ExactLogic BACnet Communicating Thermostat
EXL01610 Sequence Datasheet

Heat Pump/ 2-stage Heat and Cool

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Operating Sequence

Standard Occupied

Thermostat occupancy can be set from a number of different sources. The Occupied Schedule Command at BO-5, a Warmup Command at BV-41, a Cooldown Command at BV-42, an External Occupancy Sensor at BI-5, the Optional Internal Occupancy Sensor at BI-1, or from the Field Service Mode. The External Occupancy Sensor is enabled with BV-51, and the Internal Occupancy Sensor is enabled at BV-64. See the separate Installation documentation to set the occupancy from the Field Service Mode.

During normal occupied operation the display will show the current room temperature. The first press of either right pair of keys will show the current room setpoint. Additional presses will adjust the setpoint up or down by 0.5 degrees. The thermostat keypad will time out after 5 seconds without a key press, and the display will switch back to displaying the room temperature.

The left pair of keys allows for the adjustment of the fan speed. The current mode is shown with the first key press; additional key presses will show the adjustment to the mode. AV-62 is used to select the number of fan speeds, and AV-63 will show what speed the fan is currently set to. Refer to the table below for the values of AV-62 (Fan Mode Status) and AV-63 (Fan Speed Status)

AV-62	Mode
0	AUTO Only
1	AUTO-ON
2	OFF-AUTO-ON
3	OFF-1-2-AUTO
4	OFF-1-2-3-AUTO

AV-63	Fan Speed
0	OFF
1	Fan Speed 1
2	Fan Speed 2
3	Fan Speed 3
4	AUTO
5	ON

Thermostat Temperature Control

The thermostat control sequence can use the internal thermistor, an external thermistor connected to AI-2, or an external network temperature written to AV-10, the average temperature of connected thermistors on AI-2 through AI-5, or a Hi/Lo Temperature Selection as the controlling temperature for the thermostat. Each mode is described below and listed in Table 1 showing which points to set to enable the desired temperature. The controlling temperature is located at AV-20. This value will be displayed on the LCD of the thermostat and should be used on any workstation displays. If there is no valve in the table for a given point, the value of that point is considered a DON'T CARE in determining the valve of AV-20.

The default mode of the thermostat uses the internal thermistor.

Internal/External Thermistor
This mode is used to select the internal thermistor on AI-0 or the external thermistor on AI-2. The control decision is made by BV-67. BV-63 must be OFF for this mode.

Network Temperature
This mode is used to transfer a temperature from one BACnet device to AV-10 on the thermostat. This mode is intended for occasions where an external thermistor or average temperature can not to wire to the thermostat. The decision for this mode uses BV-62 and BV-63.

Average Temperature
This mode uses the internal thermistor and up to 4 external thermistors wire to UI-2 through 5 to be averaged together. AV-36 is used to configure the number is external thermistors used in the average calculation. The decision for this mode uses BV-61, BV-62, and BV-63.

Hi/Lo Temperature Select
This mode will allow the highest or lowest temperature, selected from the internal, external, or network temperature to be used as the control temperature. The Hi/Lo decision is made using BV-60. BV-56 is used to select the external thermistor on AI-2 or a network temperature on AV-10 to be used for the Hi/Lo Selection. The internal thermistor on AI-0 is always used in the Hi/Lo Selection.

AV-20 Control Temp	BV-56	BV-67	BV-60	BV-61	BV-62	BV-63
Internal Thermistor (default)		OFF				OFF
External Thermistor		ON				OFF
Network Temperature					OFF	ON
Average Temperature				ON	ON	ON
Hi Temperature Select			ON	OFF	ON	ON
Lo Temperature Select			OFF	OFF	ON	ON
Use Network Temp for Hi/Lo	ON					
Use External Thermistor for Hi/Lo	OFF					

Table 1

Control Sequence – Heat / Cool

For Heat/Cool applications, such as RTU's, Fan Coils, or Heat/Cool type Heat Pumps set BV-72 active. The control sequence is as follows.

When scheduled to be occupied, the thermostat will maintain its occupied setpoint. The deadband is controlled by the cooling/heating offset (default 1 degree). Should the room temperature get 0.5 degrees above or below the current cooling/heating setpoints, the fan will turn on and the cooling or heating will turn on. Second stage cooling/heating turns on after stage one has been on for 5 minutes and the room is 1.2 degrees above setpoint. Second stage cooling/heating will turn off when the room temperature is 0.5 degrees above or below the cooling/heating setpoint. At this point stage one is still engaged. Stage one cooling/heating will turn off when the room temperature is 0.2 degrees below or above the cooling/heating setpoint. See Fig. 1.

Note: All digital outputs have a 180 second ON/OFF anti-short cycle.
Analog heating and cooling outputs modulate to the heating and cooling setpoint via a PI control.

The analog outputs can also be used for heating and cooling. They are 0-10VDC modulating, PI controlled 0-100%, signals. The analog signals can be set to modulate from 10-0VDC based on the 0-100% PI controlled signals. To reverse the defaulted 0-10VDC signal used BV-54 and 55.

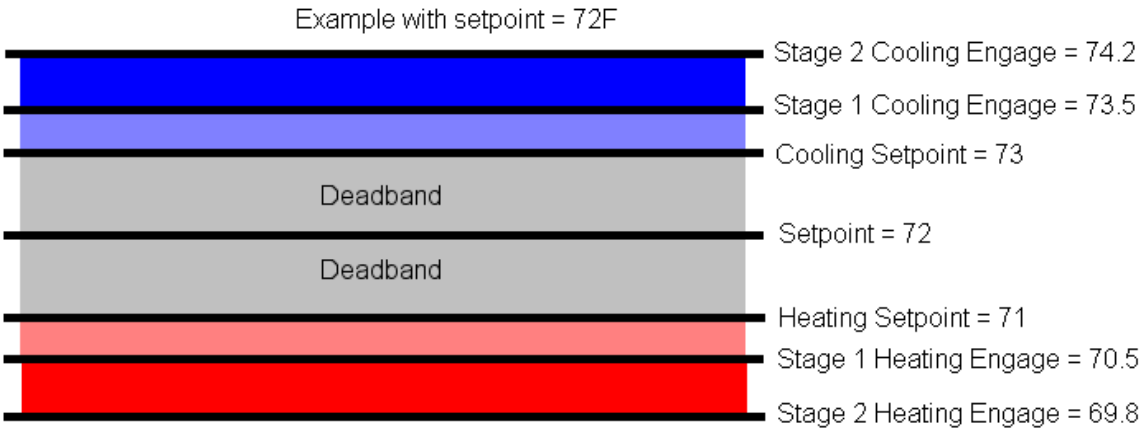

Fig. 1

Control Sequence – Compressor / Reversing Valve

For Heat Pumps of a compressor/reversing valve type, set BV-72 inactive. The control sequence is as follows.

The fan will engage when the room temperature is 0.5 degrees above or below the cooling/heating setpoint. The reversing valve command is on BV-73, 0 = Heat and 1 = Cool. The reversing valve command will determine if the reversing valve will be engaged for a cooling call or a heating call. If the reversing valve is commanded on there will be a 5 second delay before the compressor is engaged. If there is no reversing valve command the compressor will be engaged with the fan. The command for the reversing value is held until the thermostat switches modes. For instance, if the reversing valve to set to engage with heat, the command is held until the thermostat enters a cooling mode.

Note: All outputs for a 180 second ON/OFF anti-short cycle.

Standard Unoccupied

During unoccupied operation the thermostat will continue to display the room temperature. When in an unoccupied state pressing one of the right pair of keys will display a message indicating the thermostat is in night mode, preventing the setpoint from being adjusted. To adjust the room setpoint when unoccupied the thermostat must be set to night override.

Control Sequence

When in the unoccupied mode, the room will be controlled by the unoccupied cooling/heating setpoints. The fan and cooling/heating stages will operate the same as the occupied control sequence.

Vacancy

If a room is known to be vacant, vacant setpoints can be used to override the unoccupied setpoints. By setting BV-70, a room will be controlled by the vacant cooling/heating setpoints (AV-64/65).

Night Override

Set the night override by pressing one of the left pair of keys. The display will switch to allow the user to set the night override time. Additional presses of the keys will adjust the time up or down by 0.5 hour increments. The night override can be increased up to the override limit set at AV-73, the default is 5 hours. When the thermostat is in night override, the first press of one of the left pair of keys will display the override time remaining. Additional key presses will add/subtract 0.5 hours to the time that was remaining. When the timer reaches zero the thermostat will return to the unoccupied mode. In the night override mode, the right pair of keys can be used to adjust the room setpoint.

The thermostat keypad will time out after 5 seconds without a key press, and the display will switch back to displaying the room temperature.

The thermostat can be set to a night override by writing a value to AV-74 through BACnet. The value cannot exceed the night override limit set at AV-73. If the night override time is set higher than the limit, the night override timer will be set to the limit. The night override limit default is 5 hours.

If the thermostat is commanded to the occupied mode while in night override, the override timer will be cleared to zero and the thermostat will enter the occupied mode.

Control Sequence

When the thermostat is in the override mode, the room will be controlled by the occupied cooling/heating setpoints. The fan and cooling/heating stages will operate the same as the occupied control sequence.

Note: There is no fan control in the override mode. The fan will run in the AUTO mode.

Hotel Mode

The Hotel Mode is used to control the occupancy of a room. The Hotel Mode is set by commanding BV-74 to active. In this mode, the thermostat has AI-1 and AI-2 connected to motion detectors. The motion detectors are used to determine if someone is in the room or has just left the room. AI-1 is used to detect motion in the room, and AI-2 is used to detect motion at the door to the room.

If motion is found in the room the thermostat will set BO-5 indicating occupancy. If motion is detected at the door, two conditions exist. Either someone has just entered the room, or someone has just left the room. If motion is detected in the room after the door detector was set, someone just entered the room. The room will then be set to occupied. If no motion is detected in the room after the door detector was set, someone just left the room. In this condition the room will stay occupied for 15 minutes before going unoccupied. If there is motion detected within the 15 minutes, the timeout will reset and the room will continue to be occupied.

Vacancy

If a room is known to be vacant, vacant setpoints can be used to override the unoccupied setpoints. By setting BV-70 to active, a room will be controlled by the vacant cooling/heating setpoints (AV-64/65).

Motion/Humidity Option Card

The Motion/Humidity Option Card can be used for Motion Only, Humidity Only, or Motion/Humidity together. In order to use the Motion Sensor (either stand alone or with Humidity), BV-64 must be set to ACTIVE. The Humidity Sensor can be enabled by setting AV-31 to 4. These settings will automatically provide the required voltage to power the sensors. The motion sensor status will show on BI-1.

When the motion sensor, senses motion, it puts the unit in occupied “Active” Mode by writing to the Scheduled Occupied Command BO-5 at priority array entry 11, this will remain active until it does not see any motion for the entire duration of the time delay (AV-81 Units=seconds), it will then return to an inactive state.

When the internal occupancy sensor is enabled by setting BV-64 to ACTIVE, the occupied mode is controlled only by the occupancy sensor. The optimum start warmup point, BV-41, and optimum start cooldown point, BV-42, will set the unit to the occupied mode and then return to the unoccupied mode until motion is sensed. The Humidity value is shown on AI-1.

The Humidity Sensor will automatically be scaled by setting AV-31 to 4.

Disabling of the Splash, Setup Menu, or Field Service Mode

When the thermostat is installed in a public location there may be times when the setup of the thermostat will need to be disabled to prevent tenants from changing the configuration while still giving them access to change the setpoints and control after hours modes. The following points have been added to allow this:

BV-57 = Setting ACTIVE will disable the “EXACTLOGIC” splash display after key presses
BV-58 = Setting ACTIVE will disable access to the Setup Menu where the Network/MAC/Baud Rate/etc are set
BV-59 = Setting ACTIVE will disable access to the Field Service Mode where Time/Schedule/Setpoints/etc are set

Installation

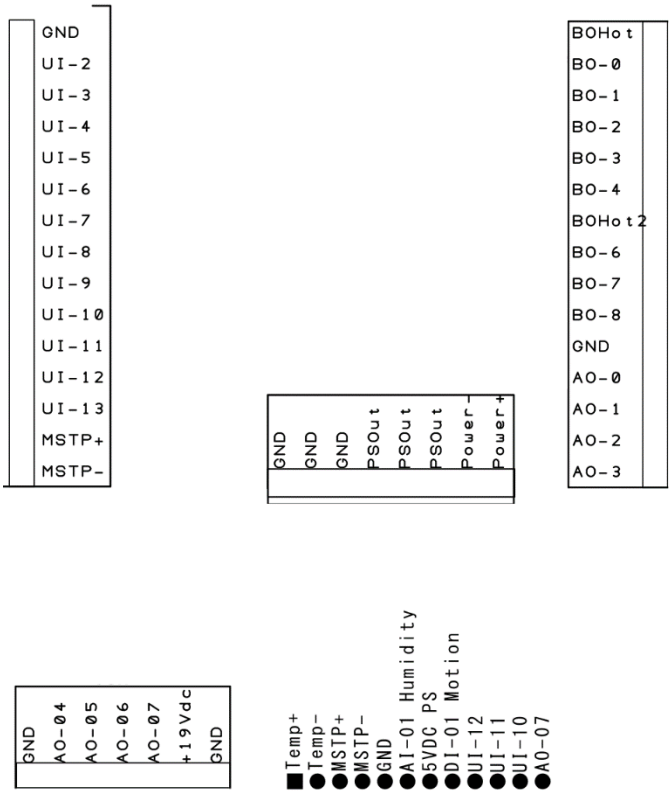

Fig. 4

*Note: Thermostat Common Relay point (BO Hot) usually 24VAC/DC or R

*Note: AI-2 through AI-5 and BI-2 through BI-5 are wired to UI-2 through UI-5. Each universal Input can only be used as an AI or a BI

GND ..... Neutral/Ground
UI-2 ..... Universal Input 2
UI-3 ..... Universal Input 3
UI-4 ..... Universal Input 4
UI-5 ..... Universal Input 5
UI-6 ..... Universal Input 6
UI-7 ..... Universal Input 7
UI-8 ..... Universal Input 8
UI-9 ..... Universal Input 9
UI-10 ..... Universal Input 10
UI-11 ..... Universal Input 11
UI-12 ..... Universal Input 12
UI-13 ..... Universal Input 13
MSTP + ... Network Line Positive
MSTP - ..... Network Line Negative

BO Hot ..... 24VAC/DC Input for Relays 1-5*
BO-0 ..... Relay 1 Output, 24VAC/DC
BO-1 ..... Relay 2 Output, 24VAC/DC
BO-2 ..... Relay 3 Output, 24VAC/DC
BO-3 ..... Relay 4 Output, 24VAC/DC
BO-4 ..... Relay 5 Output, 24VAC/DC
BO Hot 2 ..... 24VAC/DC Input for Relays 7-9*
BO-6 ..... Relay 7 Output, 24VAC/DC
BO-7 ..... Relay 8 Output, 24VAC/DC
BO-8 ..... Relay 9 Output, 24VAC/DC
GND ..... Neutral/Ground
AO-0 ..... Analog Output 0, 0-10V
AO-1 ..... Analog Output 1, 0-10V
AO-2 ..... Analog Output 2, 0-10V
AO-3 ..... Analog Output 3, 0-10V

GND ..... Neutral/Ground
GND ..... Neutral/Ground
GND ..... Neutral/Ground
PSOut ..... 24VAC/DC Hot
PSOut ..... 24VAC/DC Hot
PSOut ..... 24VAC/DC Hot
Power - ..... Neutral/Ground
Power + ... 24VAC/DC Hot

GND ..... Neutral/Ground
AO-04 ..... Analog Output 4, 0-10V
AO-05 ..... Analog Output 5, 0-10V
AO-06 ..... Analog Output 6, 0-10V
AO-07 ..... Analog Output 7, 0-10V
+19Vdc ..... 19V DC
GND ..... Neutral/Ground

Output Wiring

Output/Label	Heat / Cool Mode	Compressor / Reversing Mode
BO0	Fan	Fan
BO1	Cooling Stage 1	Compressor
BO2	Heating Stage 1	Reversing Valve
BO3	Cooling Stage 2	Cooling Stage 2
BO4	Heating Stage 2 / Radiation	Heating Stage 2 / Radiation
AO0	Heating 0-10 Vdc or 10-0 Vdc 0-100%	Heating 0-10 Vdc or 10-0 Vdc 0-100%
AO1	Cooling 0-10 Vdc or 10-0 Vdc 0-100%	Cooling 0-10 Vdc or 10-0 Vdc 0-100%

Reserved BACnet Points

The following are points reserved by the thermostat for operation.

Analog Inputs

Instance	Object Name	Description	Read/Write	Default
AI-0	Room Temp	Reading of the internal thermistor in counts. 0-1024	R	variable
AI-1	Humidity	Reading from the Humidity sensor add-on card	R	variable
AI-2	Ext. Room Temp	Optional external room temperature input	R	variable
AI-3	Analog Input 03	Reading of the external input 3 in counts. 0-1024	R	variable
AI-4	Analog Input 04	Reading of the external input 4 in counts. 0-1024	R	variable
AI-5	Analog Input 05	Reading of the external input 5 in counts. 0-1024	R	variable

Analog Outputs

Instance	Object Name	Description	Read/Write	Default
AO-0	Heat	0-10V output for control of heating	R/W	0.0
AO-1	Cool	0-10V output for control of cooling	R/W	0.0
AO-2	Analog Output 2	Variable 0-14VDC, 150mA output	R/W	0.0

Analog Values

Instance	Object Name	Description	Read/Write	Default
AV-0	Mode of Operation	The mode that the thermostat is currently in. 0 = Heat Mode 1 = Cool Mode 2 = Idle 3 = Afterhours 4 = Unoccupied Idle 5 = Unoccupied Heat Mode 6 = Unoccupied Cool Mode	R	4
AV-1	Analog Value 001			
AV-2	Analog Value 002			
AV-3	Analog Value 003			

AV-4	Current Htg SP	The setpoint that controls heating. If the room temperature goes below this setpoint the thermostat will enter heating mode.	R	60.0˚F
AV-5	Current Clg SP	The setpoint that controls cooling. If the room temperature goes above this setpoint the thermostat will enter cooling mode.	R	80.0 ˚F
AV-6	Heating SP	The setpoint used for heating during occupied mode. This setpoint is calculated by AV-66 (Current SP) – AV-70 (Heating Offset)	R	72.0˚F
AV-7	Cooling SP	The setpoint used for cooling during occupied mode. This setpoint is calculated by AV-66 (Current SP) + AV-69 (Cooling Offset)	R	74.0˚F
AV-8	Analog Value 008			
AV-9	Analog Value 009			
AV-10	Network Temperature	Temperature used for control that is written from a different network device	R/W	0˚F
AV-11	Analog Value 011			
AV-12	Analog Value 012			
AV-13	Analog Value 013			
AV-14	Analog Value 014			
AV-15	Analog Value 015			
AV-16	Analog Value 016			
AV-17	Hi Sensor Temperature	The highest temperature determined from AI-0 and AI-2 or AV-10. Use BV-56 to select between AI-2 and AV-10.	R	variable
AV-18	Lo Sensor Temperature	The lowest temperature determined from AI-0 and AI-2 or AV-10. Use BV-56 to select between AI-2 and AV-10.	R	variable
AV-19	Average Temperature	The average temperature calculated using AI-0 and AI-2 through AI-5. Use AV-36 to configure the number of external sensors used in the average.	R	variable
AV-20	Room Temp	The temperature used for the control sequence. This is the value displayed on the LCD of the thermostat and should be used to display the temperature on any workstation display.	R	variable
AV-21	Analog Value 021			
AV-22	FTR Valve % Open	Current position of the radiation valve	R	0%
AV-23	Valve Cycle Divisor	Multiplied with the valve position to determine the time the valve command is ON or OFF. (Value is AV-41/100)	R	0.1
AV-24	Valve ON Time	The amount of time to keep the valve output ON.	R	0 sec
AV-25	Valve OFF Time	The amount of time to keep the valve output OFF.	R	0 sec
AV-26	Cooling Deviation	Number of degrees that the room temperature is away from the cooling setpoint	R	variable
AV-27	Heating Deviation	Number of degrees that the room temperature is away from the heating setpoint	R	variable
AV-28	Deviation from SP	Number of degrees that the room temperature is away from the room setpoint	R	variable
AV-29	Zone Scan	Numerical representation of the thermostats mode. 100 = full heat, -100 = full cool	R	0

AV-30	AI-0 Setup	Parameter used to set the input type. 0 = counts 1 = temperature 2 = 4-20mA 3 = 0-5V 4 = 0-10V 5 = pulse	R	1
AV-31	AI-1 Setup	See AV-30	R	0
AV-32	AI-2 Setup	See AV-30	R	0
AV-33	AI-3 Setup	See AV-30	R	0
AV-34	AI-4 Setup	See AV-30	R	0
AV-35	AI-5 Setup	See AV-30	R	0
AV-36	Ext Sensors to Average	The number of external sensors connected to AI-2 to AI-5, used for the average temp calculation	R/W	0
AV-37	Analog Value 037			
AV-38	Analog Value 038			
AV-39	Analog Value 039			
AV-40	FTR Cmd Offset SP	This will set the minimum position for the PWM valve.	R/W	0
AV-41	Valve Cycle Period	Maximum cycle time for the Valve ON/OFF command	R/W	10 sec
AV-42	Valve Open Delay	Time the open command will remain ON before allowing the modulating signal to pass.	R/W	120 sec
AV-43	Valve Close Delay	Time the open command will remain OFF before allowing the modulating signal to pass.	R/W	120 sec
AV-44	Analog Value 044			
AV-45	Analog Value 045			
AV-46	Analog Value 046			
AV-47	Analog Value 047			
AV-48	Analog Value 048			
AV-49	Analog Value 049			
AV-50	Door Sensor DOM Delay	Used in Hotel Mode, for occupancy detection. This delay is used to eliminate false sensor readings. If the door sensor is still triggered after this delay, then door motion has been detected.	R/W	0.1 sec
AV-51	Door Sensor DOB Delay	Used in Hotel Mode, for occupancy detection. This delay is hold the door sensor motion a little longer than the room sensor to determine if a tenant has entered or exited the room.	R/W	4 sec
AV-52	Room Sensor DOM Delay	Used in Hotel Mode, for occupancy detection. This delay is used to eliminate false sensor readings. If the room sensor is still triggered after this delay, then motion has been detected.	R/W	0.1 sec
AV-53	Room Sensor DOB Delay	Used in Hotel Mode, for occupancy detection. This delay is used hold the room sensor motion a little shorter than the door sensor to determine if a tenant has entered or exited the room.	R/W	2 sec
AV-54	Occupied DOM Delay	Used in Hotel Mode, for occupancy detection. This delay is used to eliminate false sensor readings.	R/W	0.1 sec

AV-55	Occupied DOB Delay	Used in Hotel Mode, for occupancy detection. This delay is used to hold the room occupied for 15 minutes after it has been determined that the tenant has left to room.	R/W	900 sec
AV-56	Analog Value 056			
AV -57	Analog Value 057			
AV-58	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	1.6
AV-59	Ave Time Base	Factor used to average the room temperature. A small number will allow the room temperature to change faster over time. A large number will cause the room temperature to change slower over time.	R	100
AV-60	Calibration Offset	The calibration offset for the internal thermistor.	R	variable
AV-61	Space Alarm Offset	This offset +/- the Current Cooling/Heating SP is used to determine if the space is too warm/cold, and set an alarm if necessary.	R/W	5.0˚F
AV-62	# of Fan Speeds	Select the number of fan speeds for a multispeed fan. 0 = Auto Only 1 = AUTO - ON 2 = Off - AUTO - ON 3 = Off-1-2-AUTO 4 = Off-1-2-3-AUTO	R/W	0
AV-63	Current Fan Speed	The fan speed the thermostat is currently running. 0 = OFF 1 = Fan Speed 1 2 = Fan Speed 2 3 = Fan Speed 3 4 = AUTO 5 = ON	R	4
AV-64	Vacant Clg SP	Used in Hotel Mode. When a room is known vacant, the setpoint can be set below the unoccupied setpoint.	R/W	85.0˚F
AV-65	Vacant Htg SP	Used in Hotel Mode. When a room is known vacant, the setpoint can be set below the unoccupied setpoint.	R/W	65.0˚F
AV-66	Room Setpoint	The occupied room setpoint	R/W	73.0˚F
AV-67	Occupied SP Hi Limit	The maximum occupied room setpoint allowed.	R/W	85.0˚F
AV-68	Occupied SP Lo Limit	The minimum occupied room setpoint allowed	R/W	55.0˚F
AV-69	Clg Offset	The offset from Room Setpoint used to calculate the Occupied Cooling SP	R/W	1.0˚F
AV-70	Htg Offset	The offset from Room Setpoint used to calculate the Occupied Heating SP	R/W	1.0˚F
AV-71	Unoccupied Clg SP	The cooling setpoint used when the thermostat is unoccupied.	R/W	80.0˚F
AV-72	Unoccupied Htg SP	The heating setpoint used when the thermostat is unoccupied.	R/W	60.0˚F
AV-73	After Hours Limit	The maximum hours the thermostat is allowed to run during afterhours time. Setting this will set the thermostat to occupied operation. (0-99.9 hrs)	R/W	5.0 hrs
AV-74	After Hours Timer	The current amount of afterhours time left.	R	0.0 hrs

AV-75	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	0
AV-76	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	0
AV-77	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	0
AV-78	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	0
AV-79	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	0
AV-80	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	0
AV-81	Motion OFF Delay	The amount of time to delay the ON->OFF transition of the motion sensor occupied command after no motion is detected	R/W	900 sec
AV-82	Analog Value 082			
AV-83	Analog Value 083			
AV-84	Analog Value 084			
AV-100	Analog Value 100	Internal thermistor display descriptor. The present value is automatically transferred. The AV description holds the descriptor to display.	R	variable
AV-101	Analog Value 101	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display.	R/W	
AV-102	Analog Value 102	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-103	Analog Value 103	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-104	Analog Value 104	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-105	Analog Value 105	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-106	Analog Value 106	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-107	Analog Value 107	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-108	Analog Value 108	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-109	Analog Value 109	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	

AV-110	Analog Value 110	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-111	Analog Value 111	Internal humidity display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	
AV-112	Analog Value 112	Outside Air Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	

Binary Inputs

Instance	Object Name	Description	Read/Write	Default
BI-0	Binary Input 00		R	
BI-1	Motion	Motion sensor status from the add-on card	R	
BI-2	Binary Input 02		R	
BI-3	Hotel Room Sensor	Occupancy Sensor located on the room space	R	
BI-4	Hotel Door Sensor	Occupancy sensor located by the room door	R	
BI-5	Opt. Occupied Relay	Optional occupancy relay input	R	

Binary Outputs

Instance	Object Name	Description	Read/Write	Default
BO-0	Fan	Output for Fan Control	R/W	OFF
BO-1	Compressor/Clg	Output for Compressor in Comp/Rev Mode. Output for Cooling Stage 1 in Htg/Clg Mode.	R/W	OFF
BO-2	Rev. Valve/Htg	Output for Reversing Valve when in Comp/Rev Mode. Output for Heating Stage 1 when in Htg/Clg Mode.	R/W	OFF
BO-3	Clg Stage 2	Output for Cooling Stage 2	R/W	OFF
BO-4	Htg Stage 2/FTR	Output for Heating Stage 2 or Radiation	R/W	OFF
BO-5	Scheduled Occupied	Logical point only. Used for scheduling purposes. INACTIVE is unoccupied.	R/W	OFF

Binary Values

Instance	Object Name	Description	Read/Write	Default
BV-0	Bad Sensor Alarm	Alarm for a bad internal thermistor	R	OFF
BV-1	H/C Mode	Sequence point to show analog heating or cooling. OFF = Cooling ON = Heat	R	OFF
BV-2	Binary Value 002			
BV-3	Binary Value 003			
BV-4	Binary Value 004			
BV-5	Heat Enabled	Heating is allowed by system by BV-38	R	ON
BV-6	Binary Value 006			
BV-7	Binary Value 007			
BV-8	Binary Value 008			
BV-9	Space Alarm Delay	Delay used to prevent a space alarm after receiving an occupied command. The delay is 7200 sec	R	OFF
BV-10	Program Status	Used to determine if the sequence was loaded correctly on a BACnet Restore or power up.	R	OFF
BV-11	Binary Value 011			
BV-12	FTR ON Cmd	Status of the Valve ON command	R	OFF
BV-13	FTR OFF Cmd	Status of the Valve OFF command	R	OFF
BV-14	FTR Command	Radiation Valve command	R	OFF
BV-15	Binary Value 015			

BV-16	Htg Stage 1 Request	Stage 1 heat is requested. The sequence determines if this is a Htg/Clg request or a Comp/Rev request	R	OFF
BV-17	Clg Stage 1 Request	Stage 1 cool is requested. The sequence determines if this is a Htg/Clg request or a Comp/Rev request	R	OFF
BV-18	Htg Stage 2 Request	Stage 2 heat is requested. If radiation is not enabled (BV-50) BO-4 will be commanded.	R	OFF
BV-19	Binary Value 019			
BV-20	Fan Request - Heat	Used to request the fan to run when using the analog heat signal, AO-0, for control. Must be enabled by BV-52.	R	OFF
BV-21	Fan Request – Cool	Used to request the fan to run when using the analog cool signal, AO-1, for control. Must be enabled by BV-53.	R	OFF
BV-22	Too Warm Status	Status of the Too Warm Alarm before checking the Space Alarm Delay	R	OFF
BV-23	Too Cool Status	Status of the Too Cool Alarm before checking the Space Alarm Delay	R	OFF
BV-24	Space To Warm Alarm	The space temperature has been below the Room Set point (AV-66) – Space Alarm Offset (AV-61) for at least 7200 seconds.	R	OFF
BV-25	Space To Cool Alarm	The space temperature has been above the Room Set point (AV-66) + Space Alarm Offset (AV-61) for at least 7200 seconds.	R	OFF
BV-26	Heat Stage 1 Status	The status of the stage 1 heat request before the 180 second anti-short cycle delay.	R	OFF
BV-27	Cool Stage 1 Status	The status of the stage 1 cool request before the 180 second anti-short cycle delay.	R	OFF
BV-28	Heat Stage 2 Status	The status of the stage 2 heat request before the 180 second anti-short cycle delay.	R	OFF
BV-29	Cool Stage 2 Status	The status of the stage 2 cool request before the 180 second anti-short cycle delay.	R	OFF
BV-30	Hotel Mode Seq 100	Used in the Hotel Mode only. This is a debug point.	R	OFF
BV-31	Hotel Mode Seq 110	Used in the Hotel Mode only. This is a debug point.	R	OFF
BV-32	Hotel Mode Seq 120	Used in the Hotel Mode only. This is a debug point.	R	OFF
BV-33	Hotel Mode Seq 130	Used in the Hotel Mode only. This is a debug point.	R	OFF
BV-34	Hotel Mode Seq 140	Used in the Hotel Mode only. This is a debug point.	R	OFF
BV-35	Hotel Mode Seq 150	Used in the Hotel Mode only. This is a debug point.	R	OFF
BV-36	Binary Value 036			
BV-37	Binary Value 037			
BV-38	Heating Lockout	System has heating locked out	R/W	OFF
BV-39	Binary Value 039			

BV-40	Occupied Status	The status of this point switches the thermostats occupancy settings. When ON, the thermostat is in Occupied Setpoint Mode or After Hours Mode.	R	OFF
BV-41	Opt. Start Warmup	A Warmup command has been sent to the thermostat. When ON the thermostat will switch to occupied settings.	R/W	OFF
BV-42	Opt. Start Cooldown	A Cooldown command has been sent to the thermostat. When ON the thermostat will switch to occupied settings.	R/W	OFF
BV-43	Occ Set point Mode	The thermostat has been commanded occupied via BO-5, or a Warmup/Cooldown command has been sent via BV-41/BV-42.	R	OFF
BV-44	After Hours Status	The thermostat has been set to afterhours mode. When ON the thermostat will switch to occupied settings.	R	OFF
BV-45	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	OFF
BV-46	Binary Value 046			
BV-47	Binary Value 047			
BV-48	FTR Valve Request	Valve Open/Close request	R	OFF
BV-49	Update Descriptors	When ON descriptor changes are sent to the thermostats LCD, this point will auto reset to OFF.	R/W	OFF
BV-50	FTR Output Enable	Enables option feature, PWM Valve Modulation, in control sequence, hardware changes are required for this feature to work.	R/W	OFF
BV-51	BI for Occupancy	ON = BI-5 will be used to indicate occupancy OFF = BI-5 is not used for occupancy	R/W	OFF
BV-52	Enable Analog Heat Fan Request	Allow the analog heat signal to request the fan to start	R/W	OFF
BV-53	Enable Analog Heat Fan Request	Allow the analog cool signal to request the fan to start	R/W	OFF
BV-54	Heating Signal Reverse	Reserves the heating analog output AO-0, from 0-10V to 10-0V.	R/W	OFF
BV-55	Cooling Signal Reverse	Reserves the cooling analog output AO-1, from 0-10V to 10-0V	R/W	OFF
BV-56	Ext Temp Local/Remote	OFF = External Temperature is from AI-2 ON = External Temperature is from AV-10	R/W	OFF
BV-57	Disable Splash	When ACTIVE, the “EXACTLOGIC” splash will not show after key presses	R/W	OFF
BV-58	Disable Setup Menu	When ACTIVE, there will be no access to the Setup Menu where the Network/MAC/Baud Rate is set	R/W	OFF
BV-59	Disable FSM Menu	When ACTIVE, there will be not access to the Field Service Mode where the Time/Schedule/Point Access is set	R/W	OFF
BV-60	Hi/Lo Select Mode	ON = Select the Network Temp, AV-10, for Hi/Lo Mode OFF = Select the External Sensor, AI-2, for HI/Lo Mode	R/W	OFF

BV-61	Temperature Select Mode 1	ON = Select the Average Temp, AV-19, for control OFF = Select the Hi/Lo Mode for control	R/W	OFF
BV-62	Temperature Select Mode 2	ON = Select Average or Hi/Lo Mode OFF = Select Network Temp for control	R/W	OFF
BV-63	Temperature Select Mode 3	ON = Select Average, Hi/Lo, or Average Mode OFF = Selects Internal (AI-0) or External Temp (AI-2) for control	R/W	OFF
BV-64	Enable Motion	When ACTIVE, the power to the Motion add-on card is set to the proper voltage	R/W	OFF
BV-65	Binary Value 065			
BV-66	Disable Unit	When ON this point will disable and lockout all analog and binary outputs.	R/W	OFF
BV-67	Room Temp Select	ON = Select the external thermistor, AI-2, for the control sequence OFF = Select the internal thermistor, AI-0, for the control sequence.	R/W	OFF
BV-68	Backlight Off/On	When ON the LCD backlight will remain on	R/W	OFF
BV-69	Fan Op Mode	Controls if the fan will cycle or run continuously. OFF = Cycle, ON = Continuous, BV-40 must also be ON.	R/W	OFF
BV-70	Room Vacant Status	When ON the thermostat will run on Vacant Heating/Cooling setpoints, AV-64/AV-65.	R/W	OFF
BV-71	C/F	Sets the thermostat to display temperatures in Celsius or Fahrenheit. This point is set through the setup menu. ON = F, OFF = C	R	ON
BV-72	HP Type	OFF = Compressor/Reversing Valve Mode ON = Heat/Cool Mode	R/W	ON
BV-73	Rev Valve	Set which mode to turn on the reversing value. OFF = Heat, ON = Cool	R/W	OFF
BV-74	Hotel Mode	Determines how the thermostats occupancy is set. OFF = Normal Mode, ie schedule ON = Hotel Mode, ie motion sensors	R/W	OFF
BV-100	Binary Value 100	Enable internal thermistor descriptor	R/W	ON
BV-101	Binary Value 101	Enable descriptor	R/W	OFF
BV-102	Binary Value 102	Enable descriptor	R/W	OFF
BV-103	Binary Value 103	Enable descriptor	R/W	OFF
BV-104	Binary Value 104	Enable descriptor	R/W	OFF
BV-105	Binary Value 105	Enable descriptor	R/W	OFF
BV-106	Binary Value 106	Enable descriptor	R/W	OFF
BV-107	Binary Value 107	Enable descriptor	R/W	OFF
BV-108	Binary Value 108	Enable descriptor	R/W	OFF
BV-109	Binary Value 109	Enable descriptor	R/W	OFF
BV-110	Binary Value 110	Enable descriptor	R/W	OFF
BV-111	Binary Value 111	Enable internal humidity descriptor	R/W	OFF
BV-112	Binary Value 112	Enable outside air descriptor	R/W	OFF