ExactLogic BACnet Communicating Thermostat
EXL01618 Sequence Datasheet

Heat Pump/2-Stage Heat/Cool with CO2 Control

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Operating Sequence

Standard Occupied

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

Internal/External Thermistor Control

The thermostat control sequence can use the internal thermistor or an external thermistor connected to AI-2. Setting BV-67 to OFF (default) the thermostat will use the internal thermistor. Setting BV-67 to ON the control sequence will use the external thermistor.

The current 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.

Control Sequence – Heat / Cool

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

The occupancy of the thermostat can be controlled by a schedule or a binary input. The schedule point is BO-5. The binary input (BI-5) can be used to control occupancy by setting BV-51 to ACTIVE. 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.

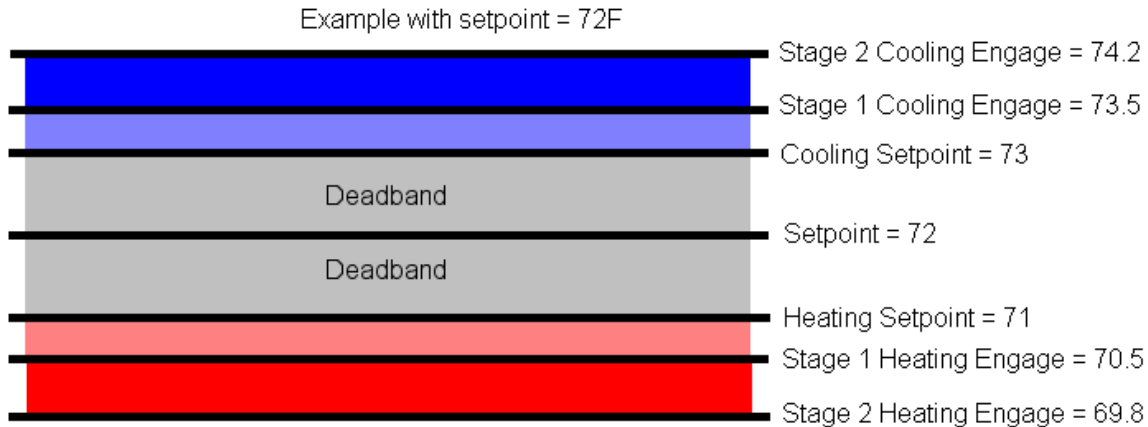Analog heating and cooling outputs modulate to the heating and cooling setpoint via a PI control.

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Example with setpoint = 72F

Stage 2 Cooling Engage = 74.2

Stage 1 Cooling Engage = 73.5

Cooling Setpoint = 73

Deadband

Setpoint = 72

Deadband

Heating Setpoint = 71

Stage 1 Heating Engage = 70.5

Stage 2 Heating Engage = 69.8

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).

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Night Overrride

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 can not 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.

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 is enabled by setting BV-64 to ACTIVE. This will automatically provide the required voltage to power the sensors. The motion sensor status will show on BI-1. Once the motion sensor does not sense motion, the delay at AV-81 is used to delay the ACTIVE to INACTIVE command to the Scheduled Occupied command at BO-5, priority array entry 10. The humidity value is shown on AI-1.

CO2 Control Option

The CO2 Control option is used to provide a modulating signal to the Economizer Damper to maintain a CO_2 Setpoint (AV-48). The control signal will modulate between a minimum position (AV-54) and a maximum position (AV-55). The maximum position can be limited by using a discharge air sensor in AI-4. To enable the DAT limiting set AV-34 to 1. The DAT Low limit is set at AV-49. The economizer position is shown at AV-16. The CO_2 Sensor is located at AI-3

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Installation

```
GND
UI-2
UI-3
UI-4
UI-5
UI-6
UI-7
UI-8
UI-9
UI-10
UI-11
UI-12
UI-13
MSTP+
MSTP-
```

```
BOHot
BO-0
BO-1
BO-2
BO-3
BO-4
BOHot2
BO-6
BO-7
BO-8
GND
AO-0
AO-1
AO-2
AO-3
```

```
GND  GND  GND  PSOut  PSOut  PSOut  Power-  Power+
```

```
GND  AO-04  AO-05  AO-06  AO-07  +19Vdc  GND
```

```
Temp+  Temp-  MSTP+  MSTP-  GND  AI-01 Humidity  5VDC PS  DI-01 Motion  UI-12  UI-11  UI-10  A0-07
```
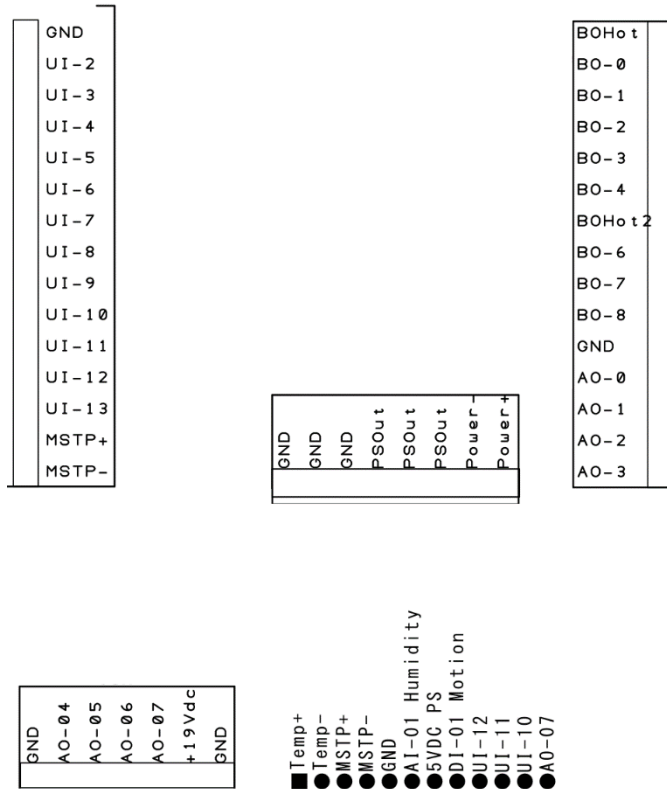
Fig. 4

*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

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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	Economizer 0-10 Vdc 0-100%	Economizer 0-10 Vdc 0-100%
AO1	Heating 0-10 Vdc 0-100%	Heating 0-10 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	
AI-1	Humidity	Humidity reading for add-on card	R	
AI-2	Ext. Room Temp	Optional external room temperature input	R	
AI-3	CO2 Sensor	Reading of the external CO2 Sensor.	R	
AI-4	Discharge Air	Reading of the discharge air temperature	R	
AI-5	Analog Input 05	Reading of the external input 5 in counts. 0-1024	R	

Analog Outputs

Instance	Object Name	Description	Read/Write	Default
AO-0	Economizer Cmd	0-10V output for control of an economizer damper	R/W	
AO-1	Aux Heat	0-10V output	R/W	
AO-2	Analog Output 2	Variable 0-14VDC, 150mA output	R/W	

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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				
AV-2				
AV-3				
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	
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	
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	Heating Signal	Current heating signal as a percent	R	
AV-9	Cooling Signal	Current cooling signal as a percent	R	
AV-10	Network Temp	Enable BV-62 to use this as Space Temp	R/W	0°F
AV-11				
AV-12				
AV-13				
AV-14				
AV-15	Current Minimum Damper SP	Current minimum economizer setpoint determined by a PI control signal	R	
AV-16	Economizer Position	Current position of the economizer.	R	
AV-17				
AV-18				
AV-19				
AV-20	Room Temp	Selected from either AI-0 or AI-2. BV-67 is used for selection. This is the value displayed on the LCD of the thermostat and should be used to display the temperature on any workstation display.	R	
AV-21				
AV-22	FTR Valve % Open	Current position of the radiation valve	R	
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	

AV-25	Valve OFF Time	The amount of time to keep the valve output OFF.	R	
AV-26	Cooling Deviation	Number of degrees that the room temperature is away from the cooling setpoint	R	
AV-27	Heating Deviation	Number of degrees that the room temperature is away from the heating setpoint	R	
AV-28	Deviation from SP	Number of degrees that the room temperature is away from the room setpoint	R	
AV-29	Zone Scan	Numerical representation of the thermostats mode. 100 = full heat, -100 = full cool	R	
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/W	1
AV-31	AI-1 Setup	See AV-30	R/W	0
AV-32	AI-2 Setup	See AV-30	R/W	0
AV-33	AI-3 Setup	See AV-30	R/W	0
AV-34	AI-4 Setup	See AV-30	R/W	0
AV-35	AI-5 Setup	See AV-30	R/W	0
AV-36				
AV-37				
AV-38				
AV-39				
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				
AV-45				
AV-46				
AV-47				
AV-48	CO2 Setpoint	Setpoint used to control the CO2 control signal to the economizer minimum position	R/W	900 ppm
AV-49	DAT Low Limit	Low Limit setpoint of the discharge air used to control the maximum position of the economizer	R/W	45
AV-50	DAT Low Limit Kp	Integral constant used for the DAT control	R/W	1.5
AV-51	DAT Low Limit Ki	Proportional constant used for the DAT control	R/W	1.5
AV-52	CO2 Kp	Proportional constant used for the CO2 control	R/W	0.01
AV-53	CO2 Ki	Integral constant used for the CO2 control	R/W	0.01
AV-54	Min OSA Damper Position	Minimum position of the economizer damper	R/W	5%
AV-55	Max OSA Damper Position	Maximum position of the economizer damper	R/W	100%
AV-56	Economizer Max Scalar	Used to scale the maximum input signal used for the economizer	R/W	100
AV -57				

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AV-58	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	1.6
AV-59	Average 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	
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	55.0˚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	OFF
AV-76	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	OFF
AV-77	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	OFF
AV-78	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	OFF

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AV-79	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	OFF
AV-80	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	OFF
AV-81	Motion OFF Delay	This is the delay used to transition that Occupied Command from ACTIVE to INACTIVE after no motion is detected from the sensor	R/W	900 sec
AV-82	SP Inc/Dec Value	The amount of adjustment to the space setpoint when the occupant uses the warmer/cooler buttons	R/W	0.5
AV-83	Splash Descriptor	This point is reserved for internal thermostat use and its value cannot be changed	R	0
AV-84				
AV-100	Analog Value 100	Internal thermistor display descriptor. The present value is automatically transferred. The AV description holds the descriptor to display.	R	
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	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	Display descriptor. Transfer the value to display to the present value. The AV description holds the descriptor to display	R/W	

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Binary Inputs

Instance	Object Name	Description	Read/Write	Default
BI-0	Binary Input 00		R	
BI-1	Motion Status	Current status of the motion add-on sensor	R	OFF
BI-2	Binary Input 02		R	
BI-3	Binary Input 03		R	
BI-4	Binary Input 04		R	
BI-5	Occupied Relay/Fan Status	Optional occupancy relay input or fan status. Selected by BV-51	R	OFF

Binary Outputs

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

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	
BV-2	Binary Value 002			
BV-3	Binary Value 003			
BV-4	Binary Value 004			
BV-5	Heat Enabled	Heating is allowed by system	R	
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	
BV-13	FTR OFF Cmd	Status of the Valve OFF command	R	
BV-14	FTR Command	Radiation Valve command	R	
BV-15	Supply Fan Status	Status from the fan sensor	R	

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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	
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	
BV-18	Htg Stage 2 Request	Stage 2 heat is requested. If radiation is not enabled (BV-50) BO-4 will be commanded.	R	
BV-19	Binary Value 019			
BV-20	Supply Fan Alarm	Triggered ACTIVE if the Fan Command (BO-0) has been ACTIVE for 20 seconds without status from BI-5	R	OFF
BV-21	Binary Value 021			
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 Warm Alarm before checking the Space Alarm Delay	R	OFF
BV-24	Space Too 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 Too 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	
BV-27	Cool Stage 1 Status	The status of the stage 1 cool request before the 180 second anti-short cycle delay.	R	
BV-28	Heat Stage 2 Status	The status of the stage 2 heat request before the 180 second anti-short cycle delay.	R	
BV-29	Cool Stage 2 Status	The status of the stage 2 cool request before the 180 second anti-short cycle delay.	R	
BV-30	Binary Value 030			
BV-31	Binary Value 031			
BV-32	Supply Fan Alarm Reset	Reset the latch on the Supply Fan Alarm (BV-20)	R/W	OFF
BV-33	Binary Value 033			
BV-34	Binary Value 034			
BV-35	Binary Value 035			
BV-36	Binary Value 036			
BV-37	Binary Value 037			
BV-38	Heating Lockout	System has heating locked out	R	
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	ON
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	
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	

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BV-43	Occ Setpoint Mode	The thermostat has been commanded occupied via BO-5, or a Warmup/Cooldown command has been sent via BV-41/BV-42.	R	ON
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	
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	Binary Value 052			
BV-53	Binary Value 053			
BV-54	Binary Value 054			
BV-55	Binary Value 055			
BV-56	Binary Value 056			
BV-57	Disable Splash	ON = The splash screen will be disabled after key presses	R/W	OFF
BV-58	Disable Setup Menu	ON = The Setup Mode to configure the Network/MAC/Baud Rate/etc will be disabled	R/W	OFF
BV-59	Disable FSM Menu	ON = The Field Service Mode to configure the Time/Schedule/etc will be disabled	R/W	OFF
BV-60	Binary Value 060			
BV-61	Binary Value 061			
BV-62	Network Temp Enable	Turn this on to use the Network Temperature	R/W	OFF
BV-63	Binary Value 063			
BV-64	Enable Motion	Set this BV to ACTIVE to enable the motion option card.	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	When OFF, the internal thermistor is selected for the control sequence. When ON, an external thermistor attached to AI-2 is selected for control of the 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

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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	Reserved	This point is reserved for internal thermostat use and its value cannot be changed	R	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 descriptor	R/W	OFF
BV-112	Binary Value 112	Enable descriptor	R/W	OFF

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