ECY-PTU 207/208 and ECY-TU-203 Preloaded Applications

User Guide

DISTECH CONTROLS™

Innovative Solutions for Greener Buildings™

Document Revision History

Version 1.0 – Initial release – June 2017

Version 1.1 – Minor updates and corrections – August 2017

Version 1.2 – Added Allure EC-Smart-Vue section and other general corrections– December 2017

Legal Notice

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Introduction to the Preloaded Applications

Distech Controls' ECY-PTU controllers come preloaded with code containing standard applications. This code was created using EC-*gfx*Program, a Graphical Programming Interface (GPI) tool that enables visual assembly of building blocks and the design of custom programs that control Building Automation Systems.

A controller's preloaded applications can be configured using the EC-*gfx*Program Configuration Assistant or xpressENVYSION pre-loaded graphics provides an intuitive interface for configuring controllers.

Alternatively, an Allure™ EC-Smart-Vue Sensor can be used to configure a controller's preloaded applications on site.

Controllers can also be custom-programmed using EC-*gfx*Program. With this GPI tool, quick and easy control sequences can be created which meet the most demanding requirements of any engineering specification.

Applications Comparison Chart

	ECY-PTU-107	ECY-PTU-207	ECY-PTU-208	ECY-TU-203
Fan Type	None 3-speed	None 3-speed variable speed	None 3-speed variable speed	None 3-speed variable speed
Electric Heater	1	1	1	1
Valve Outputs Type	2 x PWM valves 2 x On/Off valves 1 x floating valve	2 x PWM valves 2 x On/Off valves 1 x floating valve 2 x 0-10V valves 2x 6 way valve	2 x PWM valves 2 x On/Off valves 1 x floating valve 2 x 0-10V valves 2x 6 way valve	2 x PWM valves 2 x On/Off valves 1 x floating valve 2 x 0-10V valves 2x 6 way valve
Valve Voltage	100-240 VAC	100-240 VAC	24 V	24 V
System Types	2 pipes cooling only 2 pipes cooling only with electric heater 2 pipes heating 2 pipes heating with electric heater 2 pipes change-over 2 pipes change-over with electric heater 4 pipes 4 pipes with electric heater	2 pipes cooling only 2 pipes cooling only with electric heater 2 pipes heating 2 pipes heating with electric heater 2 pipes change-over 2 pipes change-over with electric heater 4 pipes 4 pipes with electric heater	2 pipes cooling only 2 pipes cooling only with electric heater 2 pipes heating 2 pipes heating with electric heater 2 pipes change-over 2 pipes change-over with electric heater 4 pipes 4 pipes with electric heater	2 pipes cooling only 2 pipes cooling only with electric heater 2 pipes heating 2 pipes heating with electric heater 2 pipes change-over 2 pipes change-over with electric heater 4 pipes 4 pipes with electric heater

Table 1: Available configurations

*: if neither ECM Fan (Variable Speed) nor Damper are used.

Purpose of the User Guide

This user guide only explains hardware installation in a general sense. Please refer to the individual device's installation guides for specific hardware installation information.

This user guide does not provide and does not intend to provide instructions for safe wiring practices. It is the user's responsibility to adhere to the safety codes, safe wiring guidelines and safe working practices of the local area. This user guide does not intend to provide all the information and knowledge of an experienced HVAC technician or engineer.

Intended Audience

This user guide is intended for system designers, integrators, and field technicians who have experience with control systems. It is recommended that anyone installing and configuring the devices specified in this user guide have prior training in the usage of these devices.

Conventions Used in this Document

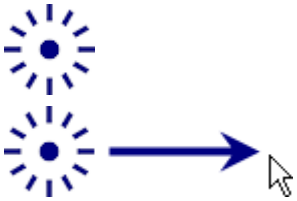
Notes

This is an example of Note text. Wherever the note-paper icon appears, it means the associated text is giving a time-saving tip or a reference to associated information of interest.

Cautions and Warnings

This is an example of Caution and Warning text. Wherever the exclamation icon appears, it means that there may be an important safety concern or that an action taken may have a drastic effect on the device, equipment, and/or network if it is done improperly.

Conventions for using the mouse



Click the item.

Click, drag, and release the item.

Accessing the ECY-PTU with ENVYSION

You can access the ECY-PTU Preloaded Applications through the Xpress*Network* Utility. Refer to the Xpress*Network* Utility User Guide for more information.

You can also access the ECY-PTU Preloaded Applications directly through your web browser using the controller IP address or using the Controller's Factory-default Hostname.

For more information regarding the different ways to access the configuration page, refer to the ECLYPSE Connected Equipment Controller Hardware Installation Guide.

Logging on to the Web Interface

When logging on to the web interface, you will be prompted to choose the project you would like to work with, in this case choose the ECY-PTU project.

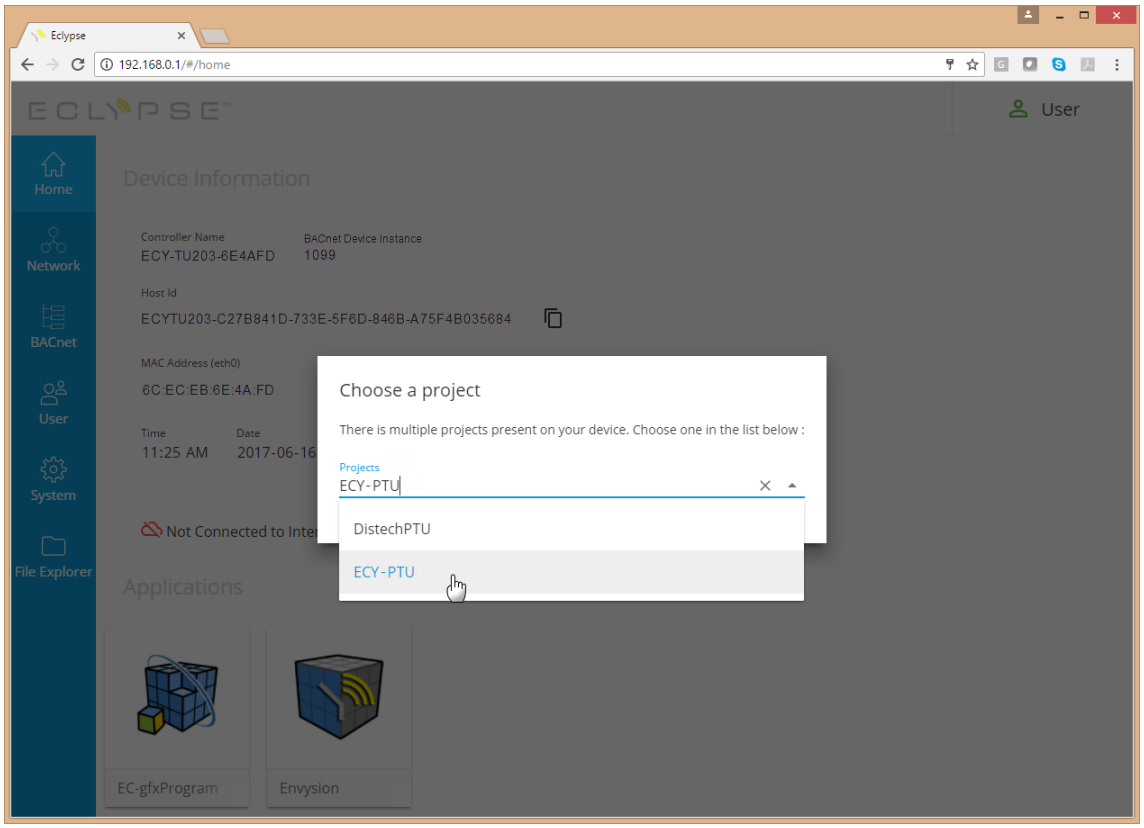


Figure 1: Choose your project when accessing the controller through the Web Interface.

Graphic Page

The ECY-PTU Preloaded Applications Graphic Page, similar to the figure below, opens once you enter the ENVYSION viewer and click the **Graphic** from the navigation menu on the left.

Figure 2: Main graphic page for the ECY-PTU ENVYSION viewer

From this screen, you are able to access values and/or overrides for certain parameters. Click directly on the parameter you wish to modify. For an explanation of these parameters, please refer to the Variables Chapter in this guide.

Configuration Page

From this screen, the ECY-PTU's Temperature Setpoints, EC-Smart-Vue Configuration, Discharge Temperature Lower Limits, Heating and Cooling Parameters, Optimum Start Parameters, Outside Air Dampers Parameters, and Fan and Equipment Delays can be set from the configuration group of tables in the **Configuration** page. This page can be easily accessed from the navigation menu located on the left.

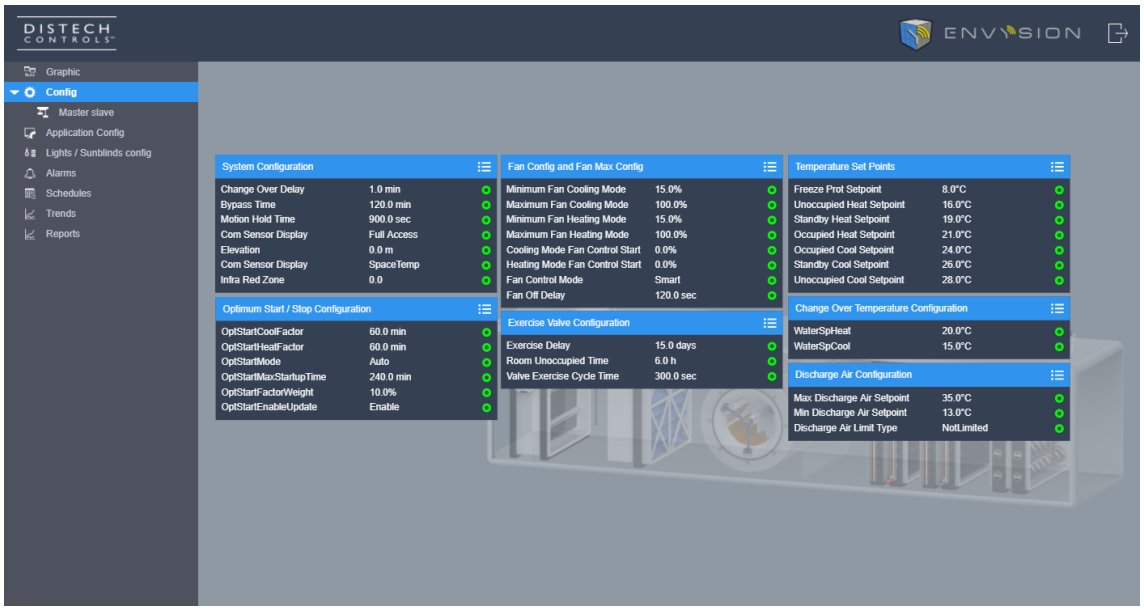


Figure 3: ECY-PTU ENVYSION Configuration Page.

To set a value, simply click on the parameter you wish to modify. For an explanation of these parameters, please refer to the Variables chapter in this guide.

Application Configuration Page

The ECY-PTU's preloaded applications can easily be configured from within the ECY-PTU Preloaded Applications Web interface. All the configuration parameters related to an ECY-PTU Inputs and Outputs, CO_2 Sensor Range, Sensor & Setpoint Offset Settings, System Type, Valves Types, and other miscellaneous settings are accessible from the **Application Config** page and are grouped into several tables. This page can be easily accessed from the navigation menu located on the left.

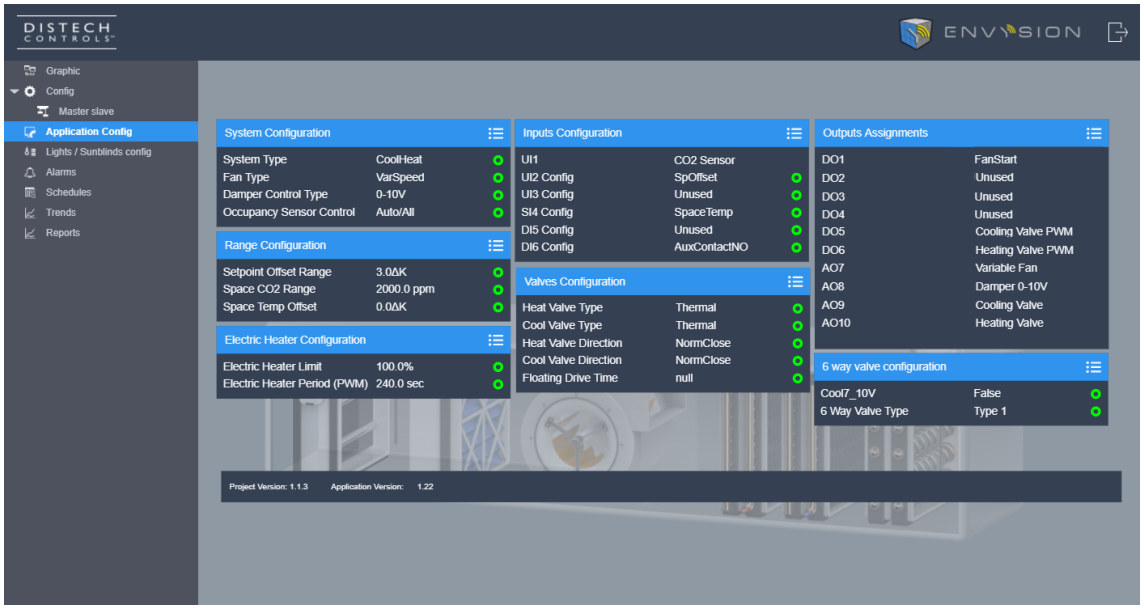


Figure 4: ECY-PTU ENVYSION Preloaded Application Configuration

To set a value, simply click on the parameter you wish to modify. For an explanation of these parameters, please refer to the Variables Chapter in this guide.

Variables

Hardware Inputs

UI1: CO2 Sensor

This input is used to connect a space or return CO2 sensor.

The variable SpaceCO2Range (AV29) can be used to configure the range of the CO2 sensor. The default value is 2000 ppm.

ID	Units	Valid Range	Default Value
AI1	Volts (V)	0.1 to 10 V	Null

UI2: UI2

This input is used to connect the Discharge Temperature, Return Temperature, Water Temperature or Setpoint Offset. It is configurable using UI2Config (MSV18) .

ID	Units	Valid Range	Default Value
AI2	Ohms (Ω)	0 to 55000 Ω	0 Ω

UI3: UI3

This variable is used to connect the window contact.

Note that reversing the window contact operation using UI3Config (MSV19) will not reverse this input. To display the status of the window contact, one should use the variable WindowContact (BV3).

ID	Units	Valid Range	Default Value
UI3	On / Off (Boolean)	On to Off	Off

SI4: SI4

This input is used to connect the Discharge Temperature, Return Temperature, Water Temperature or Space Temperature. It is configurable using SI4Config (MSV20).

ID	Units	Valid Range	Default Value
SI4	Degrees-Celsius (°C)	-10 to 50 °C	Null

DI5: DI5

This input is used to connect Auxiliary Contact, Change Over State (heating/cooling) or Condensation sensor. It is configurable via DI5Config (MSV21).

ID	Units	Valid Range	Default Value
DI5	On / Off (Boolean)	On to Off	Off

DI6: DI6

This input is used to connect Auxiliary Contact, Change Over State (heating/cooling) or Occupation sensor. It is configurable via DI6Config (MSV22) .

ID	Units	Valid Range	Default Value
DI6	On / Off (Boolean)	On to Off	Off

EC-Smart-Vue: Humidity display

This input is used to display the Allure EC-Smart-Vue humidity reading if an Allure EC-Smart-Vue equipped with a humidity option is connected to the system.

ID	Units	Valid Range	Default Value
AI5002	Percent Relative Humidity (% RH)	0 to 100 %RH	NaN

EC-Smart-Vue: Temperature display

This input is used to display the Allure EC-Smart-Vue temperature reading if an Allure EC-Smart-Vue is connected to the system.

ID	Units	Valid Range	Default Value
AI5001	Degrees-Celsius (°C)	0 to 50°C	NaN

EC-Smart-Vue: CO_2 display

This input is used to display the Allure EC-Smart-Vue CO_2 concentration reading if an Allure EC-Smart-Vue equipped with a CO_2 sensor is connected to the system.

ID	Units	Valid Range	Default Value
AI5003	ppm	0 to 2000 ppm	NaN

Hardware Outputs

DO1: FanSpeed1 / Fan Start

This output is used to control Fan Speed 1 or Fan Start based on the configuration of FanType (MSV25).

ID	Units	Valid Range	Default Value
DO1	Start / Stop	Start to Stop (Boolean)	Stop

DO2: FanSpeed2 / Damper

This output is used to control Fan Speed 2 only if FanType (MSV25) is set to 3-speed fan or a digital damper based of occupancy status only if FanType (MSV25) is set to VarSpeed and Damper (MSV32) is set to Digital.

ID	Units	Valid Range	Default Value
DO2	Start / Stop	Start to Stop (Boolean)	Stop

DO3: FanSpeed3

This output is used to control Fan Speed 3 only if FanType (MSV25) is set to 3-speed fan.

ID	Units	Valid Range	Default Value
DO3	Start / Stop	Start to Stop (Boolean)	Stop

DO4: ElectHeatCmd

This output is used to control the Electric Heater relay. Do NOT manually override this output to Active since the electric heater will not be linked to the fan start anymore.

ID	Units	Valid Range	Default Value
DO4	Start / Stop	Start to Stop (Boolean)	Stop

DO5: Valve DO5

This output is used to control the cooling valve or the open output of a floating valve (heating or cooling).

- When CoolValveType (MSV26) is set to either Thermal or On/Off, this output will control the cooling valve.
- When either CoolValveType (MSV26) or HeatValveType (MSV27) is set to Floating, this output is used to open the corresponding floating valve.

The normally closed / normally opened setting of the output can be changed using CoolValveConfig (BV14).

ID	Units	Valid Range	Default Value
DO5	Percent (PWM)	0 to 100%	0%

DO6: Valve DO6

This output is used to control the heating valve or the close output of a floating valve (heating or cooling).

- When HeatValveType (MSV27) is set to either Thermal or On/Off, this output will control the heating valve.
- When either CoolValveType (MSV26) or HeatValveType (MSV27) is set to Floating, this output is used to close the corresponding floating valve.

The normally closed / normally opened setting of the output can be changed using HeatValveConfig (BV13).

ID	Units	Valid Range	Default Value
DO6	Percent (PWM)	0 to 100%	0%

AO7: VarFanSpeed

This output is used to control the variable fan speed operation (ECM Motor) if FanType (MSV25) is set to Variable fan.

ID	Units	Valid Range	Default Value
AO7	Percent (%)	0 to 100%	0%

AO8: DamperAO

This output is used to control an analog damper. The type of signal (0-10V, 2-10V, or digital) can be configured using DamperCtrlType (MSV32).

ID	Units	Valid Range	Default Value
AO8	Percent (%)	0 to 100%	0%

AO9: Cooling Valve

This output is used to control the Cooling or Change-Over Valve operation.

This output is usually used to control a 0-10 valve actuator.

ID	Units	Valid Range	Default Value
AO9	Percent (%)	0 to 100%	0%

AO10: Heating Valve

This output is used to control the Heating Valve.

This output is usually used to control a 0-10V valve actuator.

ID	Units	Valid Range	Default Value
AO10	Percent (%)	0 to 100%	0%

Analog Values

SpaceTemp (AV1)

This variable is used to display the actual space temperature used by the controller.

This variable can be used for testing purposes by overriding the value using the BACnet priority array.

The value of this variable depends on the readings of the SpaceSensor (SI4), the EC-Smart-Vue, the EC-Smart-Comfort, the EC-Smart-Air, the EC-Remote, the Return Temperature and the EC-Multi-Sensor-MLT.

The priority order of this input is the following:

- SpaceTempSI4(AV6)
- EC-Smart-Vue, EC-Smart-Comfort/Air
- EC-Remote
- ReturnTemp(AV8)
- EC-Multi-Sensor

ID	Units	Valid Range	Default Value
Analog Value 1	Degrees-Celsius (°C)	-10 to 50 °C	-327°C

CoolingValveCtrl (AV2)

This variable is used to display the actual cooling signal of the cooling valve.

This variable can be used to override the cooling valve.

ID	Units	Valid Range	Default Value
Analog Value 2	Percent (%)	0 to 100%	N/A

HeatingValveCtrl (AV3)

This variable is used to display the actual heating signal of the heating valve.

This variable can be used to override the heating valve.

ID	Units	Valid Range	Default Value
Analog Value 3	Percent (%)	0 to 100%	N/A

SpaceCO2 (AV4)

This variable is used to display the actual space/return CO2 reading.

The value of this input is based on the reading of UI1, the EC-Smart-Vue-C or the EC-Smart-Air-C value.

The priority of this input is the following:

- UI1
- EC-Smart-Vue-C
- EC-Smart-Air-C

The valid range is between 0 ppm and SpaceCO2Range (AV29).

ID	Units	Valid Range	Default Value
Analog Value 4	ppm	0 to 2000ppm (default)	null

ElectHeatCtrl (AV5)

This variable is used to display the current electric heater load.
This variable can be used to override the electric heater.

ID	Units	Valid Range	Default Value
Analog Value 5	Percent (%)	0 to 100%	N/A

SpaceTempSI4 (AV6)

This variable is used to display the actual Space Temperature reading from SI4 Input.
This variable can be used to override the spaceTemp.
It is only used if SI4config(MSV20) is configured for SpaceTemp.

ID	Units	Valid Range	Default Value
Analog Value 6	Degrees-Celsius (°C)	-10 to 50 °C	-327°C

DischargeTemp (AV7)

This variable is used to display the actual Discharge Temperature from UI2 Input or SI3 Input.
This variable can be used to override the Discharge Temp.
It is only used if either UI2Config (MSV18) or SI3config (MSV19) is configured for DischargeTemp.

ID	Units	Valid Range	Default Value
Analog Value 7	Degrees-Celsius (°C)	N/A	-327°C

ReturnTemp (AV8)

This variable is used to display the actual Return Temp from UI2 Input or SI3 Input.
This variable can be used to override the Return Temp.
It is only used if either UI2Config (MSV18) or SI3config (MSV19) is configured for ReturnTemp.

ID	Units	Valid Range	Default Value
Analog Value 8	Degrees-Celsius (°C)	N/A	-327°C

WaterTemp (AV9)

This variable is used to display the actual Water Temp from UI2 Input or SI3 Input.
This variable can be used to override the water Temp.
It is only used if either UI2Config(MSV18) or SI3config(MSV19) is configured for WaterTemp.

ID	Units	Valid Range	Default Value
Analog Value 9	Degrees-Celsius (°C)	N/A	-327°C

SpOffsetUI2 (AV10)

This variable is used to display the actual Setpoint Offset from UI2 Input.
This variable can be used to override the Setpoint Offset UI2.
It is only used if UI2Config(MSV18) is configured for SpOffset.

ID	Units	Valid Range	Default Value
Analog Value 10	Degrees-Celsius (°C)	-5 to 5 °C	0°C

MidSetpoint (AV11)

This variable is used to display the average setpoint between the cooling and heating effective setpoint.

ID	Units	Valid Range	Default Value
Analog Value 11	Degrees-Celsius (°C)	N/A	N/A

OptStartCoolFactor (AV14)

This variable is used to configure the Optimum Start Cooling Factor.

ID	Units	Valid Range	Default Value
Analog Value 14	min	N/A	60 min

OptStartHeatFactor (AV15)

This variable is used to configure the Optimum Start Heating Factor.

ID	Units	Valid Range	Default Value
Analog Value 15	min	N/A	60 min

Send6WayValve (AV16)

This variable is used to send the 6wayvalve information for the Master/Slave Mode.

ID	Units	Valid Range	Default Value
Analog Value 16	N/A	N/A	0

OptStartMaxStartupTime (AV17)

This variable is used to configure the Optimum Start Maximum startup time.

ID	Units	Valid Range	Default Value
Analog Value 17	min	N/A	240 min

OptStartFactorWeight (AV18)

This variable is used to configure the optimum start factor weight.

ID	Units	Valid Range	Default Value
Analog Value 18	Percent	1 to 99%	10%

APARStartupDelay (AV19)

This variable is used to configure the delay before APAR starts up after the controller comes online.

ID	Units	Valid Range	Default Value
Analog Value 19	min	N/A	60 min

ModeActivDelay (AV20)

This variable is used to configure the delay after APARStartupDelay before the alarms may be activated.

ID	Units	Valid Range	Default Value
Analog Value 20	min	N/A	60 min

RuleActiveDelay (AV21)

This variable is used to configure the delay before APAR rules become active after APAR startup.

ID	Units	Valid Range	Default Value
Analog Value 21	Min	N/A	60 min

ActiveRules (AV22)

This variable is used to indicate the number of APAR rules actively in alarm.

ID	Units	Valid Range	Default Value
Analog Value 22	N/A	N/A	N/A

ElectHeatStatus (AV26)

This variable is used to display the electric heater status.

ID	Units	Valid Range	Default Value
Analog Value 26	Percent (%)	0 to 100%	0%

SpOffsetRange (AV27)

This variable is used to configure the setpoint offset range of either a remote control or the room sensor.

ID	Units	Valid Range	Default Value
Analog Value 27	Delta-degrees-Kelvin	0 to 10°K	3°K

SetPtOffset (AV28)

This variable is used to display the actual setpoint offset value.

ID	Units	Valid Range	Default Value
Analog Value 28	Delta-degrees-Kelvin	-10 to 10°K	0°K

SpaceCO2Range (AV29)

This variable is used to configure the range of the CO2 sensor connected to UI1.

ID	Units	Valid Range	Default Value
Analog Value 29	ppm	N/A	2000 ppm

SpaceTempOffset (AV30)

This variable is used to calibrate the temperature reading of the controller.

This value will be added to the temperature reading (Hardware input, EC-Smart-Vue, EC-Smart-Comfort, EC-Smart-Air, EC-Remote-T, EC-Multi-Sensor-MLT) to calculate the resulting space temperature (AV1).

ID	Units	Valid Range	Default Value
Analog Value 30	Delta-degrees-Kelvin	-5 to 5°K	0°K

FloatingDriveTime (AV31)

This variable is used to configure the drive time of the floating valve when either CoolValveType (MSV26) or HeatValveType (MSV27) is set to Floating.

ID	Units	Valid Range	Default Value
Analog Value 31	Seconds	N/A	95 seconds

UnoccOccDelay (AV32)

This variable is used to configure the delay required to change the OccupancyStatus from unoccupied to occupied when motion is detected while an unoccupied mode is received from OccupancyCmd.

The variable is used to prevent the HVAC system to be set to occupied when someone is detected during a short delay while in unoccupied mode. Lights and sunblinds are not affected by this delay.

ID	Units	Valid Range	Default Value
Analog Value 56	Seconds	N/A	600 seconds

EffectSp (AV33)

This variable is used to display the actual setpoint used by the control algorithm.

This value is based on the occupancy status (MSV14) and the actual cooling and heating setpoints (AV36 and AV37).

ID	Units	Valid Range	Default Value
Analog Value 33	Degrees-Celsius (°C)	N/A	N/A

SpaceHumidity (AV34)

This variable is used to display the actual space humidity used by the controller.

The value of this variable depends on the readings of the EC-Smart-Vue and the EC-Smart-Air.

ID	Units	Valid Range	Default Value
Analog Value 34	Percent Relative Humidity (% RH)	0 to 100%	0% RH

FreezeProtSp (AV35)

This variable is used to configure the freeze protection setpoint.

When the space temperature falls below this value, the system will be set for 100% heating, regardless of the other settings (Window Contact, Hvac Mode, Overrides).

ID	Units	Valid Range	Default Value
Analog Value 35	Degrees-Celsius (°C)	N/A	8 °C

ActCoolSp (AV36)

This variable is used to display the actual cooling setpoint used by the control algorithm.

This value is based on the occupancy status (MSV14) and the cooling setpoints (AV38 to AV40).

ID	Units	Valid Range	Default Value
Analog Value 36	Degrees-Celsius (°C)	N/A	N/A

ActHeatSp (AV37)

This variable is used to display the actual heating setpoint used by the control algorithm.

This value is based on the occupancy status (MSV14) and the heating setpoints(AV41 to AV43).

ID	Units	Valid Range	Default Value
Analog Value 37	Degrees-Celsius (°C)	N/A	N/A

UnoccCoolSp (AV38)

This variable is used to configure the cooling setpoint when the occupancy status (MSV14) is in unoccupied mode.

ID	Units	Valid Range	Default Value
Analog Value 38	Degrees-Celsius (°C)	N/A	28°C

StandbyCoolSp (AV39)

This variable is used to configure the cooling setpoint when the occupancy status (MSV14) is in standby mode.

ID	Units	Valid Range	Default Value
Analog Value 39	Degrees-Celsius (°C)	N/A	26°C

OccCoolSp (AV40)

This variable is used to configure the cooling setpoint when the occupancy status (MSV14) is in occupied mode.

ID	Units	Valid Range	Default Value
Analog Value 40	Degrees-Celsius (°C)	N/A	24°C

OccHeatSp (AV41)

This variable is used to configure the heating setpoint when the occupancy status (MSV14) is in occupied mode.

ID	Units	Valid Range	Default Value
Analog Value 41	Degrees-Celsius (°C)	N/A	21°C

StandbyHeatSp (AV42)

This variable is used to configure the heating setpoint when the occupancy status (MSV14) is in standby mode.

ID	Units	Valid Range	Default Value
Analog Value 42	Degrees-Celsius (°C)	N/A	19°C

UnoccHeatSp (AV43)

This variable is used to configure the heating setpoint when the occupancy status (MSV14) is in unoccupied mode.

ID	Units	Valid Range	Default Value
Analog Value 43	Degrees-Celsius (°C)	N/A	17°C

TerminalLoad (AV44)

This variable is used to display the actual terminal load of the room.

The value varies between -100% (heating load) and 100% (cooling load).

This variable is used by the HVAC controller to control the fan, the valves, the electric heater and the damper.

ID	Units	Valid Range	Default Value
Analog Value 44	Percent (%)	-100 to 100%	N/A

SensorSleepTime (AV45)

This variable is used to configure the sensor sleep time of the EC-Smart-Comfort sensor.

If set to 0, the sensor sleep time is disabled.

ID	Units	Valid Range	Default Value
Analog Value 45	Seconds	N/A	0 seconds

ChgOverDelay (AV46)

This variable is used to configure the minimum delay between heating/cooling.

ID	Units	Valid Range	Default Value
Analog Value 46	Minutes	N/A	1 minute

HoldTime (AV47)

This variable is used to configure the delay after the last occupancy detection before considering the room unoccupied.

When the OccupancyCmd (MSV2) is set to unoccupied, this value is divided by 3.

ID	Units	Valid Range	Default Value
Analog Value 47	Seconds	N/A	900 seconds

ByPassTime (AV48)

This variable is used to configure the bypass delay when the room occupancy is overridden either via the EC-Sensor, the EC-Smart-Vue or the EC-Smart-Comfort.

ID	Units	Valid Range	Default Value
Analog Value 48	minutes	N/A	120 minutes

WaterSpHeat (AV52)

This variable is used to configure the water temperature above which 2 pipe change-over systems are considered to be in heating mode.

ID	Units	Valid Range	Default Value
Analog Value 52	Degrees-Celsius (°C)	N/A	20 °C

WaterSpCool (AV53)

This variable is used to configure the water temperature below which 2 pipes change-over systems are considered to be in cooling mode.

ID	Units	Valid Range	Default Value
Analog Value 53	Degrees-Celsius (°C)	N/A	15 °C

MaxDischAirSp (AV54)

This variable is used to configure Maximum Discharge Temperature Setpoint Limitation.

ID	Units	Valid Range	Default Value
Analog Value 54	Degrees-Celsius (°C)	N/A	35 °C

MinDischAirSp (AV55)

This variable is used to configure Minimum Discharge Temperature Setpoint Limitation.

ID	Units	Valid Range	Default Value
Analog Value 55	Degrees-Celsius (°C)	N/A	13 °C

BlindTransCmd (AV56)

This variable is used to configure the Global Blind Translation Command.

ID	Units	Valid Range	Default Value
Analog Value 56	Percent (%)	0 to 100%	100%

BlindRotCmd (AV57)

This variable is used to configure the Global Blind Rotation Command.

ID	Units	Valid Range	Default Value
Analog Value 57	Degrees (deg)	0 to 360 deg	360 deg

AuxHeatEnable (AV58)

This variable is used to disable auxiliary heat operation.

This variable is typically sent from a system supervisor panel. For example, during peak electrical demand periods, electric heat operation could be disabled. This input can be used for simple enable/disable functions, or to enable a portion of the unit's auxiliary heat capacity.

Values less than 100% are used to limit the electric heater operation to the specified level.

ID	Units	Valid Range	Default Value
Analog Value 58	Percent (%)	0 to 100%	100%

ElectheatPeriod (AV59)

This variable is used to configure the PWM electric heater period.

ID	Units	Valid Range	Default Value
Analog Value 59	Seconds	60 to 300 s	240 seconds

FanOffDelay (AV60)

This variable is used to configure the delay during which the fan will be set to minimum speed after a stop request is received.

ID	Units	Valid Range	Default Value
Analog Value 60	Seconds	N/A	120 seconds

FanCoolLow (AV61)

This variable is used to configure the cooling load under which the fan will be at minimum speed.

ID	Units	Valid Range	Default Value
Analog Value 61	Percent (%)	0 to 100%	0%

FanHeatLow (AV62)

This variable is used to configure the heating load under which the fan will be at minimum speed.

ID	Units	Valid Range	Default Value
Analog Value 62	Percent (%)	0 to 100%	0%

CoolMaxFan (AV63)

This variable is used to configure the maximum fan speed in cooling mode.

ID	Units	Valid Range	Default Value
Analog Value 63	Percent (%)	0 to 100%	100%

HeatMaxFan (AV64)

This variable is used to configure the maximum fan speed in heating mode.

ID	Units	Valid Range	Default Value
Analog Value 64	Percent (%)	0 to 100%	100%

CoolMinFan (AV65)

This variable is used to configure the minimum fan speed in cooling mode.

ID	Units	Valid Range	Default Value
Analog Value 65	Percent (%)	0 to 100%	15%

HeatMinFan (AV66)

This variable is used to configure the minimum fan speed in heating mode.

ID	Units	Valid Range	Default Value
Analog Value 66	Percent (%)	0 to 100%	15%

DamperMaxPos (AV67)

This variable is used to configure the maximum damper position.

When not in unoccupied mode, this value will be used to control the damper between DamperMinPos (AV68) and DamperMaxPos(AV67) based on the CO2 and temperature requests.

ID	Units	Valid Range	Default Value
Analog Value 67	Percent (%)	0 to 100%	100%

DamperMinPos (AV68)

This variable is used to configure the minimum damper position.

When not in unoccupied mode, this value will be used to control the damper between DamperMinPos (AV68) and DamperMaxPos(AV67) based on the CO2 and temperature requests.

When in unoccupied mode, this value will be considered as 0%.

ID	Units	Valid Range	Default Value
Analog Value 68	Percent (%)	0 to 100%	10%

VlvExerciseDelay (AV69)

This variable is used to configure the delay before enabling the valve exercise when the valve control is 0% for a consecutive time longer than this delay.

ID	Units	Valid Range	Default Value
Analog Value 69	day	N/A	15 day

VlvExerciseUnoccDelay (AV70)

This variable is used to configure the delay before enabling the valve exercise in the unoccupied occupancy mode with the valve control equal to 0%.

ID	Units	Valid Range	Default Value
Analog Value 70	hours	N/A	6 h

Light1Room (AV71)

This variable is used to configure the room number for Light 1.

ID	Units	Valid Range	Default Value
Analog Value 71	N/A	N/A	0

Light2Room (AV72)

This variable is used to configure the room umber for Light 2.

ID	Units	Valid Range	Default Value
Analog Value 71	N/A	N/A	0

Light3Room (AV73)

This variable is used to configure the room number for Light 3.

ID	Units	Valid Range	Default Value
Analog Value 72	N/A	N/A	0

Light4Room (AV74)

This variable is used to configure the room umber for Light 4.

ID	Units	Valid Range	Default Value
Analog Value 74	N/A	N/A	0

Sblnd1Room (AV75)

This variable is used to configure the room number for Blind 1.

ID	Units	Valid Range	Default Value
Analog Value 75	N/A	N/A	0

Sblnd2Room (AV76)

This variable is used to configure the room umber for Blind 2.

ID	Units	Valid Range	Default Value
Analog Value 76	N/A	N/A	0

Sblnd3Room (AV77)

This variable is used to configure the room number for Blind 3.

ID	Units	Valid Range	Default Value
Analog Value 77	N/A	N/A	0

Sblnd4Room (AV78)

This variable is used to configure the room number for Blind 4.

ID	Units	Valid Range	Default Value
Analog Value 78	N/A	N/A	0

VlvExerciseCycle (AV79)

This variable is used to configure the valve exercise cycle time.

ID	Units	Valid Range	Default Value
Analog Value 79	Seconds	N/A	300s

Elevation (AV80)

This variable must be set for any elevation above 500ft (152m) to obtain the highest elevation compensation accuracy for the EC-Smart-Vue and EC-Smart-Air CO2 reading: the sensor will automatically compensate CO_2 readings for a number of factors including the current room temperature and the elevation.

ID	Units	Valid Range	Default Value
Analog Value 80	Meters	N/A	0 m

CtrlRoom (AV81)

This variable is used to configure the room number of the associated HVAC controller.

The controller will use the information from the RemoteCtrlInfo, the master/slave information received or sent over the local MS/TP network that are associated with the same room number to operate the HVAC control loop.

ID	Units	Valid Range	Default Value
Analog Value 81	N/A	0 to 127	0

UnoccTranslation (AV82)

This variable is used to configure the translation position of the sunblind in unoccupied mode.

ID	Units	Valid Range	Default Value
Analog Value 82	percent	N/A	100%

OccTranslation (AV83)

This variable is used to configure the translation position of the sunblind in occupied mode.

ID	Units	Valid Range	Default Value
Analog Value 83	percent	0 to 100%	0%

UnoccRotation (AV84)

This variable is used to configure the rotation position of the sunblind in unoccupied mode.

ID	Units	Valid Range	Default Value
Analog Value 84	degrees	N/A	-90 deg

OccRotation (AV85)

This variable is used to configure the rotation position of the sunblind in occupied mode.

ID	Units	Valid Range	Default Value
Analog Value 85	degrees	-90 to 90 deg	0 deg

InfraRedZone (AV86)

This variable is used to configure the infrared zone of the EC-Remote associated with the EC-Multi-Sensor.

A value of 0 will accept any zones.

ID	Units	Valid Range	Default Value
Analog Value 86	N/A	0 to 12	0

BlindCtrlInfo (AV87)

This variable is used to send the Blind control information over the local MS/TP network.

All sunblinds on the network with the same CTRLRoom number as the one sent over this variable will take the information into account.

The sent information combines CtrlRoom(AV81), reset blind override,Translation value and Rotation value.

The information is sent via binary encoding using the following formula:

AV87 = AV100 + (RestOvr*128) + (Translation * 256) + ((Ration + 90) * 32768)

ID	Units	Valid Range	Default Value
Analog Value 87	N/A	N/A	N/A

LightCtrlInfo (AV88)

This variable is used to send the light control information over the local MS/TP network.

All lights on the network with the same CTRLRoom number as the one sent over this variable will take the information into account.

The sent information combines CtrlRoom(AV81), reset light override, window value and corridor value.

The information is sent via binary encoding using the following formula:

AV88 = AV100 + (RestOvr*128) + (window * 256) + (corridor* 32768)

ID	Units	Valid Range	Default Value
Analog Value 88	N/A	N/A	N/A

RemoteCtrlInfo (AV89)

This variable is used to send the EC-Remote control information over the local MS/TP network.

All the HVAC controllers, having the same CtrlRoom number than the one sent over this variable will take this remote control information into account..

The sent information combines CtrlRoom(AV81), InformationType(SpOffset/FanSpeed/Light/Blind/Occupancy), ValueSent (from 0 to 7), and MS1.GroupCtrl(MSV15).

The information is sent via binary encoding using the following formula:

AV89 = AV100 + (InformationType*128) + (ValueSent * 512)

ID	Units	Valid Range	Default Value
Analog Value 89	N/A	N/A	N/A

MasterInfo (AV90)

This variable is used to send the Master/Slave Master information over the local MS/TP network.

All the HVAC controllers, being configured as slave controllers via the ControlMode (MSV50) variable will take this information into account.

Only the controllers configured as master controllers via the ControlMode (MSV50) variable will send this information on the network.

The sent information combines CtrlRoom(AV81), RoomOccupancy (Occ/Unocc), WindowStatus (Open/Close), FanSpeedCmd (Off/Low/Med/High/Auto), HvacMode (Auto/Heat/ Cool/Off), SpOffset (from -5°C to 5°C), change-over status and condensation sensor status. The information is sent via binary encoding using the following formula:

AV90 = AV81 + (RoomOccupancy*128) + (WindowStatus * 256) + (FanSpeed * 512) + (HvacMode * 4096) + (SpOffset * 16384) + (ChgOverState * 2097152) + (CondSensorState * 4194304)

ID	Units	Valid Range	Default Value
Analog Value 90	N/A	N/A	N/A

SlaveInfo (AV91)

This variable is used to send the Master/Slave Slave information over the local MS/TP network.

All HVAC controllers, being configured as master controllers via the ControlMode (MSV50) variable will take this information into account.

Only the controllers configured as slave controllers via the ControlMode (MSV50) variable will send this information on the network.

The sent information combines CtrlRoom(AV81), PresenceDetection (Occ/Unocc), WindowContact (Open/Close), and HvacModeRequest (Auto/Heat/ Cool/Off).

The information is sent via binary encoding using the following formula:

AV91 = AV81 + (MotionDetection*128) + (WindowSContact * 256) + (HvacModeRequest * 4096)

ID	Units	Valid Range	Default Value
Analog Value 91	N/A	N/A	N/A

SendSpaceTempCO2 (AV92)

This variable is used to send the combined value of the space temperature and space CO2 sensor of a master controller to slave controllers within the same CtrlRoom(AV81).

This value is typically used to transmit this information to slave devices in the room that are not equipped with a space temperature sensor or a CO2 sensor.

All the slave controllers receiving this value will automatically take the CO2 value into account if they do not have a locally connected CO2 sensor. The reception of the space temperature can be configured using the SpaceTempCtrl (MSV28) variable.

The sent information is a combination of CtrlRoom(AV81), LocalSpace Temperature and SpaceCO2(AV7).

The information is sent via binary encoding using the following formula:

AV81 = AV100 + (LocalSpaceTemp*10*128) + (AV7/10 * 65536)

ID	Units	Valid Range	Default Value
Analog Value 92	N/A	N/A	N/A

LuxSetpoint (AV93)

This variable is used to configure the lux setpoint for automatic mode.

ID	Units	Valid Range	Default Value
Analog Value 93	lux	N/A	300 lux

ReflexFactor (AV94)

This variable is used to configure the EC-Multi-Sensor reflexion factor.

ID	Units	Valid Range	Default Value
Analog Value 94	N/A	N/A	50

LightPower (AV95)

This variable is used to configure the power of lights.

ID	Units	Valid Range	Default Value
Analog Value 95	lux	N/A	300 lux

MinLightCmd (AV96)

This variable is used to configure the minimum of lights command.

ID	Units	Valid Range	Default Value
Analog Value 96	percent	N/A	10%

LightOffset (AV97)

This variable is used to configure the light offset measurement.

ID	Units	Valid Range	Default Value
Analog Value 97	lux	N/A	0 lux

LuxRampUpTime (AV98)

This variable is used to configure the time of the ramp up for lux measurement.

ID	Units	Valid Range	Default Value
Analog Value 98	seconds	N/A	60 s

LuxRampDownTime (AV99)

This variable is used to configure the time of the ramp down for lux measurement.

ID	Units	Valid Range	Default Value
Analog Value 99	seconds	N/A	60 s

AppVersion (AV100)

This variable is used to display the current version number of the application.

ID	Units	Valid Range	Default Value
Analog Value 100	N/A	N/A	0

6WayValveRoom1 (AV101)

This variable is used to configure room one for the Master/Slave 6WayValve operation mode (see Send6WayValve for more information)

ID	Units	Valid Range	Default Value
Analog Value 101	N/A	N/A	0

6WayValveRoom2 (AV102)

This variable is used to configure room two for the Master/Slave 6WayValve operation mode (see Send6WayValve for more information)

ID	Units	Valid Range	Default Value
Analog Value 102	N/A	N/A	0

SendAutoLightBlind (AV103)

This variable is used to send automatic master configuration for the light and blind.

ID	Units	Valid Range	Default Value
Analog Value 103	N/A	N/A	N/A

SimulateLuxLevel (AV104)

This variable is used to set the effective Lux Level after calculation of lights command.

ID	Units	Valid Range	Default Value
Analog Value 104	Lux	N/A	N/A

LightCmdDelay (AV105)

This variable is used to determine the delay between 2 commands of lights.

ID	Units	Valid Range	Default Value
Analog Value 105	Seconds	N/A	10 s

LightCmdUpdate (AV106)

This variable is used to send an update for the lighting command.

The output value will only update if the value of the difference of the new command is greater than this percentage.

ID	Units	Valid Range	Default Value
Analog Value 106	percent	N/A	5%

LightCmdFilter (AV107)

This variable is used to set the filter for Light Cmd.

ID	Units	Valid Range	Default Value
Analog Value 107	N/A	N/A	0.7

Binary Values

WindowStatus (BV1)

This variable is used to display the actual window contact status used by the controller.

This variable can be used for testing purposes by overriding the values using the BACnet priority array.

When in Master/Slave mode, this variable reflects the WindowStatus of the complete room, if any of the Window Contact of the open space is Open, this value will be set to Open.

ID	Units	Valid Range	Default Value
Binary Value 1	Open/Close	Open to Close	N/A

CondSensorSt (BV2)

This variable is used to display the actual condensation sensor status used by the controller.

This variable can be used for testing purposes by overriding the value using the BACnet priority array.

This value is calculated based on the condensation sensor input. If the condensation sensor input is in alarm, this variable is automatically set to Alarm. On a return to normal of the condensation input, this value will remain in Alarm for 600 sec. While this variable is in Alarm, the cooling valve closes.

It the local hardwired input is not configured and the controller is configured as a slave controller, this value will be received from the master controller.

ID	Units	Valid Range	Default Value
Binary Value 2	Alarm/Normal	Alarm to Normal	N/A

WindowContact (BV3)

This variable is used to display the actual window contact hardware input according to the selected configuration using DI4Config (MSV20).

ID	Units	Valid Range	Default Value
Binary Value 3	Open/close	Open to Close	Close

AuxContact (BV4)

This variable is used to display the actual Auxiliary contact hardware input status according to the selected configuration of either DI5Config (MSV21) or DI6config (MSV22).

ID	Units	Valid Range	Default Value
Binary Value 4	On/Off	On to Off	Off

ChgOverSt (BV5)

This variable is used to display the current change over status.

This variable is used only when the system is configured for either ChgOver or ChgOverElectHeat using the SystemType(MSV24) configuration value.

This value will reflect that actual status of the change-over using the following priority; DI5Config(MSV21) or DI6Config(MSV22) is configured for change-over input, UI2Config(MSV18) or SI4Config(MSV20) is configured for water temp or a value is received using via NetChgOver (BV18).

If none of these values are valid and the controller is a slave controller, the value will be received from the master controller automatically.

ID	Units	Valid Range	Default Value
Binary Value 5	Heat/Cool	Heat to Cool	Cool

MS1.Occupancy (BV11)

This variable is used to display the occupancy mode of the EC-Remote, the EC-Smart-Vue or the EC-Sensor.

Setting this variable to Occupied or Unoccupied from the BACnet network will have the same effect as if the occupancy buttons of one of these room sensors was pressed.

ID	Units	Valid Range	Default Value
Binary Value 11	Occupied/Unoccupied	Occupied/Unoccupied	Unoccupied

RoomOccupancy (BV12)

This variable is used to display the actual occupancy of the room.

The room occupancy is calculated using the MotionSensor(MSV5) variable, the MS1.Occupancy(BV1) variable and the Master/Slave information.

On reception of an unoccupied command by the OccupancyCmd(MSV2) variable, the RoomOccupany is automatically set to unoccupied if the variable EnableRoomUnocc(BV16) is set to Yes.

If the MotionSensor(MSV5) is equal to unused and the system is set to local control (See ControlMode MSV50), the RoomOccupancy will automatically be set to occupied when the OccupancyCmd(MSV2) is occupied and set to unoccupied for all the other states of OccupancyCmd.

ID	Units	Valid Range	Default Value
Binary Value 12	Occupied/Unoccupied	Occupied/Unoccupied	Unoccupied

HeatValveConfig (BV13)

This variable is used to configure the operating mode of the heating valve.

ID	Units	Valid Range	Default Value
Binary Value 13	NormOpen/NormClose	NormOpen/NormClose	NormClose

CoolValveConfig (BV14)

ID	Units	Valid Range	Default Value
Binary Value 14	NormOpen/NormClose	NormOpen/NormClose	NormClose

EnableRoomUnocc (BV16)

This variable is used to configure the behavior of RoomOccupancy when the OccupancyCmd(MVS2) is set to unoccupied.

When this variable is set to Yes, the RoomOccupancy (BV12), will be set to Unoccupied on the reception of an unoccupied command from OccupancyCmd (MSV2).

ID	Units	Valid Range	Default Value
Binary Value 16	Yes/No	Yes/No	Yes

ECSmartComfortExt (BV17)

This variable is used to configure the first extension (EC-Smart-Light or EC-Smart-Blind) connected to the EC-Smart-Comfort/Air

ID	Units	Valid Range	Default Value
Binary Value 17	Light/Blind	Light/Blind	Light

NetChgOver (BV18)

This variable is used to receive the change-over status from the BACnet network.

This information will be used by ChgOverStatus (BV4) to calculate the final change-over. After a power failure, this variable will keep the last value.

ID	Units	Valid Range	Default Value
Binary Value 18	Heat/Cool	Heat/Cool	Cool

ComSensorUnits (BV19)

This variable is used to select the units for the Allure EC-Smart-Vue sensor.

ID	Units	Valid Range	Default Value
Binary Value 19	deg.C / deg.F	deg.C / deg.F	deg.C

Cool7_10V (BV20)

This variable is used to reverse the direction of the 6 way valve. By default, the cooling mode is between 2-5V and heating mode between 7-10V.

ID	Units	Valid Range	Default Value
Binary Value 20	TRUE / FALSE	TRUE / FALSE	FALSE

6WayValveType (BV21)

This variable is used to select the 6 way valve Manufacturer between BELIMO (Type 1) and Giacomini (Type 2).

ID	Units	Valid Range	Default Value
Binary Value 21	Type2 / Type1	Type2 / Type1	Type1

EnableAPARRules (BV26)

This variable is used to enable or disable APAR rules.

ID	Units	Valid Range	Default Value
Binary Value 26	TRUE / FALSE	TRUE / FALSE	TRUE

6WayValveMaster (BV27)

This variable is used to define whether this controller sends information as the master to the slave 6-way valve.

ID	Units	Valid Range	Default Value
Binary Value 27	Master / Local	Master / Local	Local

CtrlGroupLight1 (BV31)

This variable is used to select the control type (window or corridor) of Light 1.

ID	Units	Valid Range	Default Value
Binary Value 31	Window / Corridor	Window / Corridor	Window

CtrlGroupLight2 (BV32)

This variable is used to select the control type (window or corridor) of Light 2.

ID	Units	Valid Range	Default Value
Binary Value 32	Window / Corridor	Window / Corridor	Window

CtrlGroupLight3 (BV33)

This variable is used to select the control type (window or corridor) of Light 3.

ID	Units	Valid Range	Default Value
Binary Value 33	Window / Corridor	Window / Corridor	Window

CtrlGroupLight4 (BV34)

This variable is used to select the control type (window or corridor) of Light 4.

ID	Units	Valid Range	Default Value
Binary Value 34	Window / Corridor	Window / Corridor	Window

LightType1 (BV35)

This variable is used to select the type (Dimming or On/Off) of Light 1.

ID	Units	Valid Range	Default Value
Binary Value 35	Dimming/OnOff	Dimming/OnOff	Dimming

LightType2 (BV36)

This variable is used to select the type (Dimming or On/Off) of Light 2.

ID	Units	Valid Range	Default Value
Binary Value 36	Dimming/OnOff	Dimming/OnOff	Dimming

LightType3 (BV37)

This variable is used to select the type (Dimming or On/Off) of Light 3.

ID	Units	Valid Range	Default Value
Binary Value 37	Dimming/OnOff	Dimming/OnOff	Dimming

LightType4 (BV38)

This variable is used to select the type (Dimming or On/Off) of Light 4.

ID	Units	Valid Range	Default Value
Binary Value 38	Dimming/OnOff	Dimming/OnOff	Dimming

LightCtrlMode (BV39)

This variable is used to select if the controller is in Master or Local mode for Lights management. This variable is automatically set by the controller.

ID	Units	Valid Range	Default Value
Binary Value 39	Local/Master	Local/Master	Local

BlindCtrlMode (BV40)

This variable is used to select if the controller is in Master or Local mode for Blinds management. This variable is automatically set by the controller.

ID	Units	Valid Range	Default Value
Binary Value 40	Local/Master	Local/Master	Local

BlindType1 (BV41)

This variable is used to select type (Interior or exterior) of Blind 1. For information, only exterior blinds use wind condition.

ID	Units	Valid Range	Default Value
Binary Value 41	Interior/Exterior	Interior/Exterior	Exterior

BlindType2 (BV42)

This variable is used to select type (Interior or exterior) of Blind 2. For information, only exterior blinds use wind condition.

ID	Units	Valid Range	Default Value
Binary Value 42	Interior/Exterior	Interior/Exterior	Exterior

BlindType3 (BV43)

This variable is used to select type (Interior or exterior) of Blind 3. For information, only exterior blinds use wind condition.

ID	Units	Valid Range	Default Value
Binary Value 43	Interior/Exterior	Interior/Exterior	Exterior

BlindType4 (BV44)

This variable is used to select type (Interior or exterior) of Blind 4. For information, only exterior blinds use wind condition.

ID	Units	Valid Range	Default Value
Binary Value 44	Interior/Exterior	Interior/Exterior	Exterior

Multi State Values

HvacModeCmd (MSV1)

This variable is used to coordinate the HVAC controller with the BMS system.
If the system is in another mode than Auto, the HVAC control loop will be forced into this mode.

ID	Enumeration	Default Value
Multi State Value 1	1 = Auto (Mode determined by the unit) 2 = Heat (Use heat setpoints) 3 = Cool (Use cool setpoints) 4 = Off (No unit operation allowed)	Auto

OccupancyCmd (MSV2)

This variable is used to receive the occupancy information from the BMS system.
This input is used in conjunction with the motion detection (MSV5) to determine the effective occupancy mode. Refer to the OccupancyStatus (MSV14) for more information.

ID	Enumeration	Default Value
Multi State Value 2	1 = Occupied: The HVAC controller should operate in the occupied mode 2 = Unoccupied: The HVAC controller should operate in the unoccupied mode 3 = Bypass: The HVAC controller should operate in the occupied mode 4 = Standby: The HVAC Controller should operate in the standby mode	Occupied

FanSpeedCmd (MSV3)

This variable is used to control the operating mode of the Fan Speed.
If this variable is set to Auto, the fan will be controlled based on the control algorithm.

ID	Enumeration	Default Value
Multi State Value 3	1 = Auto: The Fan is controlled based on the control loop 2 = Off: The Fan is off 3 = Low: The fan is set to FanSpeed1 when configured for 3 speed fan, when configured for variable speed, the Fan is set to CoolMinFan or HeatMinFan depending on HvacModeStatus(MSV11). 4 = Med: The fan is set to FanSpeed2 when configured for 3 speed fan, when configured for variable speed, the Fan is set to the average between CoolMinFan and CoolMaxFan or HeatMinFan and HeatMaxFan depending on HvacModeStatus(MSV11). 5 = High: The fan is set to FanSpeed3 when configured for 3 speed fan, when configured for variable speed, the Fan is set to CoolMaxFan or HeatMaxFan depending on HvacModeStatus(MSV11).	Auto

OptStartMode (MSV4)

This variable is used to configure the Optimum start mode.

ID	Enumeration	Default Value
Multi State Value 4	1 = Auto: Optimum start stop run for cooling and heating mode 2 = HeatOnly : Optimum start stop run for heating mode 3 = CoolOnly : Optimum start stop run for cooling mode 4 = Disable : Optimum start is disable.	Auto

MotionSensor (MSV5)

This variable is used to display the current motion sensor status.

This variable is controlled based on ConfigOccSensor(MSV23). This variable can also be used to set the motion sensor status from the BACnet network.

To override local control, this variable priority must be set lower than 14.

ID	Enumeration	Default Value
Multi State Value 5	1 = Occupied: Motion is detected from the configured sensor. 2 = Unoccupied: Motion is not detected from the configured sensor. 3 = Unused: No motion sensor configured.	Unused

ChangeOverInput (MSV6)

This variable is used to display the change over hardware input status according to the selected configuration via DI5Config(MSV21) or DI6Config(MSV22)

ID	Enumeration	Default Value
Multi State Value 6	1 = Unused: No change-over input configured. 2 = Heat: The change-over input is in heating mode. 3 = Cool: The change-over input is in cooling mode.	Unused

RulesNumber (MSV8)

This variable is used to display displays active rules every 5 seconds.

ID	Enumeration	Default Value
Multi State Value 6	1 = Heat_DischargeTempLowerThanSpaceTemp 2 = HeatValveSaturedFullyOpen 3 = HeatValveFullyOpen 4 = Cool_DischargeTempHigherThanSpaceTemp 5 = CoolValveStaturedFullyOpen 6 = CoolValveFullyOpen 7 = CoolVlvAndHeatVlvOpened 8 = TempDeltaTooBig 9 = TooManyRulesActPerHour 10 = None	None

HvacModeStatus (MSV11)

This variable is used to display the actual HVAC mode status of the HVAC controller.

The value of this variable is calculated based on the value of HvacModeCmd (MSV1), TerminalLoad(AV44), and WindowStatus(BV1).

- If HvacModeCmd is not Auto, HvacModeStatus will be forced into this mode.
- If a WindowStatus is open, HvacModeStatus will be set to Off. While the system is Off, if the temperature drops below the FreezeProtSp(AV35), the HvacModeStatus will be set to Heat and all the heat output will be turned on at 100%.
- If HvacModeCmd is set to Auto, the HvacModeStatus will be based on the terminal load. When the terminal load is greather than 0, the system is set to Cool, when the terminal load is lower than 0, the system is set to Heat.

ID	Enumeration	Default Value
Multi State Value 11	1 = Auto (mode determined by unit) 2 = Heat (use heat setpoints) 3 = Mrng_Wrmup (use occupied heat setpoint) 4 = Cool (use cool setpoints) 5 = Night_Purge 6 = Pre_Cool (use occupied cool setpoint) 7 = Off (no unit operation allowed)	Auto

MS1.FanSpeed (MSV13)

This variable is used to display the actual fan speed information received by either the EC-Remote control, the EC-Smart-Vue or the EC-Smart-Comfort.

Setting this variable from the BACnet network will have the same effect as if the FanSpeed button of the EC-Remote, the EC-Smart-Vue or the EC-Smart-Comfort was used with this controller.

This variable is used within the controller to set the FanSpeedCmd(MSV3).

ID	Enumeration	Default Value
Multi State Value 13	1 = Auto: The Fan is controlled based on the control loop 2 = Off: The Fan is off 3 = Low: The fan is set to FanSpeed1 when configured for 3 speed fan, when configured for variable speed, the Fan is set to CoolMinFan or HeatMinFan depending on HvacModeStatus(MSV11). 4 = Med: The fan is set to FanSpeed2 when configured for 3 speed fan, when configured for variable speed, the Fan is set to the average between CoolMinFan and CoolMaxFan or HeatMinFan and HeatMaxFan depending on HvacModeStatus(MSV11). 5 = High: The fan is set to FanSpeed3 when configured for 3 speed fan, when configured for variable speed, the Fan is set to CoolMaxFan or HeatMaxFan depending on HvacModeStatus(MSV11).	Auto

OccupancyStatus (MSV14)

This variable is used to display the actual occupancy status of the HVAC controller.

The OccupancyStatus is based on the RoomOccupancy (BV12) and the OccupancyCmd (MSV2). The RoomOccupancy is managed by the Master/Slave operation, the presence detection and also the occupancy function of the EC-Remote, the EC-Smart-Vue or the EC-Sensor.

The following table details the value of OccupancyStatus based on the different operating values.

ID	Enumeration	Default Value
Multi State Value 14	1 = Occupied: The hvac controller should operate in the occupied mode 2 = Unoccupied: The hvac controller should operate in the unoccupied mode 3 = Bypass: The hvac controller should operate in the occupied mode 4 = Standby: The Space Comfort Controller should operate in the standby mode	Occupied

EcoVue (MSV15)

This variable is used to display the ECO-Vue value of the system. The more energy efficient are the end-user settings, the more leaves are displayed on the ECO-Vue.

ID	Enumeration	Default Value
Multi State Value 15	1 = 1 Leaf: Low Energy Efficiency 2 = 2 Leaves: Medium Energy Efficiency 3 = 3 Leaves: High Energy Efficiency 4 = 4 Leaves: Highest Energy Efficiency	N/A

FanSpeedSt (MSV16)

This variable is used to display the actual fan speed status of the system.

ID	Enumeration	Default Value
Multi State Value 16	1 = Off: The Fan is off 2 = Low: The fan is set at FanSpeed1 if configured for 3 speed fan, if configured for variable speed, the Fan is set to CoolMinFan or HeatMinFan depending on HvacModeStatus(MSV11). 3 = Med: The fan is set at FanSpeed2 if configured for 3 speed fan, if configured for variable speed, the Fan is set to the average between CoolMinFan and CoolMaxFan or HeatMinFan and HeatMaxFan depending on HvacModeStatus(MSV11). 4 = High: The fan is set at FanSpeed3 if configured for 3 speed fan, if configured for variable speed, the Fan is set to CoolMaxFan or HeatMaxFan depending on HvacModeStatus(MSV11).	N/A

FanCtrlMode (MSV17)

This variable is used to configure the fan control mode based on the OccupancyStatus.

ID	Enumeration	Default Value
Multi State Value 17	1 = On: The fan is always set to at least FanSpeed1. 2 = Auto: The fan start is controlled based on the terminal load. When the terminal load is at 0%, the fan is off. 3 = Smart: The fan is always set to at least FanSpeed1 during occupied mode. When in Unoccupied, Bypass or Standby mode the fan is controlled based on the terminal load. 1 = OnHeat: The fan is always set to at least FanSpeed1 in heating mode. 2 = AutoHeat: The fan start is controlled based on the heatingl load. When the heating load is at 0%, the fan is off. 3 = SmartHeat: The fan is set to at least FanSpeed1 during occupied mode. When in Unoccupied, Bypass or Standby mode the fan is controlled based on the heating load. 1 = OnCool: The fan is always set to at least FanSpeed1 in cooling mode. 2 = AutoCool: The fan start is controlled based on the coolingl load. When the cooling load is at 0%, the fan is off. 3 = SmartCool: The fan is set to at least FanSpeed1 during occupied mode. When in Unoccupied, Bypass or Standby mode the fan is controlled based on the coolingl load.	Smart

UI2Config (MSV18)

This variable is used to configure the source of Hardware Input 2.

ID	Enumeration	Default Value
Multi State Value 18	1 = Unused: not used. 2 = Discharge Temp: used for the Discharge Temperature sensor 3 = Return Temp: used for the Return air Temperature sensor 4 = Water Temp: used for the Water Temperature sensor 5 = SpOffset: used for the setpoint offset of the EC-Sensor.	SpOffset

UI3Config (MSV19)

This variable is used to configure the source of Hardware Input 3.

ID	Enumeration	Default Value
Multi State Value 19	1 = Unused: not used. 2 = WindowContactNO: used for a normally open window contact. (Closed contact = Open window) 3 = WindowContactNC: used for a normally closed window contact. (Closed contact = Closed window)	WindowContactNO

SI4Config (MSV20)

This variable is used to configure the source of Hardware Input 4.

ID	Enumeration	Default Value
Multi State Value 20	1 = Unused: not used. 2 = Discharge Temp: used for the Discharge Temperature sensor 3 = Return Temp: used for the Return air Temperature sensor 4 = Water Temp: used used for the Water Temperature sensor 5 = SpaceTemp: used for the Space Temperature sensor	SpaceTemp

DI5Config (MSV21)

This variable is used to configure hardware Input 5.

ID	Enumeration	Default Value
Multi State Value 21	1 = Unused: not used. 2 = AuxContactNO: used for a normally open auxiliary contact. 3 = AuxContactNC: used for a normally closed auxiliary contact. 4 = ChangOverHtg: used for a change-over input. (Closed contact = Heating mode) 5 = ChangOverClg: used for a change-over input. (Closed contact = Cooling mode) 6 = CondSensorNO: used for a normally open condensation sensor. (Closed contact = Alarm) 7 = CondSensorNC: used for connect a normally close condensation sensor. (Closed contact = Normal)	Unused

DI6Config (MSV22)

This variable is used to configure hardware Input 6.

ID	Enumeration	Default Value
Multi State Value 22	1 = Unused: not used. 2 = AuxContactNO: used for a normally open auxiliary contact. 3 = AuxContactNC: used for a normally closed auxiliary contact. 4 = ChangOverHtg: used for a change-over input. (Closed contact = Heating mode) 5 = ChangOverClg: used for a change-over input. (Closed contact = Cooling mode) 6 = OccSensorNO: used for a normally open occupancy sensor. configured to occupancy sensor normally open. (Closed contact = Occupied) 7 = OccSensorNC: used for a normally closed occupancy sensor. configured to occupancy sensor normally open. (Closed contact = Unoccupied)	AuxContactNO

ConfigOccSensor (MSV23)

This variable is used to configure the occupancy detection of the system.

ID	Enumeration	Default Value
Multi State Value 23	1 = Unused: The system is not using any occupancy detection, the final occupancy is equal to the occupancy received from the BMS system, except if the device is a Slave device. 2 = Multi-Sensor: The system is using the EC-Multi-Sensor to receive the occupancy detection information 3 = ComSensor: The system is using the EC-Smart-Vue to receive the occupancy detection information 4 = DigitalInput: The system is using a Digital Input on DI6 to receive the occupancy detection information. 5 = Auto/All: The system is using any occupancy sensor connect to receive the motion detection information. If at least one sensor is occupied, the variable MotionSensor(MSV5) is set to occupied.	Auto-All

SystemType (MSV24)

This variable is used to configure the system type of the installation.

ID	Enumeration	Default Value
Multi State Value 24	1 = Cool: 2 pipes cooling only 2 = CoolElectHeat: 2 pipes cooling only with electric heater 3 = ChgOver: 2 pipes change-over 4 = ChgOverElectHeat: 2 pipes change-over with electric heater 5 = Heat: 2 pipes heating only 6 = HeatElectHeat: 2 pipes heating only with electric heater 7 = CoolHeat: 4 pipes 8 = CoolHeatElectHeat: 4 pipes with electric heater	CoolHeat

FanType (MSV25)

This variable is used to configure the fan type.

ID	Enumeration	Default Value
Multi State Value 25	1 = None: The system is not equipped with fan control. 2 = VarSpeed: The system is equipped with a variable fan speed. 3 = 3Speed: The system is equipped with a 3 speed fan.	VarSpeed

See IO assignement section for more details.

CoolValveType (MSV26)

This variable is used to configure the Cooling or Change-Over Valve.

ID	Enumeration	Default Value
Multi State Value 26	1 = Unused: The valve is not used. 2 = 0-10V: Only AO9 is used to control the valve. 3 = Thermal: DO5 is used to control the thermal valve and AO9 to control the analog valve. 4 = On-Off: DO5 is used to control the digital valve and AO9 to control the analog valve. 5 = Floating: DO5 and DO6 (DO5 = Open, DO6 = Close) are used to control the Floating valve and AO9 to control the analog valve.	Thermal

See IO assignement section for more details.

HeatValveType (MSV27)

This variable is used to configure the Heating Valve.

ID	Enumeration	Default Value
Multi State Value 27	1 = Unused: The valve is not used. 2 = 0-10V: Only AO10 is used to control the valve. 3 = Thermal: DO6 is used to control the thermal valve and AO10 to control the analog valve. 4 = On-Off: DO6 is used to control the digital valve and AO10 to control the analog valve. 5 = Floating: DO5 and DO6 (DO5 = Open, DO6 = Close) are used to control the Floating valve and AO10 to control the analog valve.	Thermal

See IO assignement section for more details.

SpaceTempCtrl (MSV28)

This variable is used to configure the source of the space temp reading (local or network) that will be used to set the value of SpaceTemp(AV1).

ID	Enumeration	Default Value
Multi State Value 28	1 = Local: The local space temperature reading is used if the value is valid. If the value of local space temperature is not valid, the network value will be used. 2 = Master: The local space temperature is sent on the network if the ControMode(MSV50) is set to Master. 3 = Slave: The space temperature is received via the network. If the network value is not valid, a valid local space temperature can be used. 4 = Auto: If the local space temperature is not valid or the system is controlled based on a return temperature sensor, the network value will be used if valid. If the network value is not valid or if the system is not controlled based on a return temperature sensor, the local value will be used.	Local

ComSensorDisplay (MSV29)

This variable is used to configure the main screen display of the EC-Smart-Vue.

ID	Enumeration	Default Value
Multi State Value 29	1 = SpaceTemp: Space Temperature is displayed 2 = SpOffset: Setpoint offset value is displayed. 3 = MidSetpoint: Average setpoint value is displayed. 4 = EffectSp: Effective setpoint is displayed.	SpaceTemp

ComSensorLock (MSV30)

This variable is used to configure the access level of the EC-Smart-Vue

ID	Enumeration	Default Value
Multi State Value 30	1 = All: User can change setpoints, fan speed and occupancy override, override outputs and change system configuration. 2 = Sp and override: User can change setpoints, fan speed and occupancy override and override outputs. 3 = Sp Only: User can change setpoints, fan speed and occupancy 4 = No access: The user can only view the main screen.	All

DischAirLimitType (MSV31)

This variable is used to configure the discharge air limit type.

ID	Enumeration	Default Value
Multi State Value 31	1 = NotLimited: The cooling or heating load are not limited by the discharge air. 2 = LowLimit: The cooling valve is limited to prevent the discharge air temperature from being lower than MinDischAirSp. 3 = HighLimit: The heating valve is limited to prevent the discharge air temperature from being greater than MaxDischAirSp 4 = HighLowLimit: Both the heating and cooling valves are limited to prevent the discharge from being lower than MinDischAirSp or greater than MaxDischAirSp..	NotLimited

DamperCtrlType (MSV32)

This variable is used to set the damper type or to disable the damper control.

ID	Enumeration	Default Value
Multi State Value 32	1 = None: The damper control is disabled. 2 = 0-10V: The damper is controlled using a 0-10V signal. 3 = 2-10V: The damper is controlled using a 2-10V signal. 4 = Digital: The damper is controlled using a digital signal.	0-10V

See IO assignement section for more details.

MS1.LightBlind (MSV33)

This variable is used to control the lights/blinds remote override.

ID	Enumeration	Default Value
Multi State Value 33	1 = LightStop : Light Stop command 2 = LightUp : Lights up command 3 = LightDown: Lights down command 4 = BlindUp : Blind translation up command 5 = BlindDown : Blind translation down command 6 = BlindRotUp : Blind rotation Up Command 7 = BlindRotDown : Blind rotation down Command 8 = BlindStop : Blind Stop command	N/A

MS1.GroupCtrl (MSV34)

This variable is used to control the lights/blinds remote override groups.

ID	Enumeration	Default Value
Multi State Value 34	1 = Grp1-8 : Control Light/Blind 1 to 8 2 = Grp1: Control Light/Blind 1 3 = Grp2: Control Light/Blind 2 4 = Grp3: Control Light/Blind 3 5 = Grp4: Control Light/Blind 4 6 = Grp5: Control Light/Blind 5 7 = Grp6: Control Light/Blind 6 8 = Grp7: Control Light/Blind 7 9 = Grp8: Control Light/Blind 8 10 = Grp1-2: Control Light/Blind 1 and 2 11 = Grp1-4 : Control Light/Blind 1 to 4	N/A

RemoteCtrlGrpLight1 (MSV35)

This variable is used to set the group command for light output 1.

ID	Enumeration	Default Value
Multi State Value 35	1 = Group1: LightOutput1 is overriden by group1 cmd 2 = Group2: LightOutput1 is overriden by group2 cmd 3 = Group3: LightOutput1 is overriden by group3 cmd 4 = Group4: LightOutput1 is overriden by group4 cmd 5 = Group5: LightOutput1 is overriden by group5 cmd 6 = Group6: LightOutput1 is overriden by group6 cmd 7 = Group7: LightOutput1 is overriden by group7 cmd 8 = Group8: LightOutput1 is overriden by group8 cmd	Group1

RemoteCtrlGrpLight2 (MSV36)

This variable is used to set the group command for light output 2.

ID	Enumeration	Default Value
Multi State Value 36	1 = Group1: LightOutput2 is overriden by group1 cmd 2 = Group2: LightOutput2 is overriden by group2 cmd 3 = Group3: LightOutput2 is overriden by group3 cmd 4 = Group4: LightOutput2 is overriden by group4 cmd 5 = Group5: LightOutput2 is overriden by group5 cmd 6 = Group6: LightOutput2 is overriden by group6 cmd 7 = Group7: LightOutput2 is overriden by group7 cmd 8 = Group8: LightOutput2 is overriden by group8 cmd	Group2

RemoteCtrlGrpLight3 (MSV37)

This variable is used to set the group command for light output 3.

ID	Enumeration	Default Value
Multi State Value 37	1 = Group1: LightOutput3 is overriden by group1 cmd 2 = Group2: LightOutput3 is overriden by group2 cmd 3 = Group3: LightOutput3 is overriden by group3 cmd 4 = Group4: LightOutput3 is overriden by group4 cmd 5 = Group5: LightOutput3 is overriden by group5 cmd 6 = Group6: LightOutput3 is overriden by group6 cmd 7 = Group7: LightOutput3 is overriden by group7 cmd 8 = Group8: LightOutput3 is overriden by group8 cmd	Group3

RemoteCtrlGrpLight4 (MSV38)

This variable is used to set the group command for light output 4.

ID	Enumeration	Default Value
Multi State Value 38	1 = Group1: LightOutput4 is overriden by group1 cmd 2 = Group2: LightOutput4 is overriden by group2 cmd 3 = Group3: LightOutput4 is overriden by group3 cmd 4 = Group4: LightOutput4 is overriden by group4 cmd 5 = Group5: LightOutput4 is overriden by group5 cmd 6 = Group6: LightOutput4 is overriden by group6 cmd 7 = Group7: LightOutput4 is overriden by group7 cmd 8 = Group8: LightOutput4 is overriden by group8 cmd	Group4

RemoteCtrlGrpSblnd1 (MSV39)

This variable is used to set the group command for blind output 1.

ID	Enumeration	Default Value
Multi State Value 39	1 = Group1: BlindOutput1 is overriden by group1 cmd 2 = Group2: BlindOutput1 is overriden by group2 cmd 3 = Group3: BlindOutput1 is overriden by group3 cmd 4 = Group4: BlindOutput1 is overriden by group4 cmd 5 = Group5: BlindOutput1 is overriden by group5 cmd 6 = Group6: BlindOutput1 is overriden by group6 cmd 7 = Group7: BlindOutput1 is overriden by group7 cmd 8 = Group8: BlindOutput1 is overriden by group8 cmd	Group1

RemoteCtrlGrpSblnd2 (MSV40)

This variable is used to set the group command for blind output 2.

ID	Enumeration	Default Value
Multi State Value 40	1 = Group1: BlindOutput2 is overriden by group1 cmd 2 = Group2: BlindOutput2 is overriden by group2 cmd 3 = Group3: BlindOutput2 is overriden by group3 cmd 4 = Group4: BlindOutput2 is overriden by group4 cmd 5 = Group5: BlindOutput2 is overriden by group5 cmd 6 = Group6: BlindOutput2 is overriden by group6 cmd 7 = Group7: BlindOutput2 is overriden by group7 cmd 8 = Group8: BlindOutput2 is overriden by group8 cmd	Group2

RemoteCtrlGrpSblnd3 (MSV41)

This variable is used to set the group command for blind output 3.

ID	Enumeration	Default Value
Multi State Value 41	1 = Group1: BlindOutput3 is overriden by group1 cmd 2 = Group2: BlindOutput3 is overriden by group2 cmd 3 = Group3: BlindOutput3 is overriden by group3 cmd 4 = Group4: BlindOutput3 is overriden by group4 cmd 5 = Group5: BlindOutput3 is overriden by group5 cmd 6 = Group6: BlindOutput3 is overriden by group6 cmd 7 = Group7: BlindOutput3 is overriden by group7 cmd 8 = Group8: BlindOutput3 is overriden by group8 cmd	Group3

RemoteCtrlGrpSblnd4 (MSV42)

This variable is used to set the group command for blind output 4.

ID	Enumeration	Default Value
Multi State Value 42	1 = Group1: BlindOutput4 is overriden by group1 cmd 2 = Group2: BlindOutput4 is overriden by group2 cmd 3 = Group3: BlindOutput4 is overriden by group3 cmd 4 = Group4: BlindOutput4 is overriden by group4 cmd 5 = Group5: BlindOutput4 is overriden by group5 cmd 6 = Group6: BlindOutput4 is overriden by group6 cmd 7 = Group7: BlindOutput4 is overriden by group7 cmd 8 = Group8: BlindOutput4 is overriden by group8 cmd	Group4

SmartLight1Group (MSV43)

This variable is used to configure the group command assigned to the EC-Smart-Light.

ID	Enumeration	Default Value
Multi State Value 43	1 = Grp1-8 : Control Light/Blind 1 to 8 2 = Grp1: Control Light/Blind 1 3 = Grp2: Control Light/Blind 2 4 = Grp3: Control Light/Blind 3 5 = Grp4: Control Light/Blind 4 6 = Grp5: Control Light/Blind 5 7 = Grp6: Control Light/Blind 6 8 = Grp7: Control Light/Blind 7 9 = Grp8: Control Light/Blind 8 10 = Grp1-2: Control Light/Blind 1 and 2 11 = Grp1-4 : Control Light/Blind 1 to 4	Grp1

SmartBlind1Group (MSV44)

This variable is used to configure the group command assigned to the EC-Smart-Blind.

ID	Enumeration	Default Value
Multi State Value 44	1 = Grp1-8 : Control Light/Blind 1 to 8 2 = Grp1: Control Light/Blind 1 3 = Grp2: Control Light/Blind 2 4 = Grp3: Control Light/Blind 3 5 = Grp4: Control Light/Blind 4 6 = Grp5: Control Light/Blind 5 7 = Grp6: Control Light/Blind 6 8 = Grp7: Control Light/Blind 7 9 = Grp8: Control Light/Blind 8 10 = Grp1-2: Control Light/Blind 1 and 2 11 = Grp1-4 : Control Light/Blind 1 to 4	Grp1-8

ControlMode (MSV50)

This variable is used to configure the HVAC control application mode.
The system can be either a locally controlled device, a master controller or a slave controller.

ID	Enumeration	Default Value
Multi State Value 50	1 = Local: The HVAC controller operates locally without exchanging information with others 2 = Master: The HVAC controller is a master on the local MS/TP network. 3 = Slave: The HVAC controller is a slave on the local MS/TP network.	Local

Sequence of Operation

Occupancy Control

The OccupancyStatus (MSV14) is managed based on OccupancyCmd (MSV1) and RoomOccupancy (BV12)

The OccupancyCmd (MSV1) is usually received from the network and the RoomOccupancy (BV12) is based on motion detection and occupancy overrides.

The following table describes the sequence of operation for the occupancy control:

OccupancyCmd (MSV1)	RoomOccupancy (BV12)	OccupancyStatus (MSV14)
Occupied	Occupied	Occupied
	Unoccupied	Standby
Unoccupied	Occupied	Occupied
	Unoccupied	Unoccupied
Bypass	Occupied	Occupied / Bypass[1]
	Unoccupied	Standby
Standby	Occupied	Occupied
	Unoccupied	Standby

Table 2: Occupancy Control

Temperature Setpoint Control

The actual setpoints ActHeatSP (AV37) and the ActCoolSP (AV36) are computed according to OccupancyStatus (MSV14)SetPtOffset (AV28)

OccupancyStatus (MSV14)	ActHeatSP (AV37)	ActCoolSP (AV36)
Occupied or Bypass	OccHeatSP (AV41) + SetPtOffset (AV28)	OccCoolSP (AV40) + SetPtOffset (AV28)
Standby	StandbyHeatSP (AV42) + SetPtOffset (AV28)	StandbyCoolSP (AV39) + SetPtOffset (AV28)
Unoccupied	UnoccHeatSP (AV44)	UnoccCoolSP (AV38)

Table 3: Actual setpoints values

The effective setpoint EffectSp (AV33) is computed according to HvacModeStatus:

HvacModeStatus value	EffectSp (AV33)
Heat or Off	ActHeatSP (AV37)
Cool	ActCoolSP (AV36)

Table 4: Effective setpoint value

Fan Control

The fan is controlled according to FanType (MSV25), FanCtrlMode (MSV17), FanSpeedCmd (MSV3), TerminalLoad (AV44) and OccupancyStatus (MSV14).

When configured for ECM Motor (Var Speed), the fan is controlled using a 0-10V signal on AO7. The fan start can also be connected on DO1.

When configured for a 3-speed fan (3Speed), the fan is controlled using DO1, DO2 and DO3.

Fan Type setting	FanSpeedCmd (MSV3)	FanCtrlMode (MSV17)	Fan management
None	Any	Any	Outputs DO1, DO2, DO3 and AO7 are not used.
ECM Motor (VarSpeed)	Auto	On	The fan is set to the maximum value between CoolMinFan (AV65) or HeatMinFan (AV66) and the fan request based on the TerminalLoad (AV44). See Temperature Management for more details.
		Auto	The fan is set to the fan request based on TerminalLoad (AV44). See Temperature Management for more details. If the system is controlled by a return temperature sensor, the fan will be enabled at minimum speed for 5 minutes every 2 hours to validate the temperature reading.
		Smart	When OccupancyStatus (MSV14) is occupied, the fan is controlled in On FanCtrlMode. When OccupancyStatus (MSV14) is not occupied, the fan is controlled in Auto FanCtrlMode. When in unoccupied mode, if the system is controlled by a return temperature sensor, the fan will be enabled at minimum speed for 5 minutes every 2 hours to validate the temperature reading.
	Off	Any	The fan is set to 0% unless the system is in freeze protection mode. In that case the fan is set to HeatMaxFan (AV64)
	Low		The fan is set to CoolMinFan (AV65) or HeatMinFan (AV66) depending on HvacModeStatus (MSV11).
	Med		The fan is set to the average between CoolMinFan (AV65) and CoolMaxFan (AV63) or HeatMinFan (AV66) and HeatMaxFan (AV64) depending on HvacModeStatus (MSV11).
	High		The fan is set to CoolMaxFan (AV63) or HeatMaxFan (AV64) depending on HvacModeStatus (MSV11).
3 Speed Fan	Auto	On	The fan will always be at least at Speed1. Fan speed2 will be enabled when the fan request based on TerminalLoad (AV44) is greater than the average between CoolMinFan (AV65) and CoolMaxFan (AV63) or HeatMinFan (AV66) and HeatMaxFan (AV64) depending on HvacModeStatus (MSV11). Fan speed3 will be enabled when the fan request based on TerminalLoad (AV44) is greater than CoolMaxFan (AV63) or HeatMaxFan (AV64) depending on HvacModeStatus (MSV11). See Temperature Management for more details about fan request.
		Auto	Fan speed1 is enabled when the fan request based on TerminalLoad (AV44) is greater than CoolMinFan (AV65) or HeatMinFan (AV66) depending on HvacModeStatus (MSV11). Fan speed2 will be enabled when the fan request based on TerminalLoad (AV44) is greater than the average between CoolMinFan (AV65) and CoolMaxFan (AV63) or HeatMinFan (AV66) and HeatMaxFan (AV64) depending on HvacModeStatus (MSV11). Fan speed3 will be enabled when the fan request based on terminal load is greater than CoolMaxFan (AV63) or HeatMaxFan (AV64) depending on HvacModeStatus (MSV11). See Temperature Management for more details about fan request. If the system is controlled by a return temperature sensor, the fan will be enabled at minimum speed for 5 minutes every 2 hours to validate the temperature reading.
		Smart	When the OccupancyStatus (MSV14) is occupied, the fan is controlled in On FanCtrlMode. When the OccupancyStatus is not occupied, the fan is controlled in Auto FanCtrlMode. When in unoccupied mode, if the system is controlled by a return temperature sensor, the fan will be enabled at minimum speed for 5 minutes every 2 hours to validate the temperature reading.
	Off	Any	The fan is set to off unless the system is in freeze protection mode. In that case the fan is set to HeatMaxFan (AV64).
	Low		The fan is set to fan speed 1.
	Med		The fan is set to fan speed 2
	High		The fan is set to fan speed 3.

Table 5: Fan Control

Whenever the system is in freeze protection mode, the fan is set to HeatMaxFan (AV64).

When the fan request switches from active to inactive, the FanOffDelay (AV60) is enabled if equipments were being controlled before stopping the fan.

HVAC Mode Management

The HvacModeStatus (MSV11) is computed according to HvacModeCmd (MSV1)TerminalLoad (AV44)WindowStatus (BV1), SpaceTemp (AV1) and FreezepProtSp (AV35)

A ChgOverDelay (AV46) prevents the HvacModeStatus (MSV11) from switching between cooling and heating too often.

SpaceTemp (AV1)	WindowStatus (BV1)	HvacModeCmd (MSV1)	ScheduleStatus	Next ScheduleStatus	TerminalLoad (AV44)	HvacModeStatus (MSV11)
>FreezepProtSp (AV35)	Open	Any	Any	Any	Any	Off (7)
	Closed	Auto	Unoccupied	Occupied	>0	Pre_Cool (6)
					<0	Mrng_Wmup (3)
					=0	Unchanged
			Occupied	Unoccupied	>0	Cool (4)
					<0	Heat (2)
					=0	Unchanged
		Other than Auto	Any	Any	Any	HvacModeCmd (MSV1)
<FreezepProtSp (AV35)	Any	Any	Any	Any	Any	Heat mode, the fan and the heating outputs are overriden to 100% untilSpaceTemp (AV1)reaches FreezepProtSp (AV35) +2°C.

Table 6: HVAC modes

Temperature Management

Cooling Mode

The cooling or change-over valve is controlled in sequence with the fan speed to maintain the space temperature to the actual cooling setpoint ActCoolSP (AV36).

The cooling or change-over valve is:

- **rescaled** between 0% to 100% when the TerminalLoad (AV44) is between 0% and 100%.
- **disabled** when the fan is not running unless the FanType (MSV25) is set to None.
- **disabled** while in cooling mode if a condensation sensor input is active on DI5 or received from a master controller.

The fan speed request is rescaled between CoolMinFan (AV65) and CoolMaxFan (AV63) when the TerminalLoad (AV44) is between FanCoolLow (AV61) and 100%.

Heating Mode

The heating or change-over valve is controlled in sequence with the electric heater and the fan speed to maintain the space temperature to the actual cooling setpoint ActHeatSP (AV37).

- If the system is not equipped with an electric heater, the heating or change-over valve is rescaled between 0% and 100% when TerminalLoad (AV44) is between 0% and 100%.
- If the system is equipped with an electric heater, the heating or change-over valve is rescaled between 0% to 100% when TerminalLoad (AV44) is between 0% and 50% while the electric heater is rescaled between 0% to 100% when TerminalLoad (AV44) is between 50% and 100%.

The heating or change-over valve and the electric heater are disabled when the fan is not running unless the FanType (MSV25) is set to None.

The fan speed request is rescaled between HeatMinFan (AV66) and HeatMaxFan (AV64) when TerminalLoad (AV44) is between FanHeatLow (AV62) and 100%.

Optimum Start/Stop

Optimum Start/Stop is used to calculate the optimum start time of a system based on the room temperature and the occupied setpoints.

Configurations

Variable	Description
OptStartMaxStartupTime (AV17)	This configuration input is used to set the maximum startup time allowed before the occupied mode (Default = 240min).
OptStartMode (MSV4)	This configuration input is used to set the optimum start mode (1=Auto, 2=HeatingOnly, 3=CoolingOnly, 4=Disable) (Default = Auto).
OptStartFactorWeight (AV18)	This configuration input is used to set the % of the new factor that will be used to calculate the new factor (heat or cool) (Default = 10%).
OptStartCoolFactor (AV14)	This configuration input is used to specify if the CoolFactor can be automatically adjusted after each optimum start.
OptStartHeatFactor (AV15)	This configuration input is used to specify if the HeatFactor can be automatically adjusted after each optimum start.
OptStartEnableUpdate (BV7)	Used to enable or disable Optimum Start/Stop function.

Table 7: Optimum start/stop configurations

Mode Types

Mode Type	Description
MrngWrmUp	This output is used to indicate that the system is currently in pre-heating mode.
PreCool	This output is used to indicate that the system is currently in pre-cooling mode.

Table 8: Optimum start/stop mode types

6 way valve Management

Automatic mode

In automatic mode, the 6 way valve runs according to the configuration of AO9 and AO10.

If CoolValveType (MSV26) is set to 6WayValve and 6WayVlvRoom1 (AV101) is set to 0, then AO9 is used to control local 6 way valve.

If HeatValveType (MSV27) is set to 6WayValve and 6WayValveRoom2 (AV102) is set to 0, then AO10 is used to control local 6WayValve.

Damper Control

The damper control is based is on SpaceCO2, CoolingLoad, and OccupancyStatus (MSV14)

The CO2 load is calculated using PID_CO2 SpaceCO2 (AV4) as measured value and CO2Septoint (AV49).

OccupancyStatus (MSV14)	EnableFreeCooling (BV15)	Damper management
Unoccupied	Any	The damper is closed to 0%.
Occupied or Bypass	Enable	The damper is controlled by the grater of the CO2 and Cooling load signals.
	Disable	The damper is controlled by the CO2 load.
Standby	Enable	The damper is controlled by the Cooling load.
	Disable	The damper is closed to 0%.

Table 9: Damper Control

Master/Slave Control

When the ControlMode (MSV50) of the controller is set to either Master or Slave, the system will be use the Master/Slave variables.

To configure Master/Slave control, the ControlMode (MSV50) and CtrlRoom (AV81) must be set for each of the controllers. All controllers with the same CtrlRoom (AV81) value are considered in the same zone.

FanSpeedCmd

In this mode, the system will gather the FanSpeedCmd (MSV3) from all the slave devices associated to the master to calculate the final values. As soon as one of these values is changed (ether from a slave or from a master), the command is updated for all the controllers associated with that Master/Slave group.

SetPointOffset

In this mode, the system will gather the SetPtOffset (AV28) from all the slave devices associated to the master to calculate the final command. As soon as one of these values is changed (ether from a slave or from a master), the command is updated for all the controllers associated with that Master/Slave configuration.

HvacMode

In this mode, the system will gather all the HVAC mode requests of all the slave devices associated to the master controller to calculate HvacModeCmd (MSV1).

If more controllers are requesting cooling than heating, the HvacModeCmd (MSV1) will be set to cooling for all the controllers.

If more controllers are requesting heating than cooling, theHvacModeCmd (MSV1) will be set to heating for all controllers.

Occupancy Detection

When a controller detects occupancy, it sets its own RoomOccupancy (BV12) to occupied immediately. This information will also be sent on the network so that all of the controllers within the open space are set to occupied.

Only the master controller can set the RoomOccupancy (BV12) to unoccupied. This happens when all motion detectors assigned to the master and the slave(s) controller(s) are unoccupied for more than the HoldTime (AV47).

Window Contact

All of the slave(s) controller(s) are sending their window contact input status to the master controller. If at least one window is open, the master controller will set the complete open space in HvacModeCmd (MSV1) = Off until all the windows are closed.

Space Temperature and CO2

By default, all of the master and slave(s) controller(s) are controlled using a locally connected temperature sensor. If there is a need for the master to send the value of its temperature or CO2 sensor, this can be done by configuring the variable SpaceTempCtrl (MSV28).

Condensation Sensor

The master is automatically sending the value of its condensation sensor to the slave(s) controller(s). If the slaves do not have a locally configured condensation sensor, they will use the value of the master controller.

Change-Over Status

When the system is configured for 2-pipe change-over, the master is automatically sending the value of its change-over to the slave(s) controller(s). If the slave does not have a locally configured change-over or water temperature sensor, it will use the value of the master controller.

6 Way Valve

If 6WayValveMaster (BV27) is set to Master and the cooling and/or heating valves are configured to 6WayValve the controller sends 6wayvalve value to its group.

However if 6WayValveRoom1 and/or 6WayValveRoom2 are configured with different room than in ControlMode variable (MSV50), 6 way valve control is automatically set to slave mode and request is sent to the master of the matching room. Once the controller receives this request it automatically sets itself to 6WayValve master mode.

Discharge Temperature Control

The discharge temperature control allows the limitation of the heating and/or cooling valve depending on the configuration of DischAirLimitType (MSV31) and of the matching PID value (PID_HighLimit (PID4) / PID_LowLimit (PID5)):

- Heating valve limitation (if DischAirLimitType (MSV31) = Highlimit or HighLowLimit): the heating valve is limited by PID_HighLimit (PID4) which is calculated depending on the discharge temperature and MaxDischAirSp (AV54): the valve opening is limited to the minimum value between Heating Load and PID_HighLimit (PID4).
- Cooling valve limitation (if DischAirLimitType (MSV31) = LowLimit or HighLowLimit): the cooling valve is limited by PID_LowLimit (PID5) which is calculated depending on the discharge temperature and MinDischAirSp (AV55) , the valve opening is limited to the minimum value between Cooling Load and PID_LowLimit (PID5).

Lighting Control

Manual Mode

Lighting can be managed in manual mode, which has priority over automatic mode.

Once the manual mode is activated, lighting does not return to automatic mode until the user presses the Unoccupied or Occupied button on the EC-Remote remote control or the occupation mode changes.

When lights are in manual mode, they can be controlled by using Up and Down buttons on the EC-Remote remote control.

The manual mode is deactivated when the automatic occupancy mode changes or the Unoccupied or Occupied button is pressed on the remote control.

Automatic Mode

Occupancy management follows the motion detection, not the room’s occupancy mode. Therefore, lighting follows the motion detection rules :

Upon motion detection, whether the occupancy mode is Occupied or not, the lighting turns on in automatic mode.

A 15-minute delay (configurable) maintains the lights on after the last detected motion (MotionHoldTime).

The occupation mode change is necessary to put the lighting back into automatic mode (following an override from a remote control or ComSensor). In other words, every time the occupancy mode changes, the lighting is turned into automatic mode.

Variable	Description
LightType1,2,3,4 (BV 35,36,37,38)	Configuration of the light type (Dimming/On-off)
CtrlGroupLight1,2,3,4 (BV 31,32,33,34)	Configuration of the light control loop (Window/Corridor)
RemoteCtrlGrpLight1,2,3,4 (MSV35,36,37,38)	Configuration of the light EC-Remote Group # for overrides (0 = none)
LightXRoom (AV 71,72,73,74)	Configuration of the room number for Master/Slave Control
CtrlGroupLight1,2,3,4 (BV 31,32,33,34)	Configuration of the light type (Dimming/On-off)

Table 10: Lighting Configuration

Variable	Description
LuxSetpoint (AV93)	Light Setpoint for control loop
ReflexFactor (AV94)	Reflection Factor for calibration of EC-Multi-Sensor.
LightPower (AV95)	Total Installed Light Power in lux. This is used in the calculation of the window/corridor light control loop.
minLightCmd (AV96)	Control loop value below which the window light is set to 0
LightOffset (AV97)	Configuration of offset between Window and corridor value.
LuxRampUpTime (AV98)	Configuration of the time to stabilize the increased luxlevel.
LuxRampDownTime (AV98)	Configuration of the time to stabilize the decreased luxlevel.

Table 11: Light Loop Configuration

Master/Slave Mode

Slave mode is active if lightXRoom is different to the room number of the controller. In this mode, the lights take commands from the master controller of the respective zone.

Master controller mode is activated automatically when a slave request is received. It is reset back to local when no request are received for more than three hours.

When in master mode, the controller calculates and sends commands to other controllers.

When in local mode, the controller can calculate its own commands, can take commands from other controllers but cannot send information to the other controllers.

Blinds Control

Manual Mode

Blinds can be set to manual mode which has priority over automatic one. Once the manual mode is activated, blinds return to automatic mode when a user presses the Unoccupied button on the EC-Remote remote control or when there is a change in the occupation mode.

When blinds are in manual mode, they can be controlled by using Up and Down buttons on the EC-Remote remote control.

BlindTranCmd (%) and BlindRotCmd (Deg.).

Automatic Mode

In automatic mode, blinds are managed as follows:

In occupied mode: The control output value goes to 0% (blinds are open)

In unoccupied mode: The control output value goes to 100% (blinds are closed)

Automatic operation covers only these two output modes. In standby mode, the blind’s position remains unchanged.

Variable	Description
BlindType1,2,3,4 (BV 41,42,43,44)	Configuration of the blind type (interior/exterior)
RemoteCtrlGrpSblnd1,2,3,4 (BMSV 29,40,41,42)	Configuration of the blind EC-Remote Group # for overrides (0 = none)
SblndXRoom (AV 75,76,77,78)	Configuration of the room number for Master/Slave Control
BlindCtrlMode (BV40)	Configuration of the blinds master/local mode.

Table 12: Blinds Configuration

Master/Slave Mode

Slave mode is active if SblndXRoom is different from the controller’s room number. In this mode, the blinds are controlled by the master controller of the zone.

Master controller mode is activated automatically when a slave request is received. It is reset back to local when no request are received for more than three hours.

When in master mode, the controller calculates and sends commands to other controllers.

When in local mode, the controller can calculate its own commands, can take commands from other controllers but cannot send information to the other controllers.

Wind Condition (Protection)

In automatic as well as in manual mode, if the WindCondition (BV6) is activated, all the external blinds open.

They remain open until WindCondition (BV6) goes back to FALSE + 600 seconds security delay.

APAR Rules

Each of the rules has an internal delay timer that must elapse prior to rule activation. The delay time is defined by RulesActiveDelay (AV21).

Number	Enumeration Text	Description
1	Heat_DischargeTempLowerThanSpaceTemp	Discharge air temperature is lower than space air temperature in heating mode
3	HeatValveSaturedFullyOpen	Difference between setpoint and measured temperature is greater than 2°C and heating valve is fully opened
4	HeatValveFullyOpen	Heating valve is fully opened
12	Cool_DischargeTempHigherThanSpaceTemp	Discharge air temperature is higher than space air temperature in cooling mode
13	CoolValveStaturedFullyOpen	Difference between setpoint and measured temperature is greater than 2°C and cooling valve is fully opened
14	CoolValveFullyOpen	Cooling Valve is fully opened
22	CoolVlvAndHeatVlvOpened	Cooling and heating valve are simultaneously opened
25	TempDeltaTooBig	Difference between setpoint and measured temperature is too big
28	TooManyRulesActPerHour	Too many rules activated during one hour period.

Table 13: APAR Rules

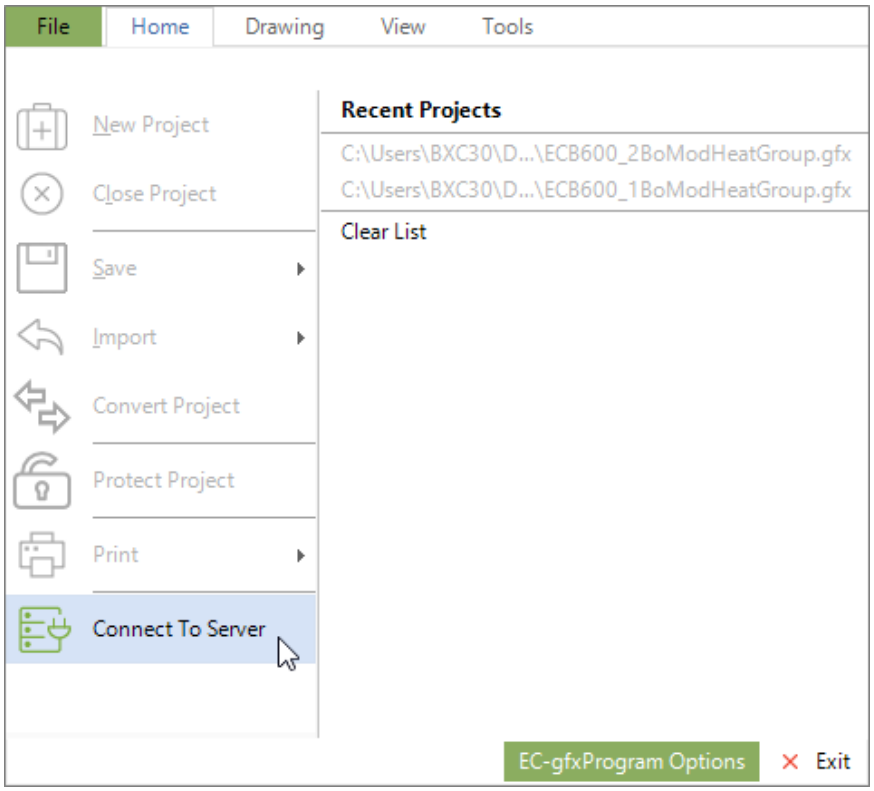
NOTE: Active APAR rules are displayed using two parameters. ActiveRules (AV22) displays number of active rules, while RulesNumber (MSV8) cyclically shows active rules as enumerated states, with 5 second delay for each state.

Configuring the Preloaded Applications

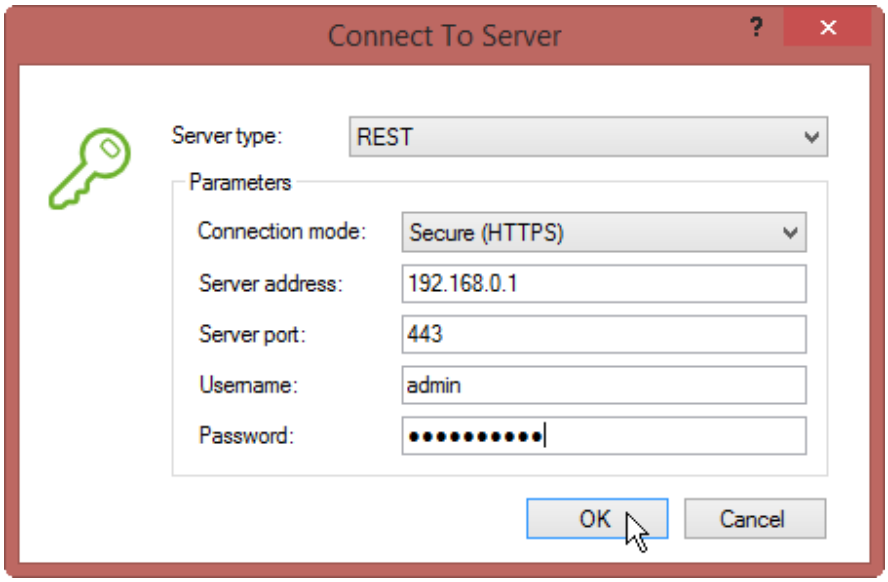
The ECY-PTU's preloaded applications can be easily configured from within EC-*gfx*Program. The configuration parameters related to a VAV box setup as well as its input and output settings are accessible through the Configuration Assistant.

To access the Configuration Assistant page:

1. Launch EC-*gfx*Program. From the file menu connect to server.



2. Select the REST server type and input the username and password.



3. Select the device you wish to connect to and press OK.

The **Configuration Assistant** page will appear.

Overview Tab

The **Overview** tab of the Configuration Assistant provides a user with a convenient location to view many general settings, such as setpoints and status.

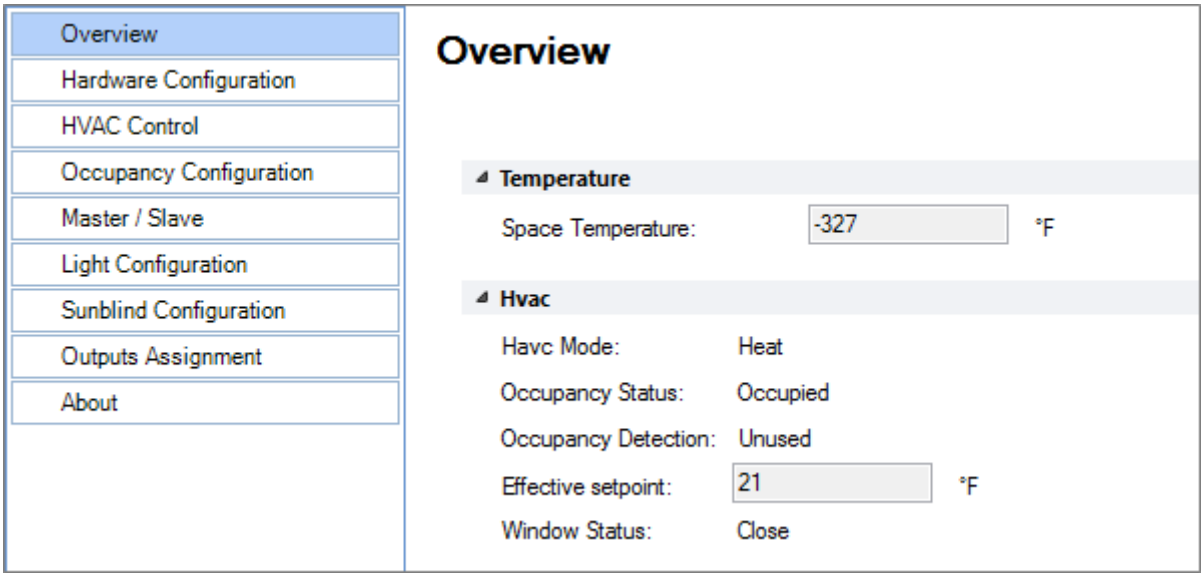
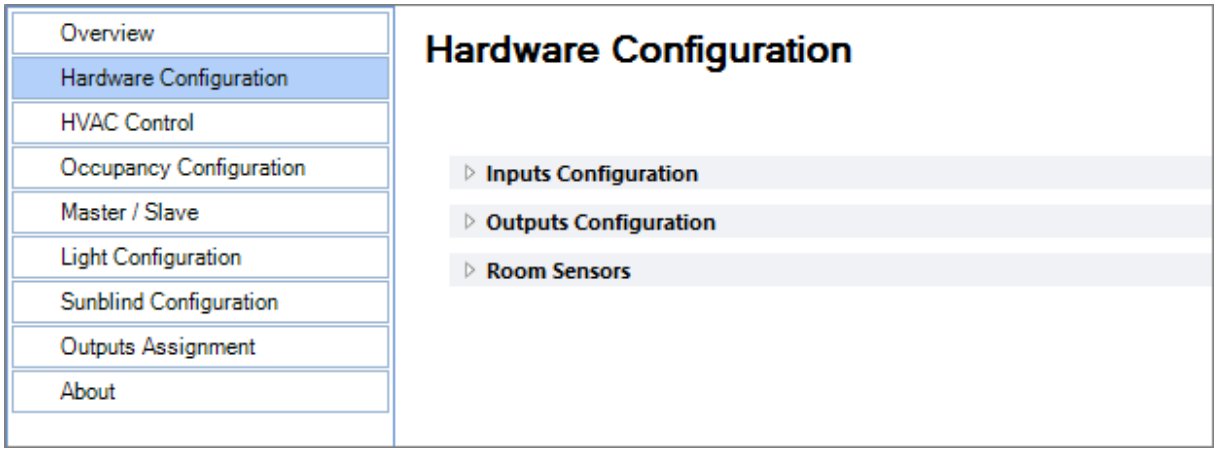


Figure 5: General Settings Overview

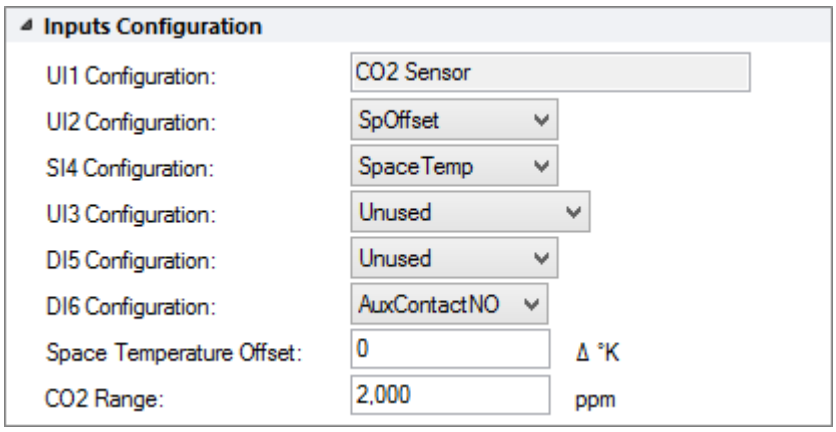
Hardware Configuration

The **Hardware Configuration** tab includes Inputs, Outputs, and Room Sensors configuration. A brief description of each type of configuration parameter is outlined below.



Configuring Input Parameters

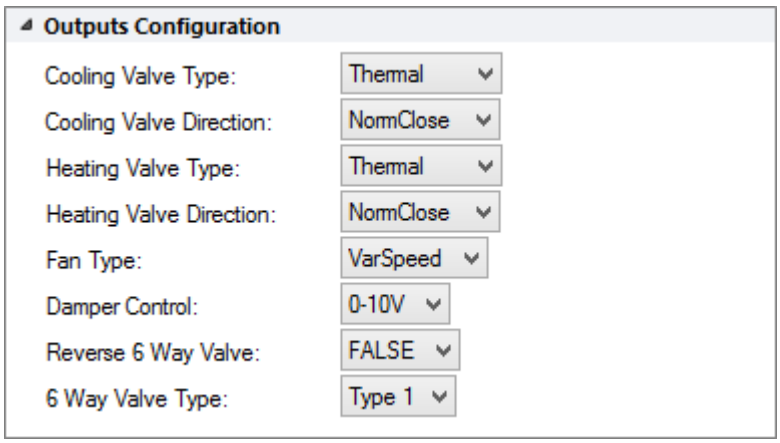
All input configuration setpoint parameters are found in the **Inputs Configuration** subsection of the **Hardware Configuration** tab. The table below gives a brief description of each type of input configuration parameter.



Parameter	Description
UI1 Configuration	Universal input 1 is used only for the CO_2 Sensor.
UI2 Configuration	**Unused** – Not used. **DischargeTemp** – Discharge air temperature sensor. **ReturnTemp** – Return air temperature sensor. **WaterTemp** – Water temperature sensor. **SpOffset** – Setpoint offset.
SI4 Configuration	**Unused** – Not used. **DischargeTemp** – Discharge air temperature sensor. **ReturnTemp** – Return temperature sensor. **WaterTemp** – Water temperature sensor. **SpaceTemp** – Space temperature sensor.
UI3 Configuration	**WindowContactNO** – Normally open window contact. **WindowContactNC** – Normally closed window contact.
DI5 Configuration	**Unused** – Not used). **AuxContactNO** – Normally open auxiliary contact. **AuxContactNC** – Normally closed auxiliary contact. **ChangOverHtg** – Change-over input for heating. **ChangOverClg** – Change-over input for cooling. **CondSensorNO** – Normally open condensation sensor. **CondSensorNC** – Normally closed condensation sensor.
DI6 Configuration	**Unused** – Not used. **AuxContactNO** – Normally open auxiliary contact. **AuxContactNC** – Normally closed auxiliary contact. **ChangOverHtg** – Change-over input for heating. **ChangOverClg** – Change-over input for cooling. **OccSensorNO** – Normally open occupancy sensor. **OccSensorNC** – Normally closed occupancy sensor.
Space Temperature Offset	Set the space temperature calibration offset.
CO2 Range	Set the CO_2 range.

Configuring the Output Parameters

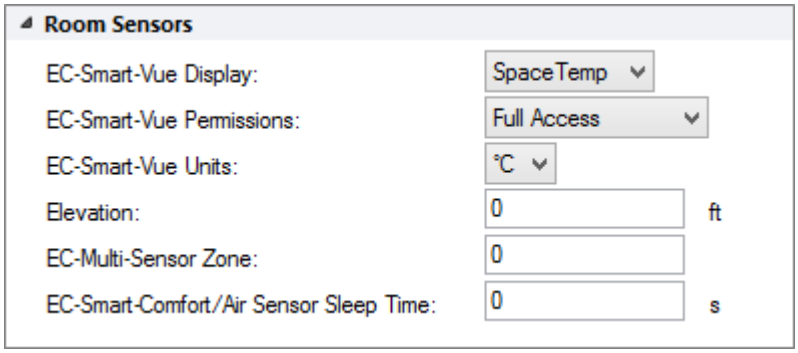
All output configuration setpoint parameters are found in the **Outputs Configuration** subsection of the **Hardware Configuration** tab. The table below gives a brief description of each type of configuration parameter.



Parameter	Description
Cooling Valve Type	**Unused** – The valve is not used. **0-10V** – 0-10V cooling valve only is used. **Thermal** – Thermal and 0-10V cooling valve are used. **On/Off** – On/Off and 0-10V cooling valve are used. **Floating** – Floating and 0-10V cooling valve are used. **6WayValve** – 6 Way Valve control.
Cooling Valve Direction	**NormOpen** – Valve normally open. **NormClosed** – Valve normally closed.
Heating Valve Type	**Unused** – The valve is not used. **0-10V** – 0-10V heating valve only is used. **Thermal** – Thermal and 0-10V heating valve are used. **On/Off** – On/Off and 0-10V heating valve are used. **Floating** – Floating and 0-10V heating valve are used. **6WayValve** – 6 Way Valve control.
Heating Valve Direction	**NormOpen** – Valve normally open. **NormClosed** – Valve normally closed.
Fan Type	**None** – The system is not equipped with fan control. **VarSpeed** – The system is equipped with a variable fan speed. **3Speed** – The system is equipped with a 3 speed fan.
Damper Control	**None** – Damper control is disabled. **0-10V** – Damper is controlled using a 0-10V signal. **2-10V** – Damper is controlled using a 2-10V signal. **Digital** – Damper is controlled using a digital signal.
Reverse 6 Way Valve	**FALSE** – 6 Way Valse is not reversed. **TRUE** – 6 Way Valve is reversed.
6 Way Valve Type	Select the 6 way valve manufacturer: **Type2** – Giacomini. **Type1** – Belimo.

Configuring Room Sensors

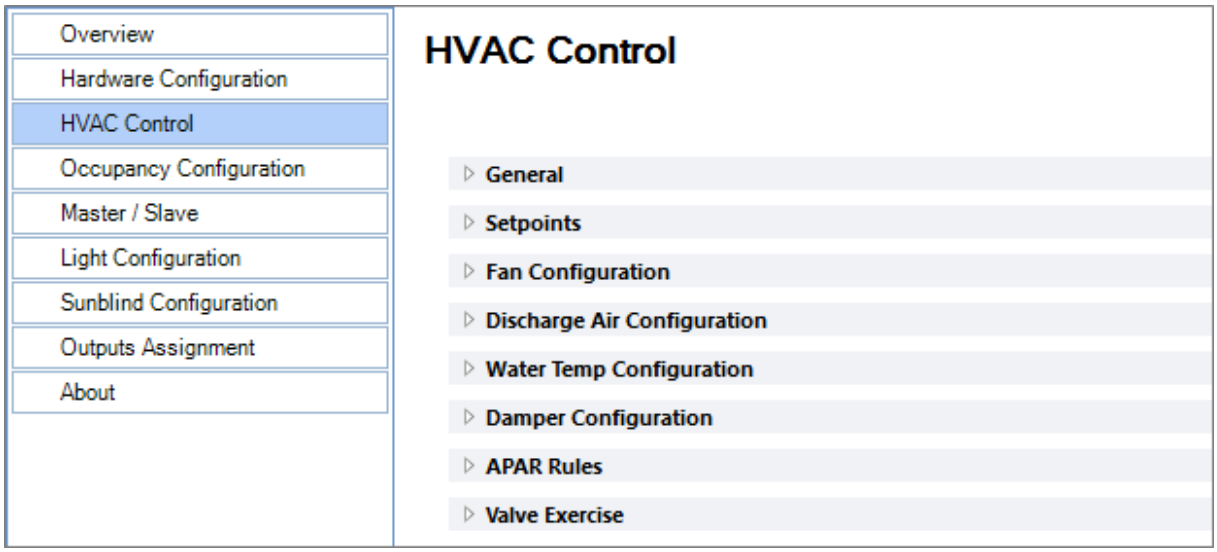
Allure EC-Smart-Vue and Allure EC-Smart-Comfort or EC-Smart-Air configuration setpoint parameters are found in the **Room Sensors** subsection of the **Hardware Configuration** tab. The table below gives a brief description of each type of configuration parameter.



Parameter	Description
EC-Smart-Vue Display	**SpaceTemp** – Space Temperature is displayed. **SpOffset** – Setpoint offset value is displayed. **MidSetpoint** – Average setpoint value is displayed. **EffectSp** – Effective setpoint is displayed.
EC-Smart-Vue Permissions	Defines how much access a user of the Allure EC-Smart-Vue has to the controller's configuration parameters. The Allure EC-Smart-Vue access ranges from full access to limited access or no access at all. Limited access allows setpoint adjustment only or setpoint adjustment and airflow balancing. Regardless of the access level of the Allure EC-Smart-Vue, the controller's configuration parameters cannot be modified through the Allure EC-Smart-Vue except after a password is entered.
EC-Smart-Vue Units	Choose from either Imperial or Metric units.
Elevation	For accurate CO_2 concentration levels, input geographic elevation here if elevation is greater than 500ft (152m) above sea level. By default, the sensor is factory calibrated to sea level.
EC-Multi-Sensor Zone	Configure the infrared zone (0 -12) of the EC-Remote associated with the EC-Multi-Sensor. A value of 0 will accept any zones.
EC-Smart-Comfort/Air Sleep Time	Enter the amount of time before the sensor goes into standby mode.

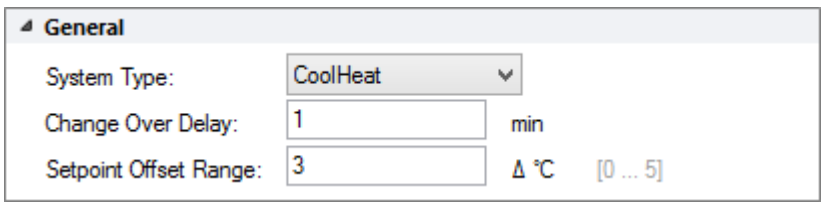
HVAC Control

The **HVAC Control** tab allows a user to configure General, Setpoints, Fan Configuration, Discharge Air Configuration, Water Temperature Configuration, Damper Configuration, APAR Rules, and Valve Exercise. A brief description of each type of configuration parameter is outlined below.



General Parameters

In the General subsection, controller parameters are set such as the changeover delay, bypass mode override time, and terminal load scaling factors. The table below describes each of these parameters



Parameter	Description
System Type	**Cool** – 2 pipes cooling only. **CoolElectHeat** – 2 pipes cooling only with electric heater. **ChgOver** – 2 pipes change-over. **ChgOverElectHeat** – 2 pipes change-over with electric heater. **Heat** – 2 pipes heating only. **HeatElectHeat** – 2 pipes heating only with electric heater. **CoolHeat** – 4 pipes. **CoolHeatElectHeat** – 4 pipes with electric heater.
Change Over Delay	Defines the minimum time during which heating must be OFF before cooling can be turned ON as well as the minimum time during which cooling must be OFF before heating turns ON. This parameter prevents the system from continuously oscillating between heating and cooling modes.
Setpoint Offset Range	Configure the setpoint offset range of either a remote control or the room sensor. Valid range is from 0 to 5°C.

Configuring Space Temperature Settings

The **Setpoints Configuration** subsection contains the heating and cooling setpoints for the occupied, standby and unoccupied modes. The table below gives a brief description of each type of setpoint.

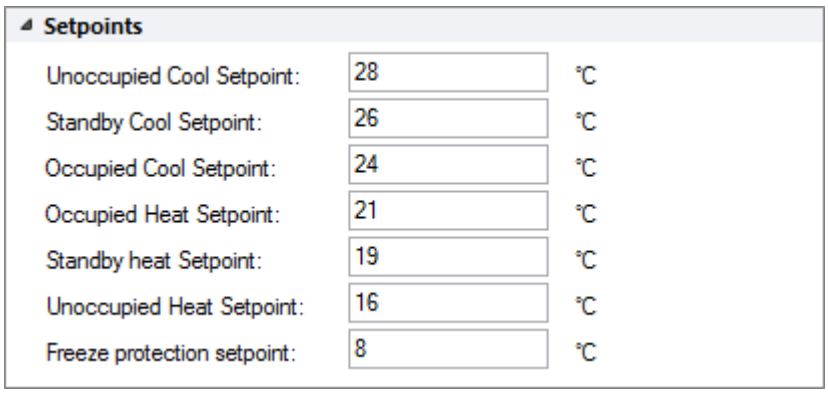
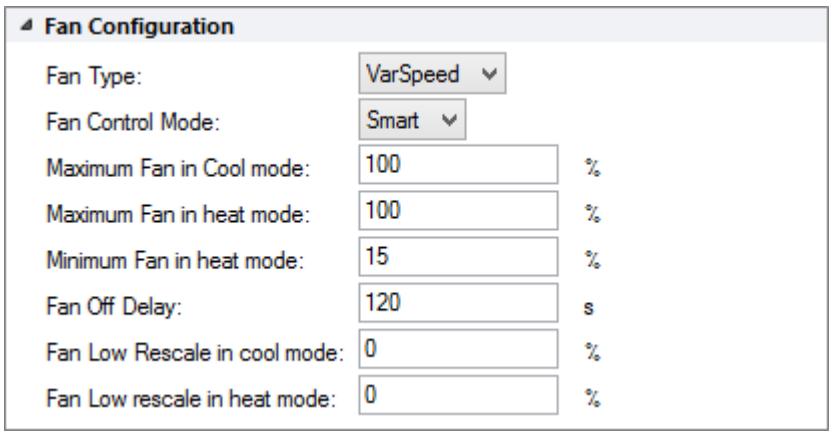


Figure 6: Setpoints Configuration Subsection

Setpoint (heating/cooling)	Description
Occupied	The limits between which the temperature is to be maintained by the controller when it is in Occupied mode. This temperature range should be comfortable to building occupants.
Standby	The limits between which the temperature is to be maintained by the controller when it is in Standby mode. In Standby mode, the temperature is usually allowed a larger amount of variance than in Occupied mode. Still, it is maintained at a value close enough to the occupied setpoints so that it can be varied quickly for occupancy.
Unoccupied	The limits between which the temperature is to be maintained by the controller when it is in Unoccupied mode. If the temperature passes these limits, the system reacts to bring the temperature back within these limits. In Unoccupied mode, the space temperature is usually allowed a larger amount of variance than in Occupied mode, thereby lowering operating costs.

Fan Configuration

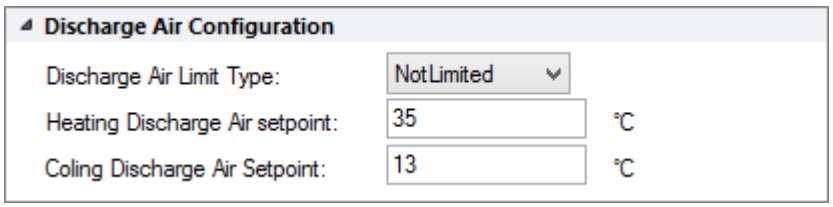
The **Fan configuration** subsection contains the Fan Type option, Fan Control mode, minimum and maximum fan percentage, Fan Off delay, and fan low rescale percentage.



Parameter	Description
Fan Type	**None** – The system is not equipped with fan control. **VarSpeed** – The system is equipped with a variable fan speed. **3Speed** – The system is equipped with a 3 speed fan.
Fan Control Mode	**On** – Fan is always set to at least FanSpeed1. **Auto** – Fan start is controlled based on the terminal load. When the terminal load is at 0%, the fan is off. **Smart** – The fan is always set to at least FanSpeed1 during occupied mode. When in Unoccupied, Bypass or Standby mode the fan is controlled based on the terminal load.
Minimum/Maximum Fan in Cool/Heat Mode	Enter the minimum and maximum fan speed as a percentage for either cooling or heating.
Fan Off Delay	Configure the delay during which the fan will be set to minimum speed after a stop request is received.
Fan Low Rescale in cool/heat mode	Configure the cooling/heating load under which the fan will be at minimum speed.

Discharge Air Configuration

The **Discharge Air Configuration** subsection allows for adjustment of the discharge air limit type, and heating and cooling discharge air setpoints.



Parameter	Description
Discharge Air Limit Type	**NotLimited** – The cooling or heating load are not limited by the discharge air. **LowLimit** – The cooling valve is limited to prevent the discharge air temperature from being lower than MinDischAirSp. **HighLimit** – The heating valve is limited to prevent the discharge air temperature from being greater than MaxDischAirSp **HighLowLimit** – Both the heating and cooling valves are limited to prevent the discharge from being lower than MinDischAirSp or greater than MaxDischAirSp.
Heating/Cooling Discharge Air setpoint	Configure maximum (heating) and minimum (cooling) discharge temperature setpoint limitation.

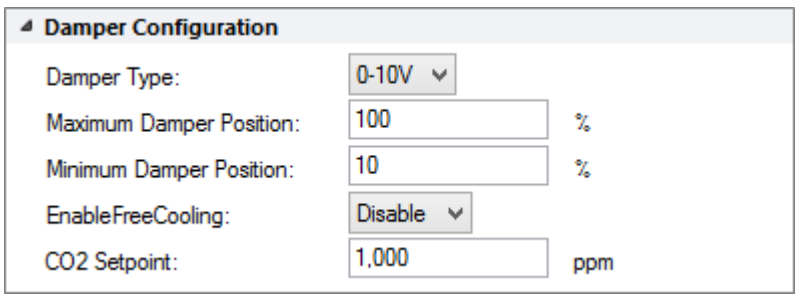
Water Temperature Configuration

The **Water Temperature Configuration** subsection allows for the control of heating and cooling water setpoints for 2 pipe change-over systems.

Parameter	Description
Heat Water Setpoint	Configure the water temperature above which 2 pipe change-over systems are considered to be in heating mode.
Cool Water Setpoint	Configure the water temperature below which 2 pipes change-over systems are considered to be in cooling mode.

Damper Configuration

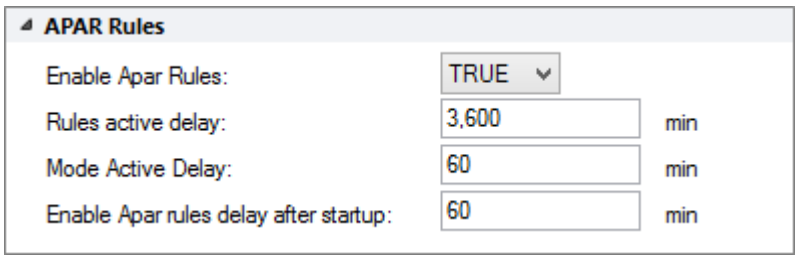
The **Damper Configuration** subsection contains several configuration parameters that control the damper's behaviour. For example, the damper type, position, free cooling mode, and CO2 setpoint can be set. The table below describes all the parameters related to the damper configuration.



Parameter	Description
Damper Type	**None** – Damper controlis disabled. **0-10V** – Damper is controlled using a 0-10V signal. **2-10V** – Damper is controlled using a 2-10V signal.
Maximum Damper Position	Configure the maximum damper position. When not in unoccupied mode, this value will be used to control the damper between Minimum Damper Position and Maximum Damper Position based on the CO_2 and temperature requests.
Minimum Damper Position	Configure the minimum damper position. When not in unoccupied mode, this value will be used to control the damper between Minimum Damper Position and Maximum Damper Position based on the CO_2 and temperature requests. When in unoccupied mode, this value will be considered as 0%.
EnableFreeCooling	Free cooling options are based on occupancy status. **Enable** – (Unocupied) – Damper is closed. – (Occupied or Bypass) – Damper is controlled by the greater of the CO_2 and Cooling load signals. – (Standby) – Damper is controlled by the Cooling load. **Disable** – (Unoccupied) – Damper is closed. – (Occupied or Bypass) – Damper is controlled by the CO_2 load. – (Standby) – Damper is closed.
CO2 Setpoint	Configure the CO_2 setpoint used to calculate CO_2 load for damper control.

APAR Rules

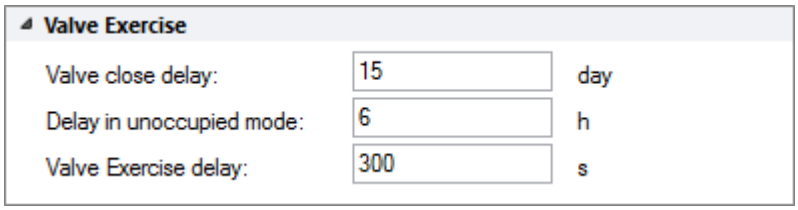
The **APAR Rules** subsection allows for the configuration of AHU Performance Assessment Rules needed for fault detection and diagnostics. The table below outlines the available options.



Parameter	Description
Enable APAR Rules	Enable or disable AHU Performance Assessment Rules.
Rules active delay	Enter the delay period before APAR rules are active.
Mode active delay	Enter the delay period before APAR rules are enabled when the device is in the correct mode.
Enable APAR rules delay after startup	Enter the delay period before APAR rules are enabled after startup.

Valve Exercise

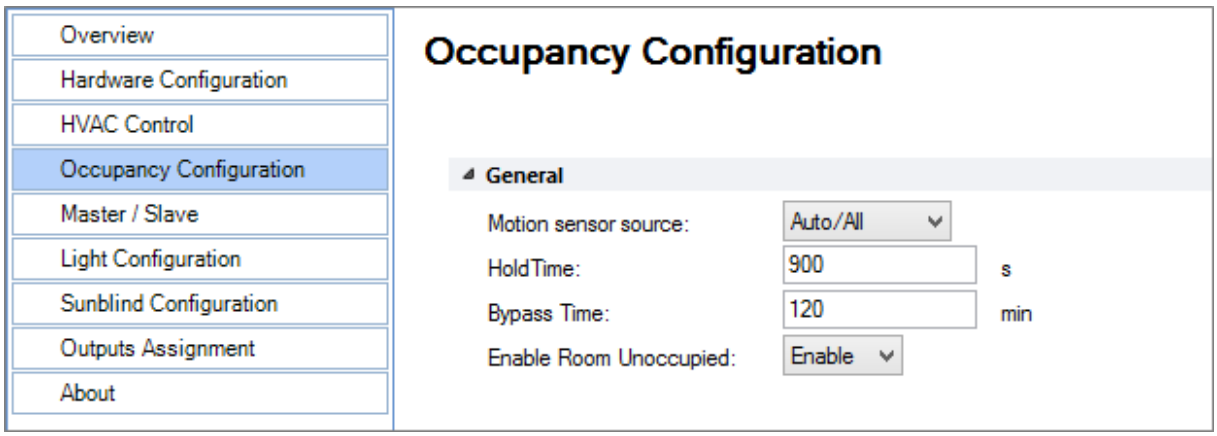
The **Valve Exercise** is used to periodically open and close valves during long periods when the valve is in the same position. This ensures the valve is free-moving when it is needed.



Parameter	Description
Valve close delay	Configure the delay period before enabling the valve exercise when the valve control is 0% for a consecutive time longer than this delay.
Delay in unoccupied mode	Configure the delay period before enabling the valve exercise in the unoccupied occupancy mode with the valve control equal to 0%.
Valve exercise delay	Configure the valve exercise cycle time.

Occupancy Configuration

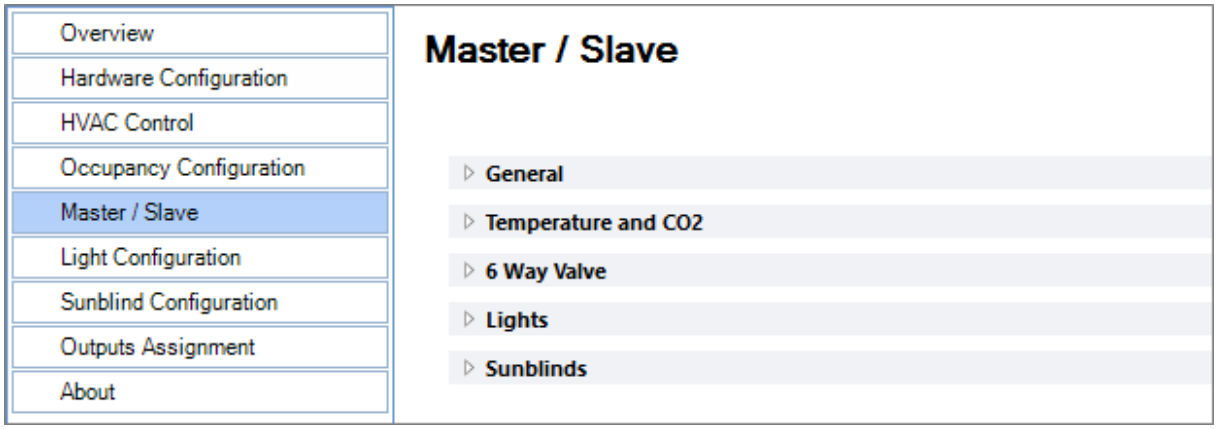
The **Occupancy Configuration** tab allows a user to configure general settings such as the motion sensor source, hold time, bypass time, and room unoccupancy. A brief description of each type of configuration parameter is outlined below.



Parameter	Description
Motion sensor source	**Unused** – The system is not using any occupancy detection, the final occupancy is equal to the occupancy received from the BMS system, except if the device is a Slave device. **Multi-Sensor** – The system is using the EC-Multi-Sensor to receive the occupancy detection information. **ComSensor** – The system is using the EC-Smart-Vue to receive the occupancy detection information. **DigitalInput** – The system is using a Digital Input on DI6 to receive the occupancy detection information. **Auto/All** – The system is using any occupancy sensor connected to receive the motion detection information. If at least one sensor is occupied, the variable MotionSensor(MSV5) is set to occupied.
Hold Time	Configure the delay period after the last occupancy detection before considering the room unoccupied.
Bypass Time	Configure the bypass delay period when the room occupancy is overridden either via the EC-Sensor, the EC-Smart-Vue or the EC-Smart-Comfort.
Enable Room Unoccupied	Enable this command to set the room to unoccupied when the motion sensor detects that the room is unoccupied.

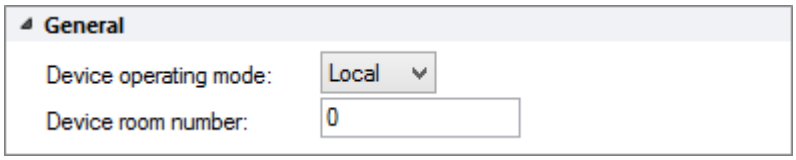
Master / Slave

The **Master / Slave** tab gives options as to whether the current controller should behave as a master, slave, or independently for many settings which are outlined below.



General

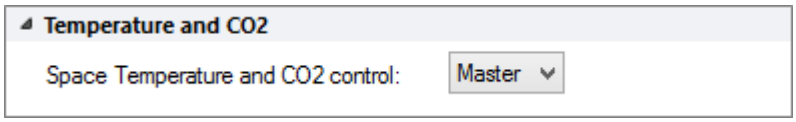
In the **General** subsection, the controller operating mode and the controller room number can be configured.



Parameter	Description
Device operating mode	**Local** – The HVAC controller operates locally without exchanging information with others. **Master** – The HVAC controller is a master on the local MS/TP network. **Slave** – The HVAC controller is a slave on the local MS/TP network.
Device room number	The controller will use the information from the EC-Remote control. The master/slave information received or sent over the local MS/TP network that are associated with the same room number will operate the HVAC control loop.

Temperature and CO2

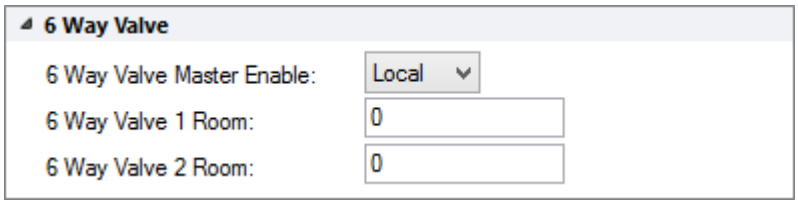
In the **Temperature and CO2** subsection, indicate the controller behaviour for space temperature and CO2 control.



Parameter	Description
Space temperature and CO2 control	**Local** – The local space temperature reading is used if the value is valid. If the value of local space temperature is not valid, the network value will be used. **Master** – The local space temperature is sent on the network if the Device Operating Mode (MSV50) is set to Master. **Slave** – The space temperature is received via the network. If the network value is not valid, a valid local space temperature can be used. **Auto** – If the local space temperature is not valid or the system is controlled based on a return temperature sensor, the network value will be used if valid. If the network value is not valid or if the system is not controlled based on a return temperature sensor, the local value will be used.

6 Way Valve

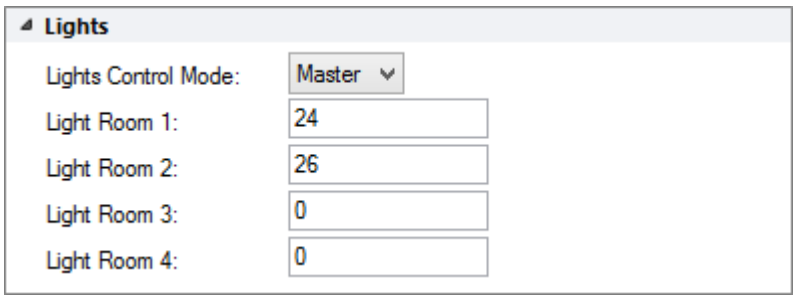
The **6 Way Valve** subsection allows for configuration of 6 Way Valve control.



Parameter	Description
6 Way Valve Control Mode	Select if the controller is in Master or Local mode for 6 Way Valve management.
6 Way Valve Room 1/2	Enter the desired device room number to control the 6 Way Valve.

Lights

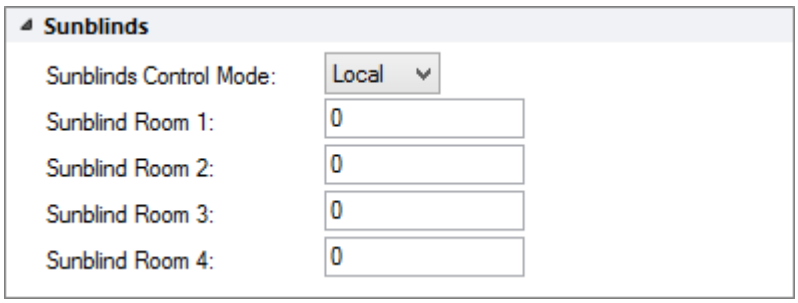
The **Lights** subsection allows for configuration of light control.



Parameter	Description
Lights Control Mode	Select if the controller is in Master or Local mode for Lights management.
Light Room 1/2/3/4	Enter the desired device room number to control the lights.

Sunblinds

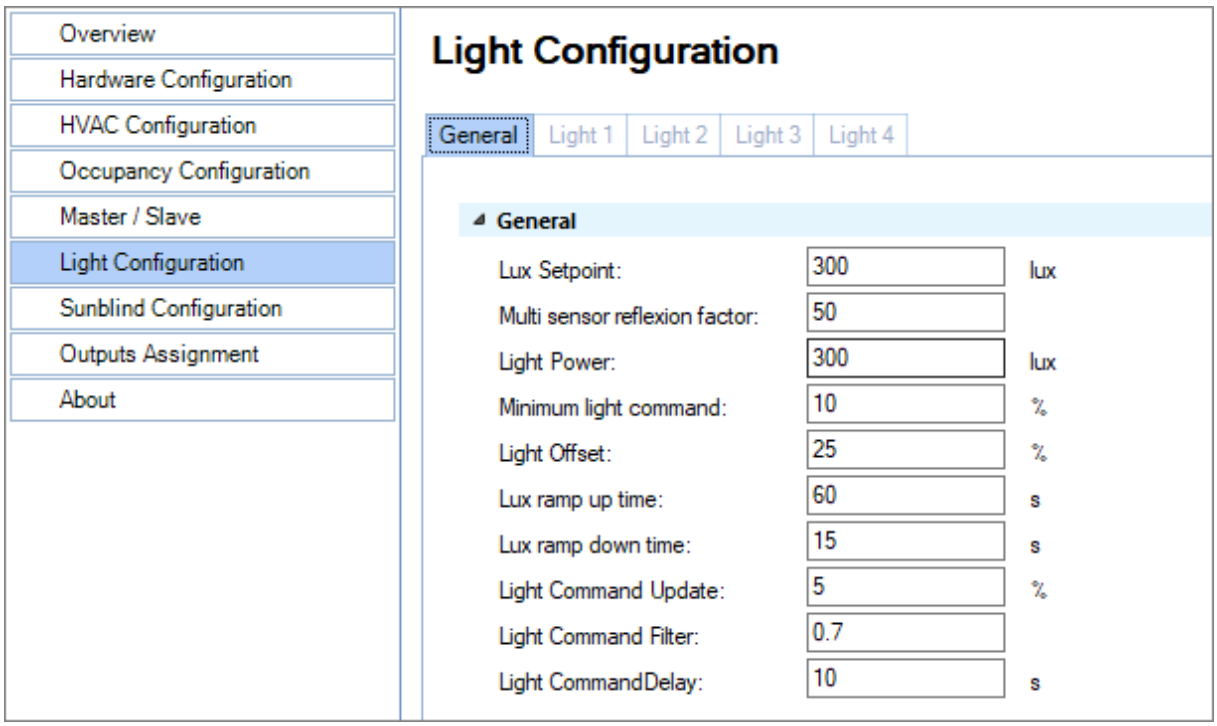
The **Sunblinds** subsection allows for configuration of sunblind control.



Parameter	Description
Sunblinds Control Mode	Select if the controller is in Master or Local mode for sunblind management.
Sunblinds Room 1/2/3/4	Enter the desired device room number to control the sunblinds.

Light Configuration

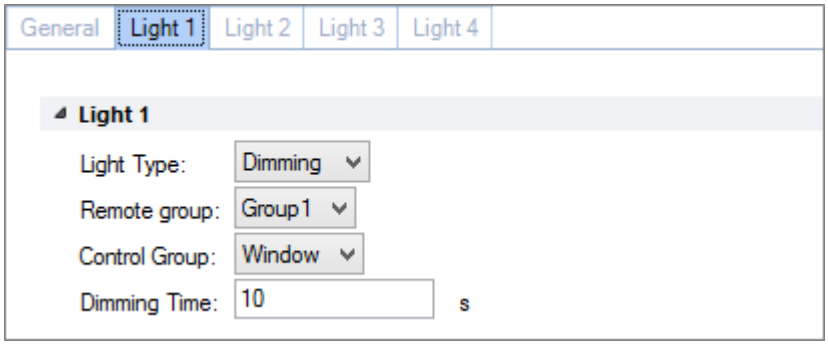
The **Light Configuration** tab contains the configurable parameters for light control. A description of each option is outlined below.



Parameter	Description
Lux Setpoint	Configure the lux setpoint for automatic mode.
Multi sensor reflexion factor	Configure the EC-Multi-Sensor reflexion factor.
Light Power	Configure the power of the lights.
Minimum light command	Configure the minimum light setting percentage.
Light Offset	Configure the light offset measurement as a percentage.
Lux ramp up/down time	Configure the time of the ramp up/down for lux measurement.
Light Command Update	Configure the lighting command update. The output value will only update if the value of the difference of the new command is greater than this percentage.
Light Command Filter	This setting is used for the filtering of the lighting command.
Light Command Delay	Enter the delay between two light commands.

Light 1/2/3/4

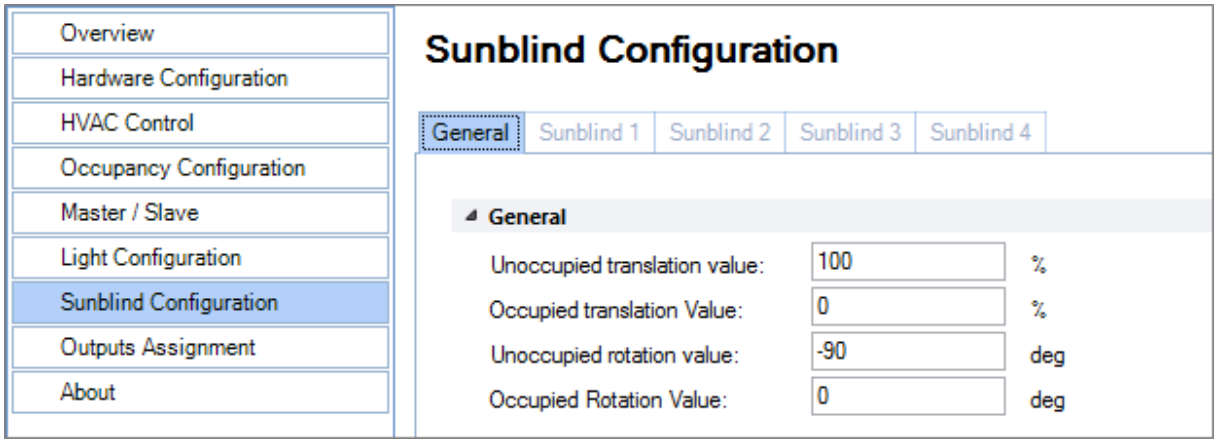
All lighting groups have the same options.



Parameter	Description
Light Type	Select whether the lighting will be dimming or On/Off.
Remote Group	**Group1** – LightOutput1/2/3/4 is overriden by group1 command. **Group2** – LightOutput1/2/3/4 is overriden by group2 command. **Group3** – LightOutput1/2/3/4 is overriden by group3 command. **Group4** – LightOutput1/2/3/4 is overriden by group4 command. **Group5** – LightOutput1/2/3/4 is overriden by group5 command. **Group6** – LightOutput1/2/3/4 is overriden by group6 command. **Group7** – LightOutput1/2/3/4 is overriden by group7 command. **Group8** – LightOutput1/2/3/4 is overriden by group8 command.
Control Group	Select either window or corridor control type.
Dimming Time	Select the amount of seconds required to dim the lights.

Sunblinds Configuration

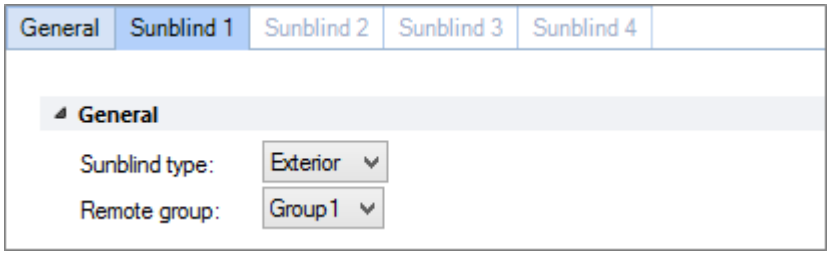
The **Sunblinds Configuration** tab contains the configurable parameters for sunblinds control. A description of each option is outlined below.



Parameter	Description
Unoccupied/Occupied translation value	Configure the translation position of the sunblind in unoccupied and occupied mode.
Unoccupied/Occupied rotation value	Configure the rotation position of the sunblind in unoccupied and occupied mode.

Sunblind 1/2/3/4 General

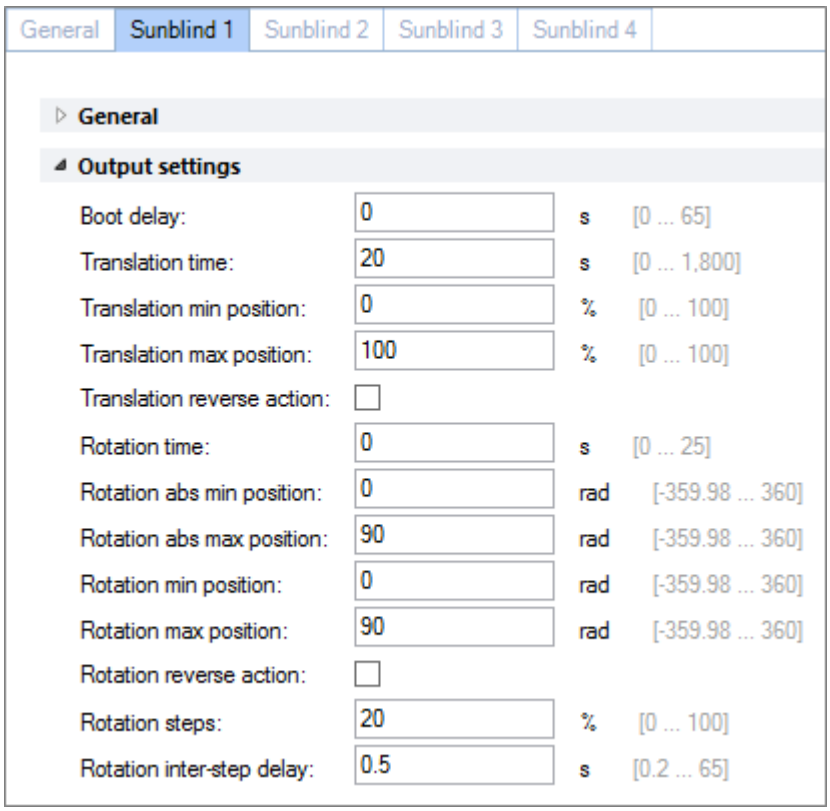
All sunblind groups have the same settings.



Parameter	Description
Sunblind Type	Select whether the sunblinds are interior or exterior..
Remote Group	**Group1** – BlindOutput1/2/3/4 is overriden by group1 command. **Group2** – BlindOutput1/2/3/4 is overriden by group2 command. **Group3** – BlindOutput1/2/3/4 is overriden by group3 command. **Group4** – BlindOutput1/2/3/4 is overriden by group4 command. **Group5** – BlindOutput1/2/3/4 is overriden by group5 command. **Group6** – BlindOutput1/2/3/4 is overriden by group6 command. **Group7** – BlindOutput1/2/3/4 is overriden by group7 command. **Group8** – BlindOutput1/2/3/4 is overriden by group8 command.

Sunblind 1/2/3/4 Output Settings

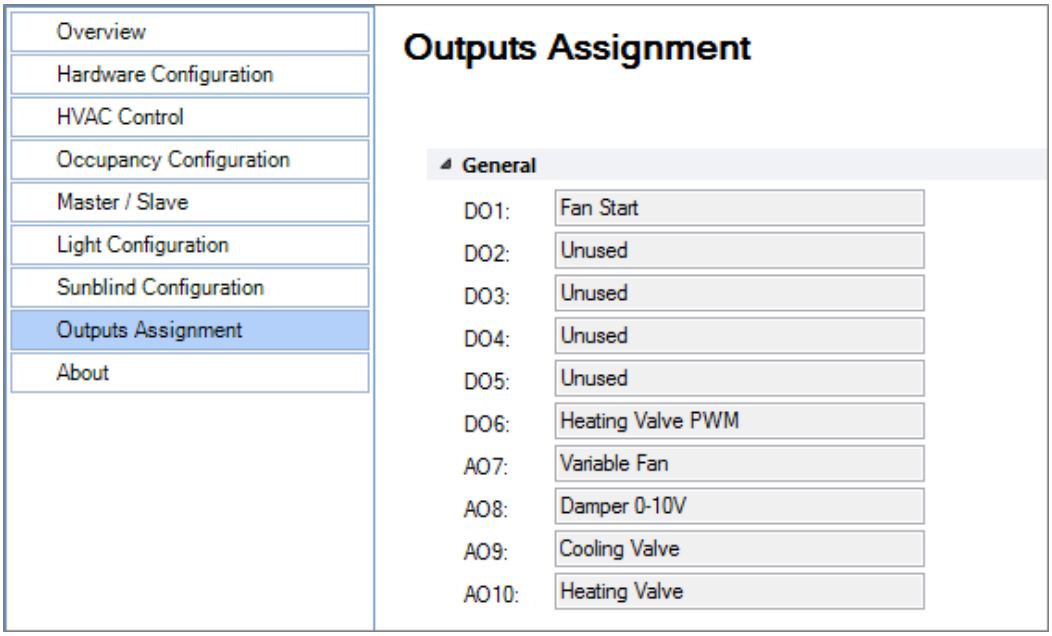
All sunblind groups have the same settings.



Parameter	Description
Boot delay	The motor of some blinds / shades have electronics that delay operation when power is first applied. Set this to the actual amount of delay before the motor reacts to being powered.
Translation time	This sets the time for the blind / shade to go from its fully retracted position to its fully deployed position or vice versa.
Translation min position	This sets the blind's / shade's minimum position beyond which it will not retract as a percentage of the total blind's / shade's translation movement.
Translation max position	This sets the blind's / shade's maximum position beyond which it will not deploy as a percentage of the total blind's / shade's translation movement.
Translation reverse action	Set this option to invert the translation position, to correct a wiring mistake.
Rotation time	This sets the time for the blind / shade to rotate from one extreme to the other, between **Rotation abs minposition** and **Rotation abs max position**.
Rotation abs min position	This sets the blind's / shade's minimum rotation position beyond which physically it cannot turn.
Rotation abs max position	This sets the blind's / shade's maximum rotation position beyond which physically it cannot turn.
Rotation min position	Though a blind can have a wide range of rotation, in practice a more restrictive range of rotation may be required (for example, for security or esthetic reasons). Used in conjunction with Rotation max position, this sets the usable range of blind rotation. This sets the blind's / shade's minimum effective rotation position.
Rotation max position	Used in conjunction with Rotation min position, this sets the blind's / shade's maximum effective rotation position.
Rotation reverse action	Set this option to invert the rotation direction.
Rotation steps	When a blind / shade is commanded by a user (for example, through a remote control), this slows-down blind rotation by introducing rotation steps. This gives a user enough time to react to the actual blind rotation. This sets a percentage of the total rotation for each rotation step that is then followed by a pause set by **Rotation inter-step delay**. For example, if this is set to 10%, and the blind's / shade's total rotation is 90°, a user command will rotate the blind in steps of 9° (10% × 90°), between the range set by **Rotation max position** and **Rotation minposition**.
Rotation inter-step delay	Used in conjunction with **Rotation steps**, when a blind / shade is commanded by a user, this slows-down blind rotation by introducing a time delay between rotation steps.

Output Assignments

The Output Assignment tab indicates which physical outputs are assigned to the configured outputs based on the Outputs Configuration in the Hardware Configuration tab. This facilitates output wiring.



Saving to Multiple Devices

To save your settings to multiple devices, click on the save icon  in the Configuration Assistant ribbon. The Configuration Assistant Synchronization window will appear.

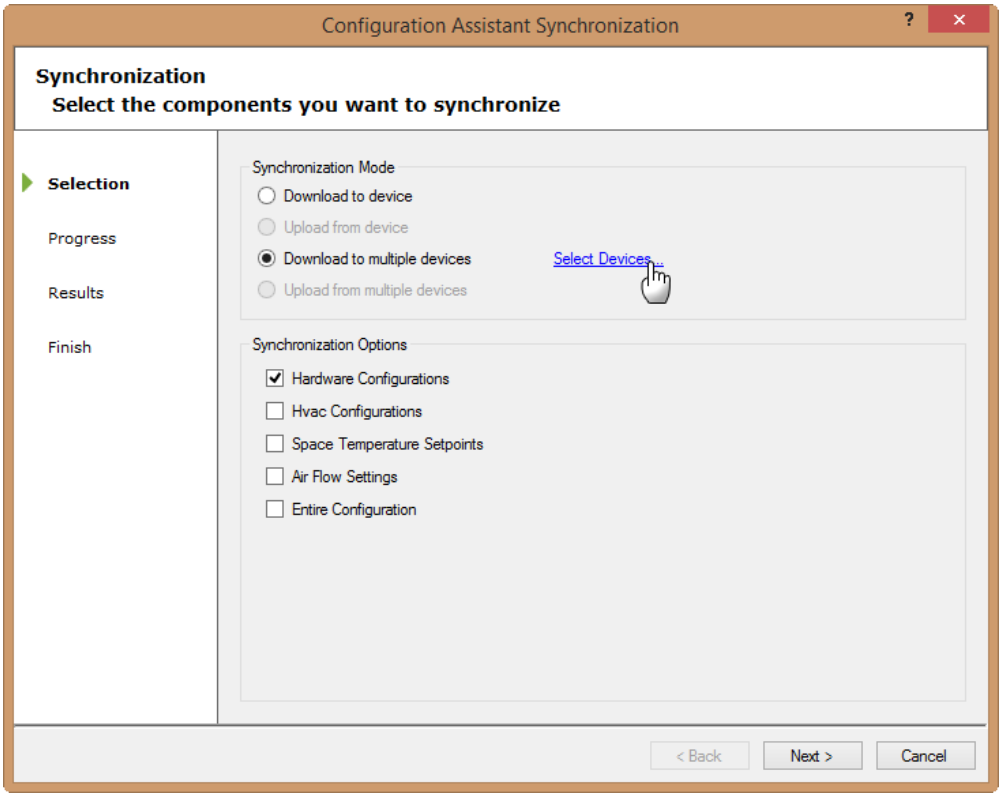


Figure 7: Configuration Assistant Synchronization window

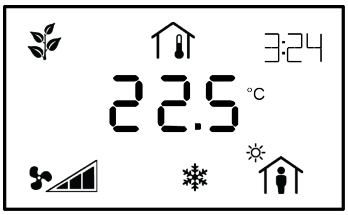
You must select the other devices you wish to save the current configuration to, as well as selecting which parameters you wish saved to those controllers. Click next to advance and complete the process.

Allure EC-Smart-Vue Screen-by-Screen Guide

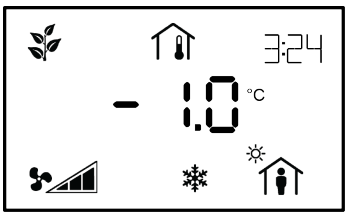
Setting the home screen

Depending on the value of ComSensorDisplay (MSV29), the Allure EC-Smart-Vue sensor home screen will display either:

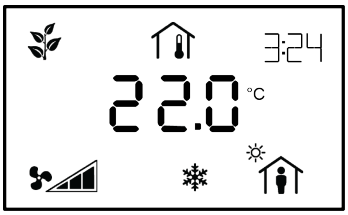
- the space temperature



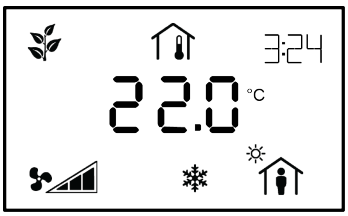
- the setpoint offset



- the effective setpoint



- the average setpoint



Configuration menus

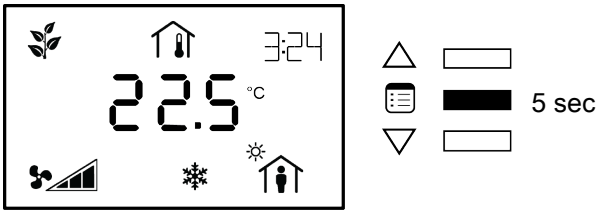
Setting up the system configuration

This section is used to set the system conguration.

See the Enumeration tab section for more details.

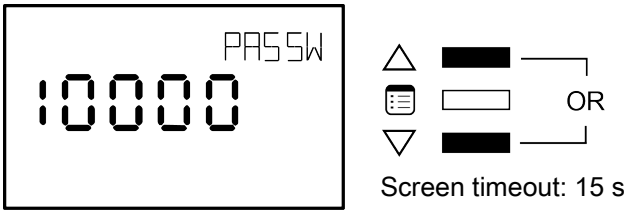
To enter the advanced menus:

1. Hold the **Menu** button for five seconds:



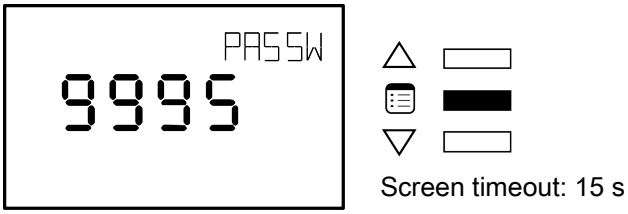
The password field appears.

2. Use the **arrow key**s to increase or decrease the displayed number until it matches the configured password.



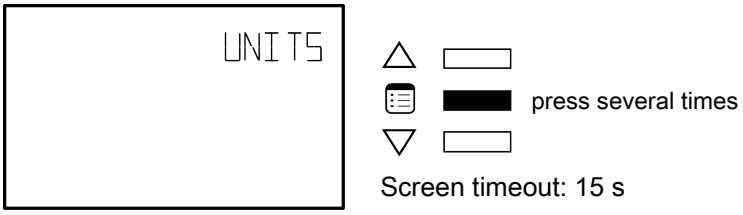
By default, the password is 9995.

3. Press the **Menu** button to submit the password.

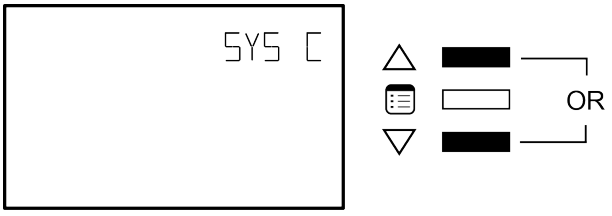


Upon submitting the correct password, the advanced menu is entered and the **Units** submenu is displayed.

4. Press the **Menu** button several times until SYS CFG appears on the display.

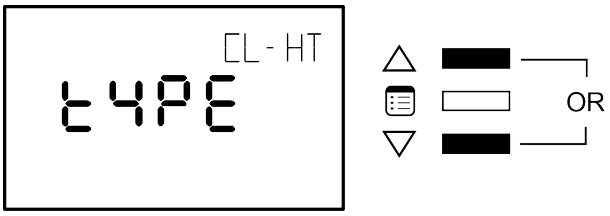


5. Press either of the arrow keys to enter the System Configuration submenu.



TYPE

This menu is used to select the type of system (2 pipes, 4 pipes, etc.)

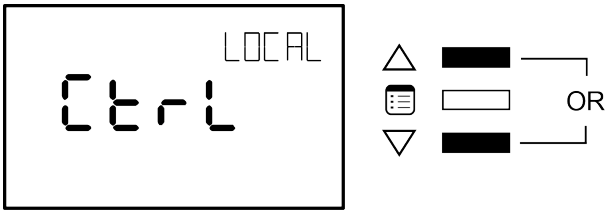


Parameter	Default	Valid Choices		Description
TYPE (MSV 24)		1	CL	2 Pipes cooling
		2	CL-EH	2 Pipes cooling with electric heater
		3	CO	2 Pipes Change Over
		4	CO-EH	2 Pipes Change Over with electric heater
		5	HT	2 Pipes Heating
		6	HT-EH	2 Pipes Heating with electric heater
	X	7	CL-HT	4 Pipes
		8	CL-HT-EH	4 Pipes with electric heater

Table 14: System Type

CTRL

This menu is used to specify the control mode (master/slave/local).

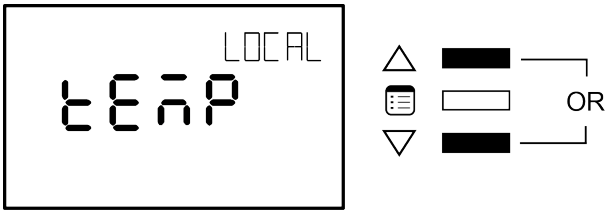


Parameter	Default	Valid Choices		Description
CTRL (MSV 50)	X	1	LOCAL	The HVAC controller operates locally without exchanging information with others
		2	MASTER	The HVAC controller is a master on the local MS/TP network.
		3	SLAVE	The HVAC controller is a slave on the local MS/TP network.

Table 15: Ctrl Mode

TEMPCTRL

This menu is used to specify the space temperature control mode.

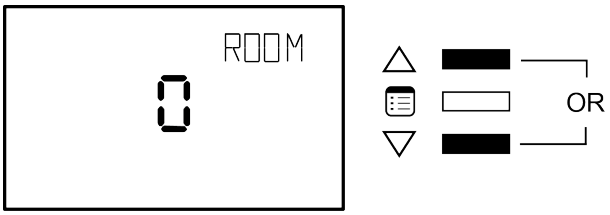


Parameter	Default	Valid Choices		Description
TEMP CTRL (MSV 28)	X	1	LOCAL	Local space temperature is used
		2	MASTER	Local space temperature is used and sent over the network
		3	SLAVE	Space temperature of master controller is used
		4	AUTO	Space temperature of master controller is used with fallback to local value.

Table 16: Temperature Control

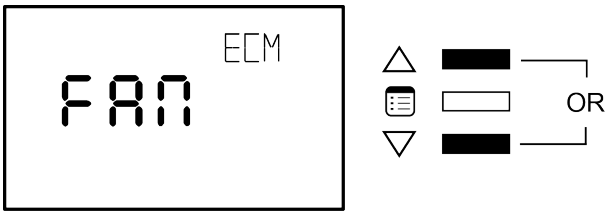
ROOM

This menu is used to specify the room number in which the controller is located.



FAN

This menu is used to configure the fan type.

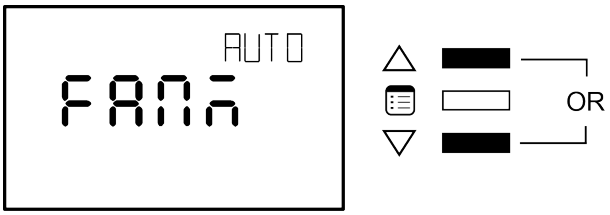


Parameter	Default	Valid Choices		Description
FAN (MSV 25)		1	NONE	Fan control is not used
	X	2	ECM	ECM motor (0-10V output)
		3	3SP	3-speed fan

Table 17: Fan Type

FANM

This menu is used to configure the fan control mode.



Parameter	Default	Valid Choices		Description
FANM (MSV 17)		1	ON	Fan is controlled between minimum speed and 100%
		2	AUTO	Fan control is based on terminal load
	X	3	SMART	Fan control is based on terminal load when unoccupied, and between minimum speed and 100% in other occupancy modes.
		4	ONHEAT	Fan is controlled between minimum speed and 100% in heating mode only.
		5	AUTOHEAT	Fan control is based on heating load
		6	SMARTHEAT	Fan control is based on heating load when unoccupied, and between minimum speed and 100% in other occupancy modes.
		7	ONCOOL	Fan is controlled between minimum speed and 100% in cooling mode only.
		8	AUTOCOOL	Fan control is based on Cooling load
		9	SMARTCOOL	Fan control is based on cooling load when unoccupied, and between minimum speed and 100% in other occupancy modes.

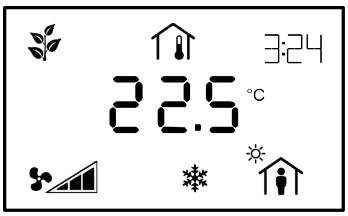
Table 18: Fan Mode

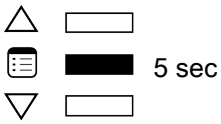
Setting up Inputs

Input Configuration

To enter the advanced menus:

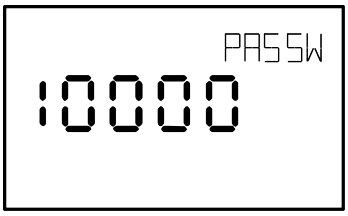
1. Hold the **Menu** button for five seconds:

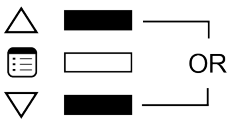




The password field appears.

2. Use the **arrow key**s to increase or decrease the displayed number until it matches the configured password.

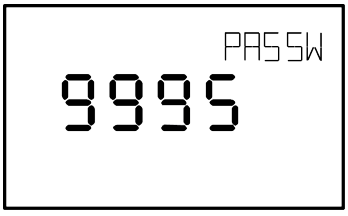


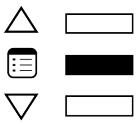


Screen timeout: 15 s

By default, the password is 9995.

3. Press the **Menu** button to submit the password.

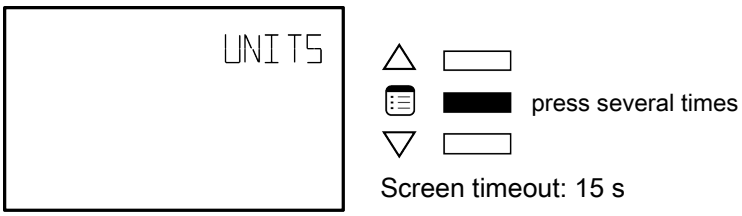




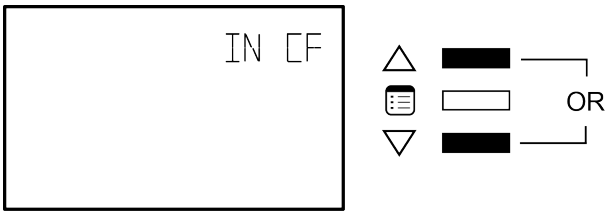
Screen timeout: 15 s

Upon submitting the correct password, the advanced menu is entered and the **Units** submenu is displayed.

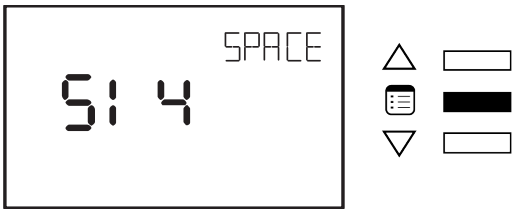
4. Press the **Menu** button several times until IN CFG appears on the display.



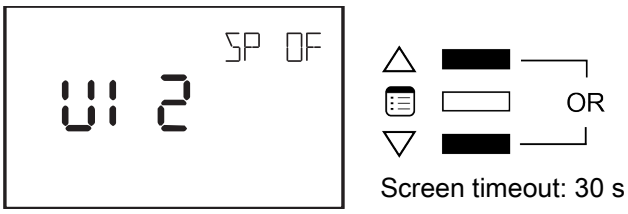
5. Press either of the arrow keys to enter the Inputs Configuration submenu.



6. Press the Menu button to navigate between the different submenus.



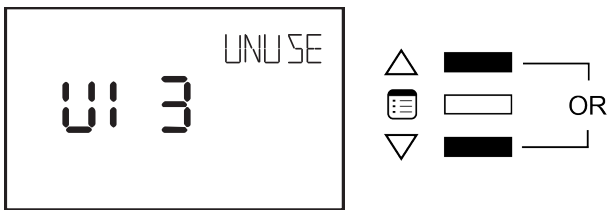
UI2 - Input 2



Parameter	Default	Valid Choices		Description
UI2 (MSV 18)		1	UNUSED	UI2 is not used.
		2	DISCH TEMP	Discharge temperature sensor is connected to UI2.
		3	RETURN TEMP	Return air temperature sensor is connected to UI2.
		4	WATER TEMP	Water Temperature sensor is connected to UI2.
	X	5	SETPOINT OFFSET	Setpoint offset is connected to UI2

Table 19: Universal Input 2

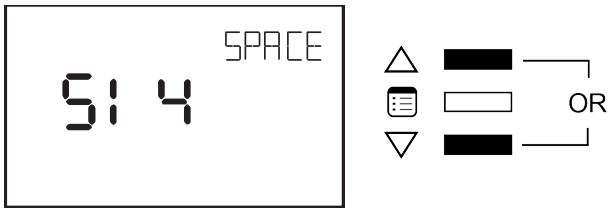
UI3 - Input 3



Parameter	Default	Valid Choices		Description
UI3 (MSV 19)	X	1	UNUSED	UI3 is not used
		2	WINDOW NO	Window Contact is normally open
		3	WINDOW NC	Window Contact is normally closed

Table 20: Universal Input 3

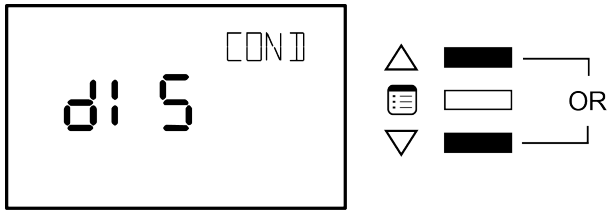
SI4 - Input 4



Parameter	Default	Valid Choices		Description
SI4 (MSV 20)		1	UNUSED	SI4 is not used.
		2	DISCH TEMP	Discharge temperature sensor is connected to SI4.
		3	RETURN TEMP	Return air temperature sensor is connected to SI4.
		4	WATER TEMP	Water Temperature sensor is connected to SI4.
	X	5	SPACE TEMP	Space Temperature is connected to SI4.

Table 21: Sensor Input 4

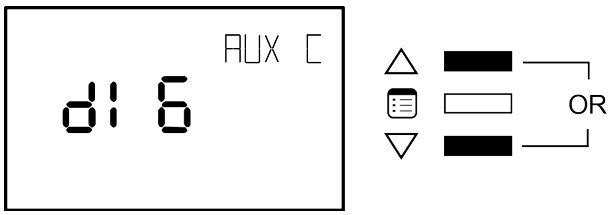
DI5 - Input 5



Parameter	Default	Valid Choices		Description
DI5 (MSV 21)	X	1	UNUSED	DI5 is not used
		2	AUX CONT NO	Auxiliary contact is normally open
		3	AUX CONT NC	Auxiliary contact is normally closed
		4	CHG OVER HEAT	Changeover contact (TRUE = Heat / FALSE = Cool)
		5	CHG OVER COOL	Changeover contact (TRUE = Cool / FALSE = Heat)
		6	COND SENSOR NO	Condensation sensor is normally open
		7	COND SENSOR NC	Condensation sensor is normally close

Table 22: Digital Input 5

DI6 - Input 6



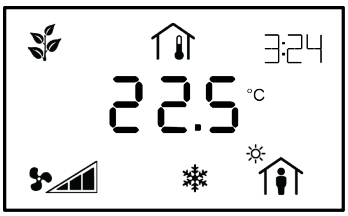
Parameter	Default	Valid Choices		Description
DI6 (MSV 22)		1	UNUSED	DI5 is not used
	X	2	AUX CONT NO	Auxiliary contact is normally open
		3	AUX CONT NC	Auxiliary contact is normally closed
		4	CHG OVER HEAT	Changeover contact (TRUE = Heat / FALSE = Cool)
		5	CHG OVER COOL	Changeover contact (TRUE = Cool / FALSE = Heat)
		6	OCC SENSOR NO	Occupancy sensor is normally open
		7	OCC SENSOR NC	Occupancy sensor is normally close

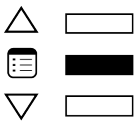
Table 23: Digital Input 6

Displaying Input Values

To enter the advanced menus:

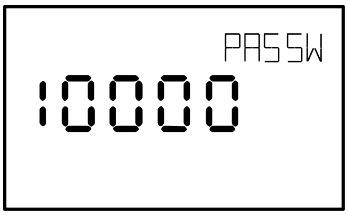
1. Hold the **Menu** button for five seconds:

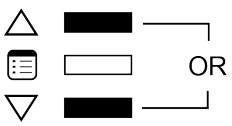




The password field appears.

2. Use the **arrow key**s to increase or decrease the displayed number until it matches the configured password.

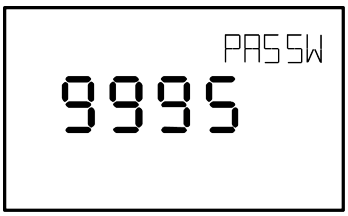


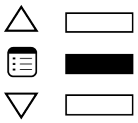


Screen timeout: 15 s

By default, the password is 9995.

3. Press the **Menu** button to submit the password.

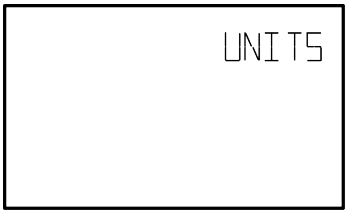


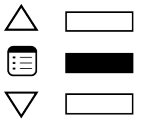


Screen timeout: 15 s

Upon submitting the correct password, the advanced menu is entered and the **Units** submenu is displayed.

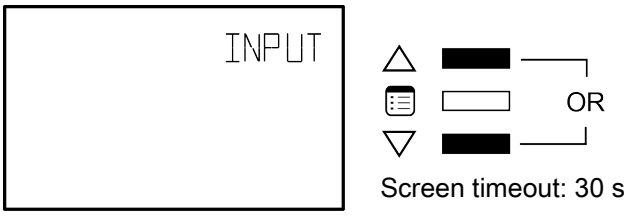
4. Press the **Menu** button several times until INPUTS appears on the display.



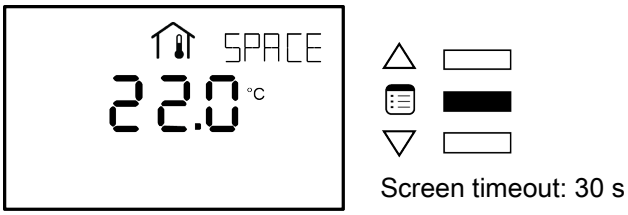


Screen timeout: 15 s

5. Press either of the arrow keys to enter the Inputs Display submenu.



6. Press the Edit button to successively display the input values.



Code	Description
UI1V	Displays UI1 value (volts)
DISCH	Displays the actual discharge temperature value (-327°C if not configured or not connected)
RETU	Displays the actual return temperature value (-327°C if not configured or not connected)
WATE	Displays actual water temperature value (-327°C if not configured or not connected)
SP OF	Displays setpoint offset from UI2.
SPAC	Displays the actual space temperature value from SI4. (-327°C if not configured or not connected)
UI3	Displays the actual state of UI3. (0 = Open, 1 = Close)
DI5	Displays the actual state of DI5. (0 = Open, 1 = Close)
DI6	Displays the actual state of DI6. (0 = Open, 1 = Close)

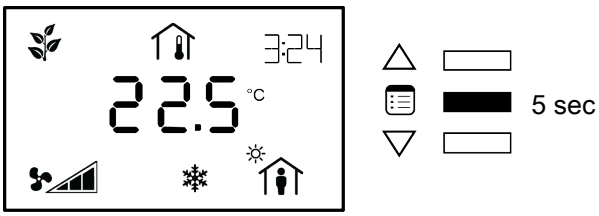
Table 24: Displaying Input Values

Setting up Outputs

Output Configuration

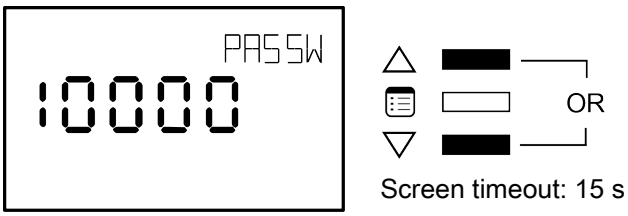
To enter the advanced menus:

1. Hold the **Menu** button for five seconds:



The password field appears.

2. Use the **arrow key**s to increase or decrease the displayed number until it matches the configured password.



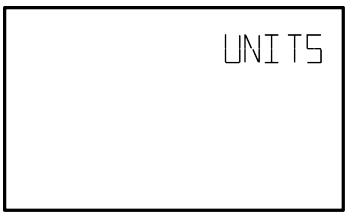
By default, the password is 9995.

3. Press the **Menu** button to submit the password.

Screen timeout: 15 s

Upon submitting the correct password, the advanced menu is entered and the **Units** submenu is displayed.

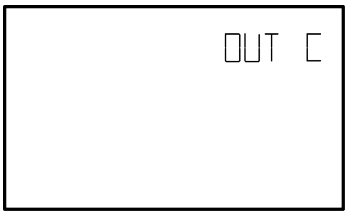
4. Press the **Menu** button several times until OUT CFG appears on the display.



press several times

Screen timeout: 15 s

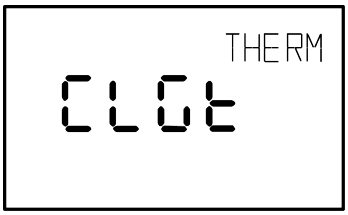
5. Press either of the arrow keys to enter the Outputs Configuration submenu.



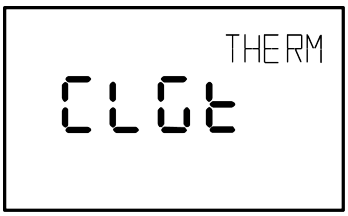
OR

Screen timeout: 30 s

6. Press the Menu button to navigate between the different submenus.



CLG T - Cooling Valve Type

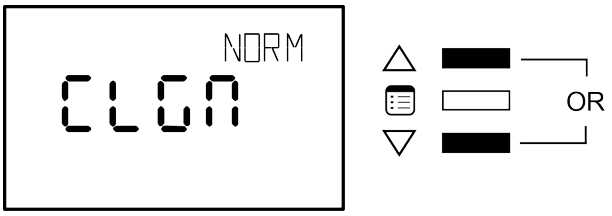


OR

Parameter	Default	Valid Choices		Description
CLG TYPE (MSV 26)		1	UNUSED	Cooling valve is not used
	X	2	0-10V	0-10V cooling valve only is used
		3	THERMAL	Thermal and 0-10V cooling valves are used
		4	ON_OFF	On/Off and 0-10V cooling valves are used
		5	FLOATING	Floating and 0-10V cooling valves are used
		6	6WAYVLV	6 Way Valve control

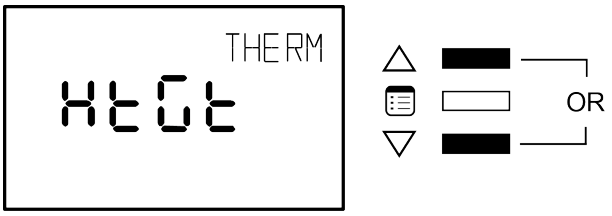
Table 25: Cooling Valve Type

CLG N - Cooling Valve Polarity



Select Normally Open or Normally Closed depending on your system.

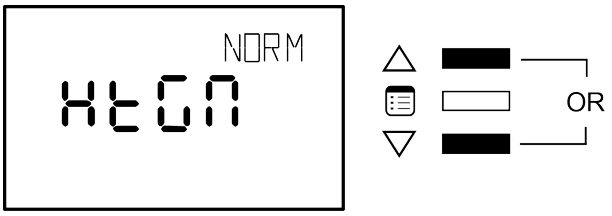
HTG T - Heating Valve Type



Parameter	Default	Valid Choices		Description
HTG TYPE (MSV 27)		1	UNUNSED	Heating valve is not used
	X	2	0-10V	0-10V heating valve only is used
		3	THERMAL	Thermal and 0-10V heating valves are used
		4	ON_OFF	On/Off and 0-10V heating valves are used
		5	FLOATING	Floating and 0-10V heating valves are used
		6	6WAYVLV	6 Way Valve control

Table 26: Heating Valve Type

HTG N - Heating Valve Polarity

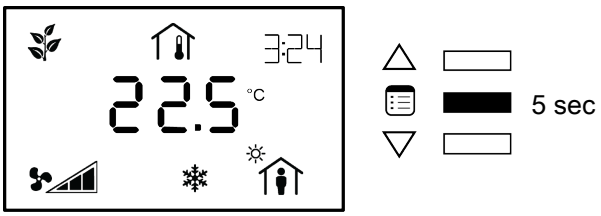


Select Normally Open or Normally Closed depending on your system.

Equipment Override

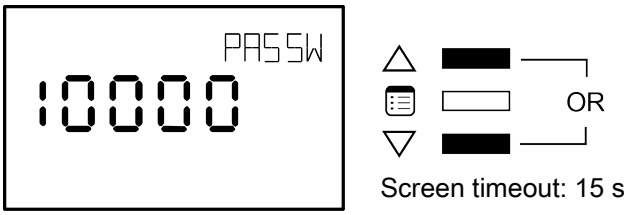
To enter the advanced menus:

1. Hold the **Menu** button for five seconds:



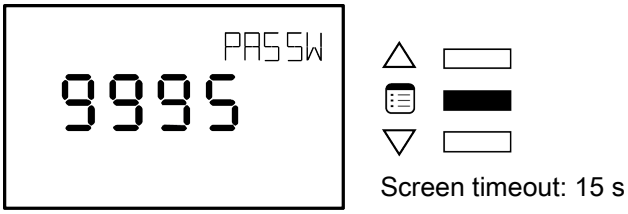
The password field appears.

2. Use the **arrow key**s to increase or decrease the displayed number until it matches the configured password.



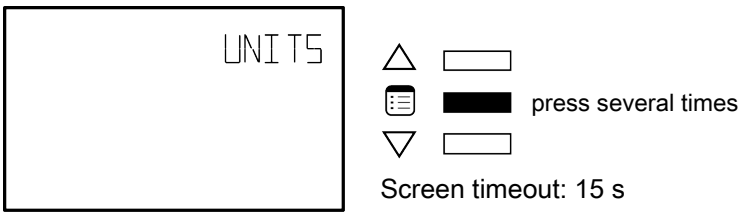
By default, the password is 9995.

3. Press the **Menu** button to submit the password.

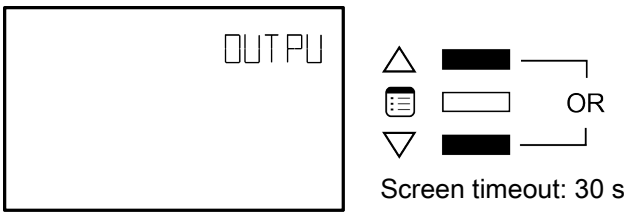


Upon submitting the correct password, the advanced menu is entered and the **Units** submenu is displayed.

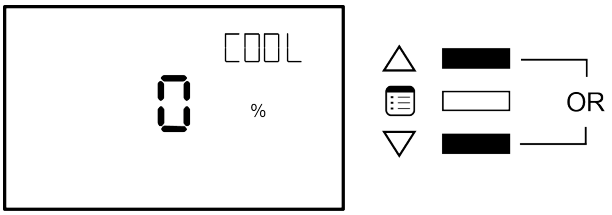
4. Press the **Menu** button several times until OUTPUTS appears on the display.



5. Press either of the arrow keys to enter the Outputs Display submenu.

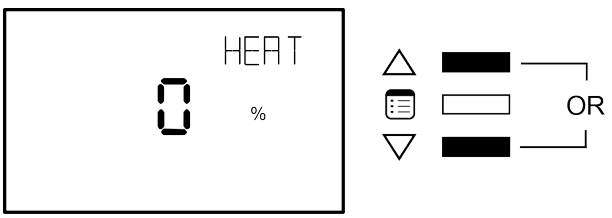


Cooling or change over valve override



To go back to automatic control, press simultaneously both arrow keys.
Use the **arrow keys** to change the value and press the **Menu** button to validate.

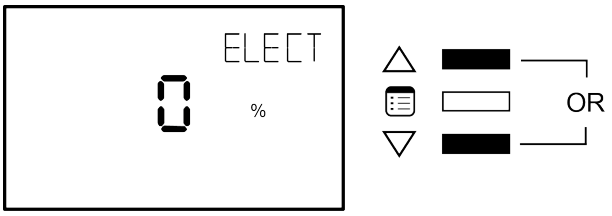
Heating Valve Override



To go back to automatic control, press simultaneously both arrow keys.

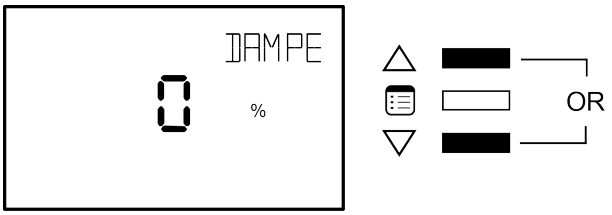
Use the **arrow keys** to change the value and press the **Menu** button to validate.

Electric Heater Override



Use the **arrow keys** to change the value and press the **Menu** button to validate.
To go back to automatic control, press simultaneously both arrow keys.

Damper Override



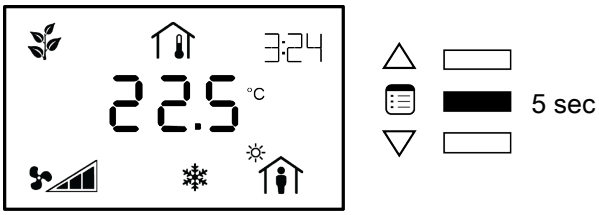
Use the **arrow keys** to change the value and press the **Menu** button to validate.
To go back to automatic control, press simultaneously both arrow keys.

Setting up the network parameters and calibrating the system

Setting up the communication network parameters

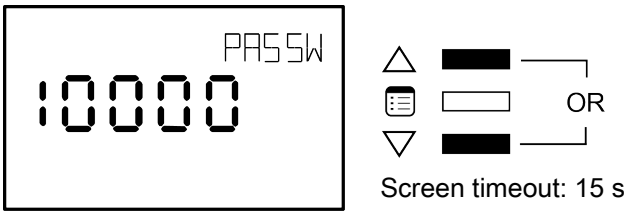
To enter the advanced menus:

1. Hold the **Menu** button for five seconds:



The password field appears.

2. Use the **arrow key**s to increase or decrease the displayed number until it matches the configured password.



Screen timeout: 15 s

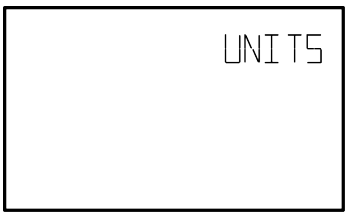
By default, the password is 9995.

3. Press the **Menu** button to submit the password.

Screen timeout: 15 s

Upon submitting the correct password, the advanced menu is entered and the **Units** submenu is displayed.

4. Press the **Menu** button several times until GEN CFG appears on the display.



press several times

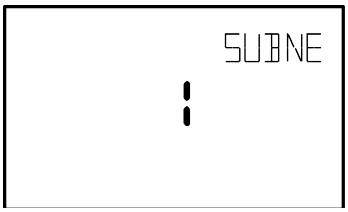
Screen timeout: 15 s

5. Press either of the arrow keys to enter the General Configuration submenu.

OR

Screen timeout: 30 s

Subnet ID



OR

Screen timeout: 30 s

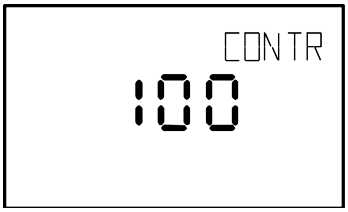
Use the **arrow keys** to change the value and press the **Menu** button to validate.

Device ID

Screen timeout: 30 s

The device ID is a read only value.

Screen Contrast



OR

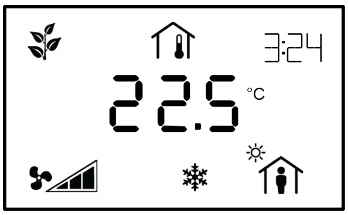
Screen timeout: 30 s

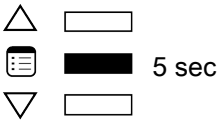
Use the **arrow keys** to change the value and press the **Menu** button to validate.

Calibrating the system

To enter the advanced menus:

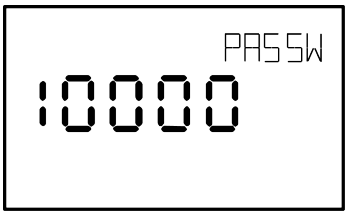
1. Hold the **Menu** button for five seconds:

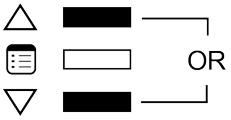




The password field appears.

2. Use the **arrow key**s to increase or decrease the displayed number until it matches the configured password.

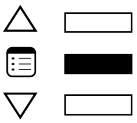




Screen timeout: 15 s

By default, the password is 9995.

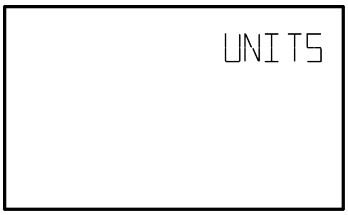
3. Press the **Menu** button to submit the password.

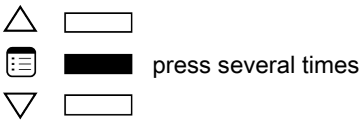


Screen timeout: 15 s

Upon submitting the correct password, the advanced menu is entered and the **Units** submenu is displayed.

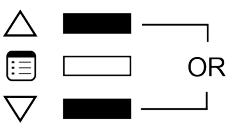
4. Press the **Menu** button several times until CALIBRATION appears on the display.





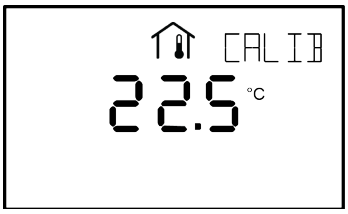
Screen timeout: 15 s

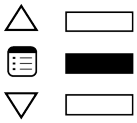
5. Press either of the arrow keys to enter the Calibration submenu.



Screen timeout: 30 s

6. Press the Menu button to navigate between the different submenus.





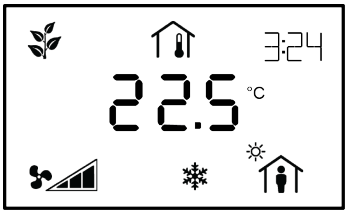
Screen timeout: 30 s

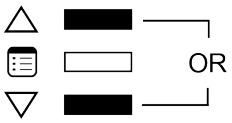
End-User Overrides

Setpoint Offset Control

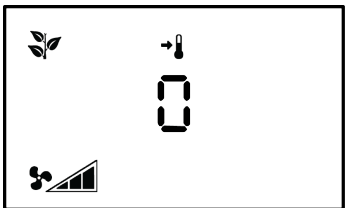
Using the Allure EC-Smart-Vue sensor, the user can change the setpoint offset. The setpoint offset range can be configured via SpOffsetRange (AV27)

1. Press the up or down buttons to access the setpoint offset screen.

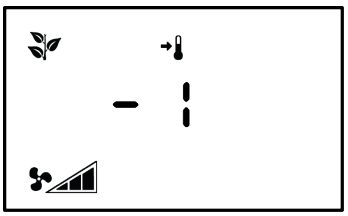


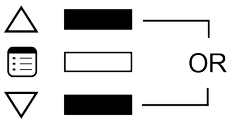


This Screen appears (Timeout 5 seconds).



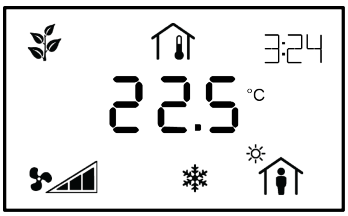
2. Use the up and down buttons to change the setpoint offset. (+- 0.1 Increments)

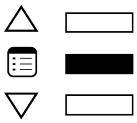




Occupancy Override

The first press to the **Menu** button switches the room occupancy from unoccupied to occupied.



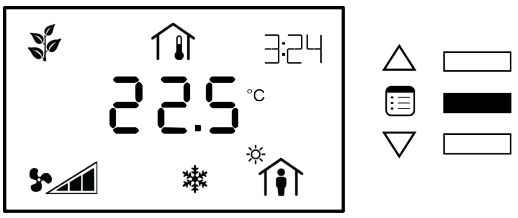


The occupancy override by **the Allure EC-Smart-Vue** sensor is only used to set the room occupancy in occupied mode if the effective occupancy is currently in standby or unoccupied.

If the effective occupancy is Occupied, the Menu button is only used to set the fan speed.

Fan Speed Override

Pressing the Menu button will change the fan speed (variable or 3 speed). The fan override is disabled when the room occupancy is not occupied.



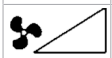
Icon	Description
	Fan is overriden to low speed
	Fan is overriden to medium speed.
	Fan is overriden to maximum speed.
	Fan is manually stopped.

Table 27: Fan Override Icons

Tables of configuration codes

System Type

Parameter	Default	Valid Choices		Description
TYPE (MSV 24)		1	CL	2 Pipes cooling
		2	CL-EH	2 Pipes cooling with electric heater
		3	CO	2 Pipes Change Over
		4	CO-EH	2 Pipes Change Over with electric heater
		5	HT	2 Pipes Heating
		6	HT-EH	2 Pipes Heating with electric heater
	X	7	CL-HT	4 Pipes
		8	CL-HT-EH	4 Pipes with electric heater

Table 28: System Type

Ctrl Mode

Parameter	Default	Valid Choices		Description
CTRL (MSV 50)	X	1	LOCAL	The HVAC controller operates locally without exchanging information with others
		2	MASTER	The HVAC controller is a master on the local MS/TP network.
		3	SLAVE	The HVAC controller is a slave on the local MS/TP network.

Table 29: Ctrl Mode

Temperature Control

Parameter	Default	Valid Choices		Description
TEMP CTRL (MSV 28)	X	1	LOCAL	Local space temperature is used
		2	MASTER	Local space temperature is used and sent over the network
		3	SLAVE	Space temperature of master controller is used
		4	AUTO	Space temperature of master controller is used with fallback to local value.

Table 30: Temperature Control

Fan Type

Parameter	Default	Valid Choices		Description
FAN (MSV 25)		1	NONE	Fan control is not used
	X	2	ECM	ECM motor (0-10V output)
		3	3SP	3-speed fan

Table 31: Fan Type

Fan Mode

Parameter	Default	Valid Choices		Description
FANM (MSV 17)		1	ON	Fan is controlled between minimum speed and 100%
		2	AUTO	Fan control is based on terminal load
	X	3	SMART	Fan control is based on terminal load when unoccupied, and between minimum speed and 100% in other occupancy modes.
		4	ONHEAT	Fan is controlled between minimum speed and 100% in heating mode only.
		5	AUTOHEAT	Fan control is based on heating load
		6	SMARTHEAT	Fan control is based on heating load when unoccupied, and between minimum speed and 100% in other occupancy modes.
		7	ONCOOL	Fan is controlled between minimum speed and 100% in cooling mode only.
		8	AUTOCOOL	Fan control is based on Cooling load
		9	SMARTCOOL	Fan control is based on cooling load when unoccupied, and between minimum speed and 100% in other occupancy modes.

Table 32: Fan Mode

Cooling Valve Type

Parameter	Default	Valid Choices		Description
CLG TYPE (MSV 26)		1	UNUSED	Cooling valve is not used
	X	2	0-10V	0-10V cooling valve only is used
		3	THERMAL	Thermal and 0-10V cooling valves are used
		4	ON_OFF	On/Off and 0-10V cooling valves are used
		5	FLOATING	Floating and 0-10V cooling valves are used
		6	6WAYVLV	6 Way Valve control

Table 33: Cooling Valve Type

Heating Valve Type

Parameter	Default	Valid Choices		Description
HTG TYPE (MSV 27)		1	UNUSED	Heating valve is not used
	X	2	0-10V	0-10V heating valve only is used
		3	THERMAL	Thermal and 0-10V heating valves are used
		4	ON_OFF	On/Off and 0-10V heating valves are used
		5	FLOATING	Floating and 0-10V heating valves are used
		6	6WAYVLV	6 Way Valve control

Table 34: Heating Valve Type

Cooling Valve Polarity

Parameter	Default	Valid Choices		Description
CLG NO/NC (BV 14)	X	0	NORM CLOSE	Cooling valve is normally closed
		1	NORM OPEN	Cooling valve is normally open

Table 35: Cooling Valve Polarity

Heating Valve Polarity

Parameter	Default	Valid Choices		Description
HTG NO/NC (BV 13)	X	0	NORM CLOSE	Heating valve is normally closed
		1	NORM OPEN	Heating valve is normally open

Table 36: Heating Valve Polarity

Universal Input 2

Parameter	Default	Valid Choices		Description
UI2 (MSV 18)		1	UNUSED	UI2 is not used.
		2	DISCH TEMP	Discharge temperature sensor is connected to UI2.
		3	RETURN TEMP	Return air temperature sensor is connected to UI2.
		4	WATER TEMP	Water Temperature sensor is connected to UI2.
	X	5	SETPOINT OFFSET	Setpoint offset is connected to UI2

Table 37: Universal Input 2

Universal Input 3

Parameter	Default	Valid Choices		Description
UI3 (MSV 19)	X	1	UNUSED	UI3 is not used
		2	WINDOW NO	Window Contact is normally open
		3	WINDOW NC	Window Contact is normally closed

Table 38: Universal Input 3

Sensor Input 4

Parameter	Default	Valid Choices		Description
SI4 (MSV 20)		1	UNUSED	SI4 is not used.
		2	DISCH TEMP	Discharge temperature sensor is connected to SI4.
		3	RETURN TEMP	Return air temperature sensor is connected to SI4.
		4	WATER TEMP	Water Temperature sensor is connected to SI4.
	X	5	SPACE TEMP	Space Temperature is connected to SI4.

Table 39: Sensor Input 4

Digital Input 5

Parameter	Default	Valid Choices		Description
DI5 (MSV 21)	X	1	UNUSED	DI5 is not used
		2	AUX CONT NO	Auxiliary contact is normally open
		3	AUX CONT NC	Auxiliary contact is normally closed
		4	CHG OVER HEAT	Changeover contact (TRUE = Heat / FALSE = Cool)
		5	CHG OVER COOL	Changeover contact (TRUE = Cool / FALSE = Heat)
		6	COND SENSOR NO	Condensation sensor is normally open
		7	COND SENSOR NC	Condensation sensor is normally close

Table 40: Digital Input 5

Digital Input 6

Parameter	Default	Valid Choices		Description
DI6 (MSV 22)		1	UNUSED	DI5 is not used
	X	2	AUX CONT NO	Auxiliary contact is normally open
		3	AUX CONT NC	Auxiliary contact is normally closed
		4	CHG OVER HEAT	Changeover contact (TRUE = Heat / FALSE = Cool)
		5	CHG OVER COOL	Changeover contact (TRUE = Cool / FALSE = Heat)
		6	OCC SENSOR NO	Occupancy sensor is normally open
		7	OCC SENSOR NC	Occupancy sensor is normally close

Table 41: Digital Input 6

Tables of IO Assignments

Fan Configuration

FanType (MSV25)	Variable Fan	FanSpeed1	FanSpeed2	FanSpeed3
None	Unused	Unused	Unused	Unused
3Speed	Unused	DO1	DO2	DO3
VarSpeed	AO7	DO1	Unused	Unused

Electric Heater Configuration

SystemType (MSV24)	Electric Heater Output
Cool	Unused
CoolElectHeat	DO4
ChgOver	Unused
ChgOverElectHeat	DO4
Heat	Unused
HeatElectHeat	DO4
CoolHeat	Unused
CoolHeatElectHeat	DO4

Damper Configuration

DamperCtrlType (MSV32)	Damper Output
None	Unused
0-10V	AO8
2-10V	AO8

Cooling Valve Configuration

SystemType (MSV24)	CoolValveType (MSV26)	FanType (MSV25)	DamperCtrlType (MSV32)	Cooling Valve Output
Heat/HeatElectHeat or CoolHeat/ CoolHeatElectHeat	Unused	-	-	Unused
	0-10V	VarSpeed	None	AO8
			0-10V or 2-10V	Invalid Configuration
		None or 3Speed	-	AO7
	Thermal	-	-	DO5
	On/Off	-	-	DO5
	Floating	-	-	DO5:Open, DO6:Close
	6-Way Valve			AO9
Any other settings	-	-	-	Unused

Heating Valve Configuration

SystemType (MSV24)	HeatValveType (MSV27)	CoolValveType (MSV26)	FanType (MSV25)	DamperCtrlType (MSV32)	Heating Valve Output
Heat/HeatElectHeat or CoolHeat/ CoolHeatElectHeat	Unused	-	-	-	Unused
	0-10V	0-10V	VarSpeed	-	Invalid Configuration
			None or 3Speed	None	AO8
				0-10V or 2-10V	Invalid Configuration
		Not 0-10V	VarSpeed	None	AO8
				0-10V or 2-10V	Invalid Configuration
			None or 3Speed	None	AO8
				0-10V or 2-10V	AO7
	Thermal	-	-	-	DO6
	On/Off	-	-	-	DO6
	Floating	Floating	-	-	Invalid Configuration
		Not Floating	-	-	DO5:Open, DO6:Close
	6-Way Valve				AO10
Any other settings	-	-	-	-	Unused

Change-Over Valve Configuration

SystemType (MSV24)	CoolValveType (MSV26)	FanType (MSV25)	DamperCtrlType (MSV32)	Change-Over Valve
ChgOver or ChgOverElectHeat	Unused	-	-	Unused
	0-10V	VarSpeed	None	AO8
			0-10V or 2-10V	Invalid Configuration
		None or 3Speed	-	AO7
	Thermal	-	-	DO5
	On/Off	-	-	DO5
	Floating	-	-	DO5:Open, DO6:Close
	6-Way Valve			AO9
Any other settings	-	-	-	Unused

Wiring Diagrams

ECY-PTU-207

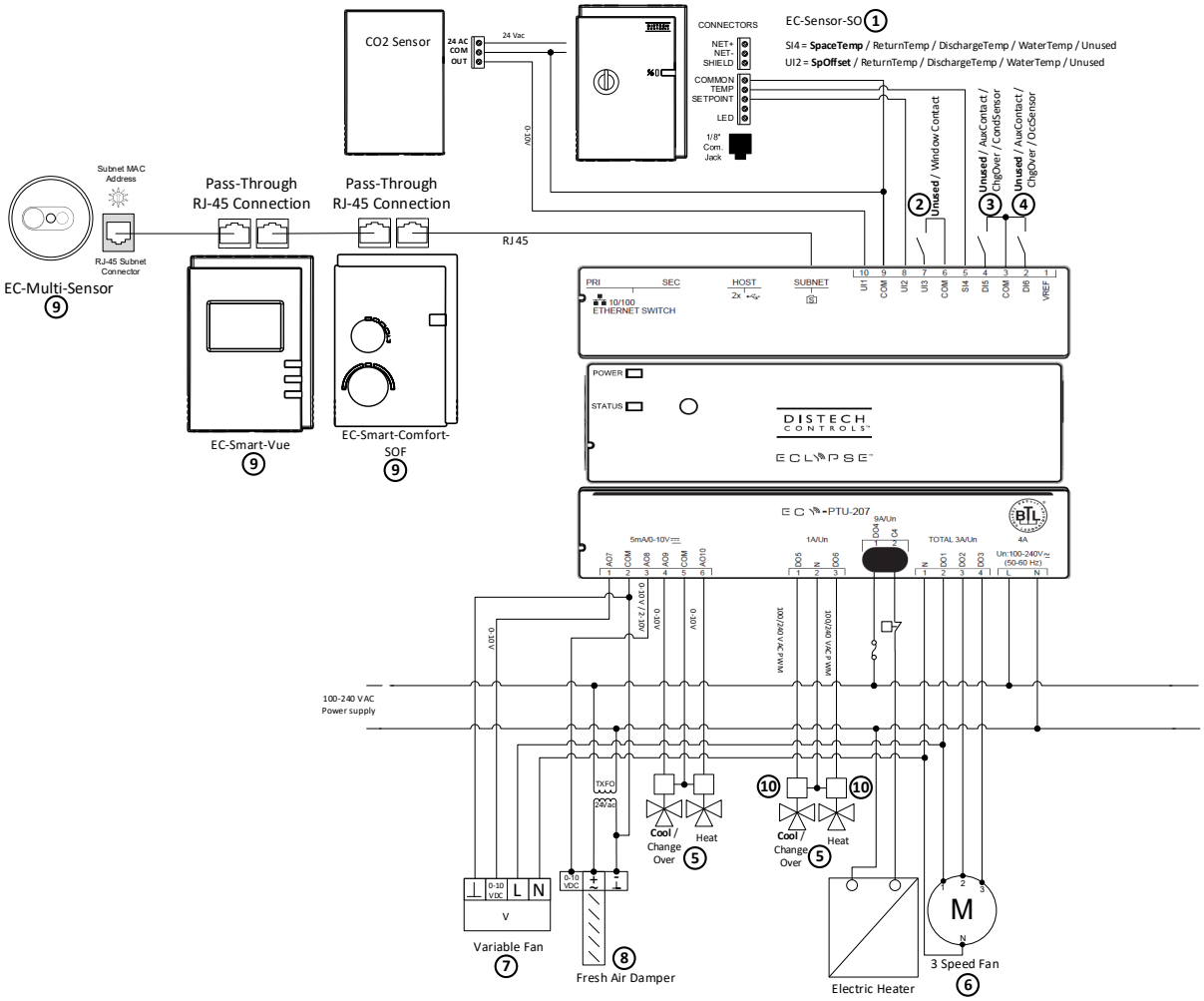


Figure 8: Wiring Diagram - ECY-PTU-207 Application

Notes

1. SI4 input can be configured for SpaceTemp, ReturnTemp, WaterTemp or DischargeTemp sensor (10K Type II) using SI4Config (MSV20).
   UI2 Input can be configured for SetpointOffset (10K), ReturnTemp, Watertemp or DischargeTemp sensors (10K Type II) using UI2Config (MSV18).
2. UI3 input can be configured for WindowContactNO or WindowContactNC using UI3Config (MSV19)
3. DI5 input can be configured for AuxContactNO, AuxContactNC, ChgOverHeat, ChgOverCool, CondSensorNO or CondSensorNC using DI5Config (MSV21).
4. DI6 input can be configured for AuxContactNO, AuxContactNC, ChgOverHeat, ChgOverCool, Occ-SensorNO or OccSensorNC using DI6Config (MSV22).
5. This valve output is used for Change Over if SystemType (MSV24) is set to ChgOver / ChgOver-ElecHeat.

6. 3-speed fan is used if FanType (MSV25) is set to 3Speed.
7. Variable speed fan is used if FanType (MSV25) is set to VarSpeed.
8. Fresh air damper control signal can be configured for 0-10V or 2-10V using DamperCtrlType (MSV32).
9. Supports any version of EC-Multi-Sensor, Allure EC-Smart-Vue, Allure EC-Smart-Comfort and Allure EC-Smart-Air.
10. DO5 and DO6 outputs can be used to control a floating valve (heat, cooling or change Over) using HeatValveType (MSV27) or CoolValveType (MSV26) with DO5 = Open and DO6 = Closed.

The MAC address can be set using the Allure EC-Smart-Vue, or directly with the dipswitch.

ECY-PTU-208

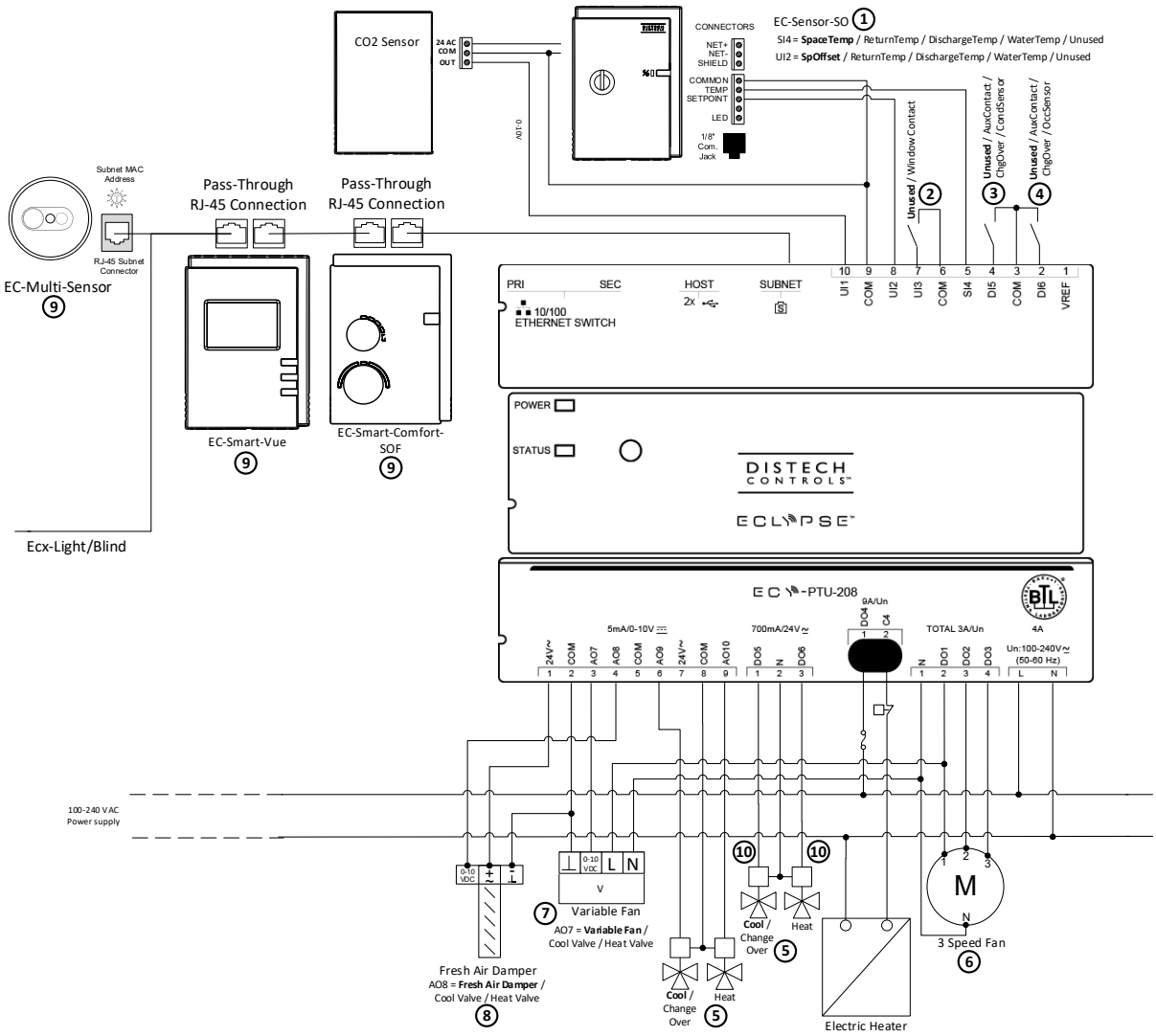


Figure 9: Wiring Diagram - ECY-PTU-208 Application

Notes

1. SI4 input can be configured for SpaceTemp, ReturnTemp, WaterTemp or DischargeTemp sensor (10K Type II) using SI4Config (MSV20).
   UI2 Input can be configured for SetpointOffset (10K), ReturnTemp, Watertemp or DischargeTemp sensors (10K Type II) using UI2Config (MSV18).
2. UI3 input can be configured for WindowContactNO or WindowContactNC using UI3Config (MSV19)
3. DI5 input can be configured for AuxContactNO, AuxContactNC, ChgOverHeat, ChgOverCool, CondSensorNO or CondSensorNC using DI5Config (MSV21).
4. DI6 input can be configured for AuxContactNO, AuxContactNC, ChgOverHeat, ChgOverCool, Occ-SensorNO or OccSensorNC using DI6Config (MSV22).
5. This valve output is used for Change Over if SystemType (MSV24) is set to ChgOver / ChgOver-ElecHeat.
6. 3-speed fan is used if FanType (MSV25) is set to 3Speed.

7. Variable speed fan is used if FanType (MSV25) is set to VarSpeed and AO7 control valve (cool or heat) if Fantype = None.
8. Fresh air damper control signal can be configured for 0-10V or 2-10V using DamperCtrlType (MSV32) and AO8 control valve (cool or heat) if DamperCtrlType (MSV32) = None.
9. Supports any version of EC-Multi-Sensor, Allure EC-Smart-Vue, Allure EC-Smart-Comfort and Allure EC-Smart-Air.
10. DO5 and DO6 outputs can be used to control a floating valve (heat, cooling or change Over) using HeatValveType (MSV27) or CoolValveType (MSV26) with DO5 = Open and DO6 = Closed.

The MAC address can be set using the Allure EC-Smart-Vue, or directly with the dipswitch.

ECY-TU-203

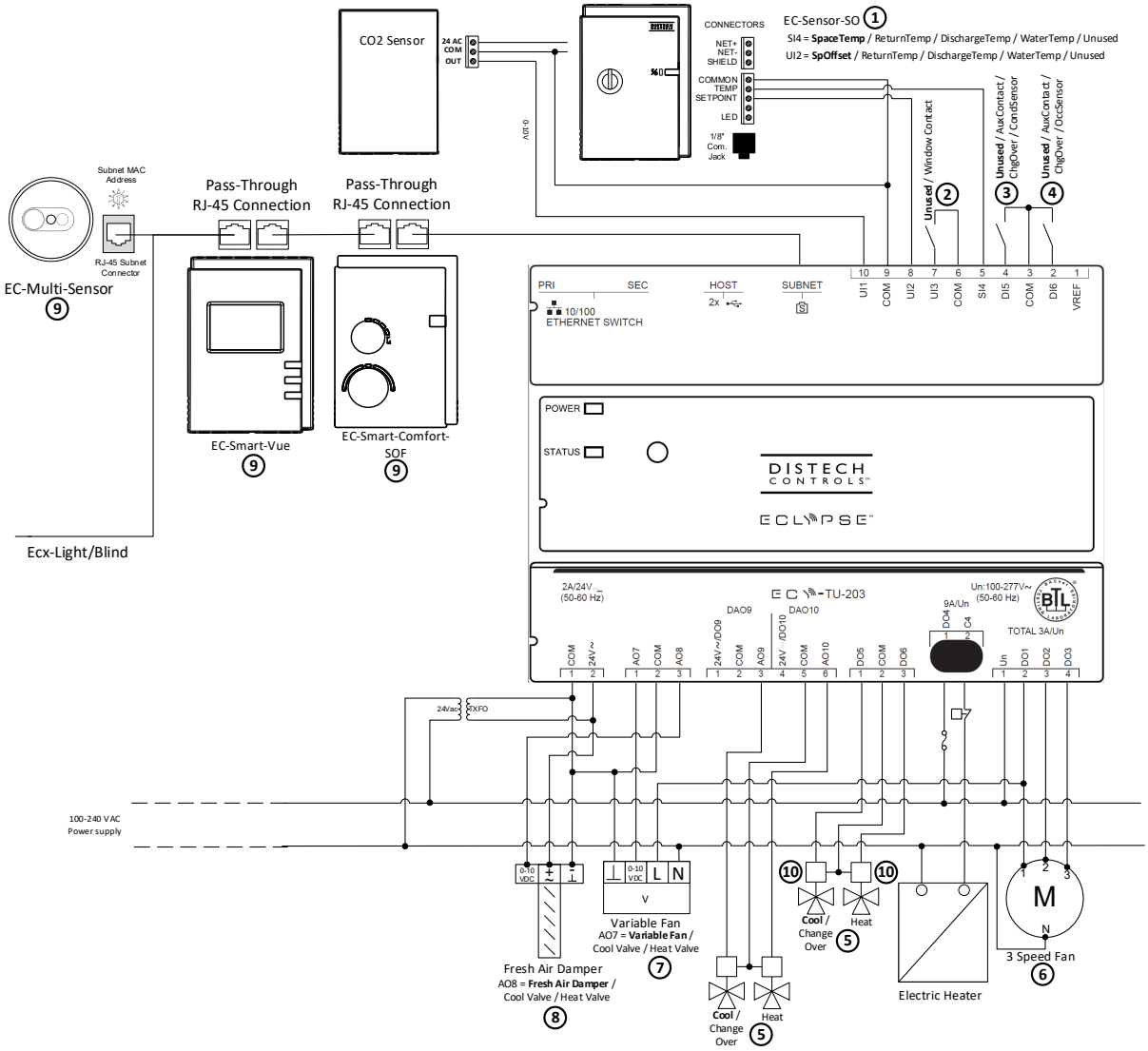


Figure 10: Wiring Diagram - ECY-TU-203 Application

Notes

1. SI4 input can be configured for SpaceTemp, ReturnTemp, WaterTemp or DischargeTemp sensor (10K Type II) using SI4Config (MSV20).
   UI2 Input can be configured for SetpointOffset (10K), ReturnTemp, Watertemp or DischargeTemp sensors (10K Type II) using UI2Config (MSV18).
2. UI3 input can be configured for WindowContactNO or WindowContactNC using UI3Config (MSV19)
3. DI5 input can be configured for AuxContactNO, AuxContactNC, ChgOverHeat, ChgOverCool, CondSensorNO or CondSensorNC using DI5Config (MSV21).
4. DI6 input can be configured for AuxContactNO, AuxContactNC, ChgOverHeat, ChgOverCool, Occ-SensorNO or OccSensorNC using DI6Config (MSV22).
5. This valve output is used for Change Over if SystemType (MSV24) is set to ChgOver / ChgOver-ElecHeat.
6. 3-speed fan is used if FanType (MSV25) is set to 3Speed.

7. Variable speed fan is used if FanType (MSV25) is set to VarSpeed and AO7 control valve (cool or heat) if Fantype = None.
8. Fresh air damper control signal can be configured for 0-10V or 2-10V using DamperCtrlType (MSV32) and AO8 control valve (cool or heat) if DamperCtrlType (MSV32) = None.
9. Supports any version of EC-Multi-Sensor, Allure EC-Smart-Vue, Allure EC-Smart-Comfort and Allure EC-Smart-Air.
10. DO5 and DO6 outputs can be used to control a floating valve (heat, cooling or change Over) using HeatValveType (MSV27) or CoolValveType (MSV26) with DO5 = Open and DO6 = Closed.

The MAC address can be set using the Allure EC-Smart-Vue, or directly with the dipswitch.