	1 = Not Configured 2 = Not Communicating 3 = Communicating	Always
MV-11108	Performance Test State Request	Point to request the unit into a Performance Test Step.	1 = Inactive 2 = Cool 1 3 = Cool 2 4 = Cool 3 5 = Cool 4 6 = Off	Always
MV-11119	Refrigerant Type	Indicates the type of refrigerant used in the equipment	1 = R-11 2 = R-12 3 = R-22 4 = R-123 5 = R-134a 6 = R-407C 7 = R-410A 8 = R-113 9 = R-114 10 = R-500 11 = R-502 12 = R-404A 13 = R-513A 14 = R-1233zd(E) 15 = R-514A 16 = R-1234ze(E)	Always
MV-11110	Service Test State Request	Point to request the unit into a service test step.	1 = Inactive 2 = Fan On 3 = Cool 1 4 = Cool 2 5 = Heat 1 6 = Heat 2 7 = Heat 3 8 = Heat 4 9 = Defrost 10 = Emergency Heat	Always
MV-11124	Supply Fan VFD Communication Status	Communication Status of the Modbus Supply Fan VFD	1 = Not Configured 2 = Not Communicating 3 = Communicating	Indoor Fan Type Configured as Multi Speed or Variable Speed
MV-11112	System Mode Switch Local	Indicates the status of the system mode switch connected to the controller as arbitrated between wired and wireless sources.	1 = Off 2 = Auto 3 = Cool 4 = Heat 5 = Emergency Heat	Space Controller not Configured as Conventional TStat
MV-10110	Timed Override Request	Used to request a temporary timed override during unoccupied	1 = Idle 2 = On 3 = Cancel	Space Controller not Configured as Conventional TStat



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Table 6. Multistate Values (continued)

Object Identifier	Object Name	Description	Object States	When Exists
MV-11113	Timed Override Status	Indicates the status of the timed override request	1 = Idle 2 = On 3 = Cancel	Space Controller not Configured as Conventional TStat
MV-11114	Trane Unit Type	Indicates the equipment type according to the manufacturer's classification	1 = 1 Heat/1 Cool 2 = Heat Pump 3 = Blower Coil 4 = Unit Ventilator 5 = Fan Coil 6 = Rooftop 7 = Air Handler 8 = Vertical Self Contained 9 = Unitary 10 = VAV Box	Always
MV-11115	Unit Stop Source	Source of the stop command that turned off the equipment.	1 = None 2 = Emergency Stop 3 = Drain Pan Overflow 4 = Local HI 5 = Remote HI 6 = External Auto Stop 7 = Phase Monitor 8 = Emergency Override 9 = Supply Fan Fault 10 = Equipment Shutdown Input	Always

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