WSHP Open v3
Points/Properties

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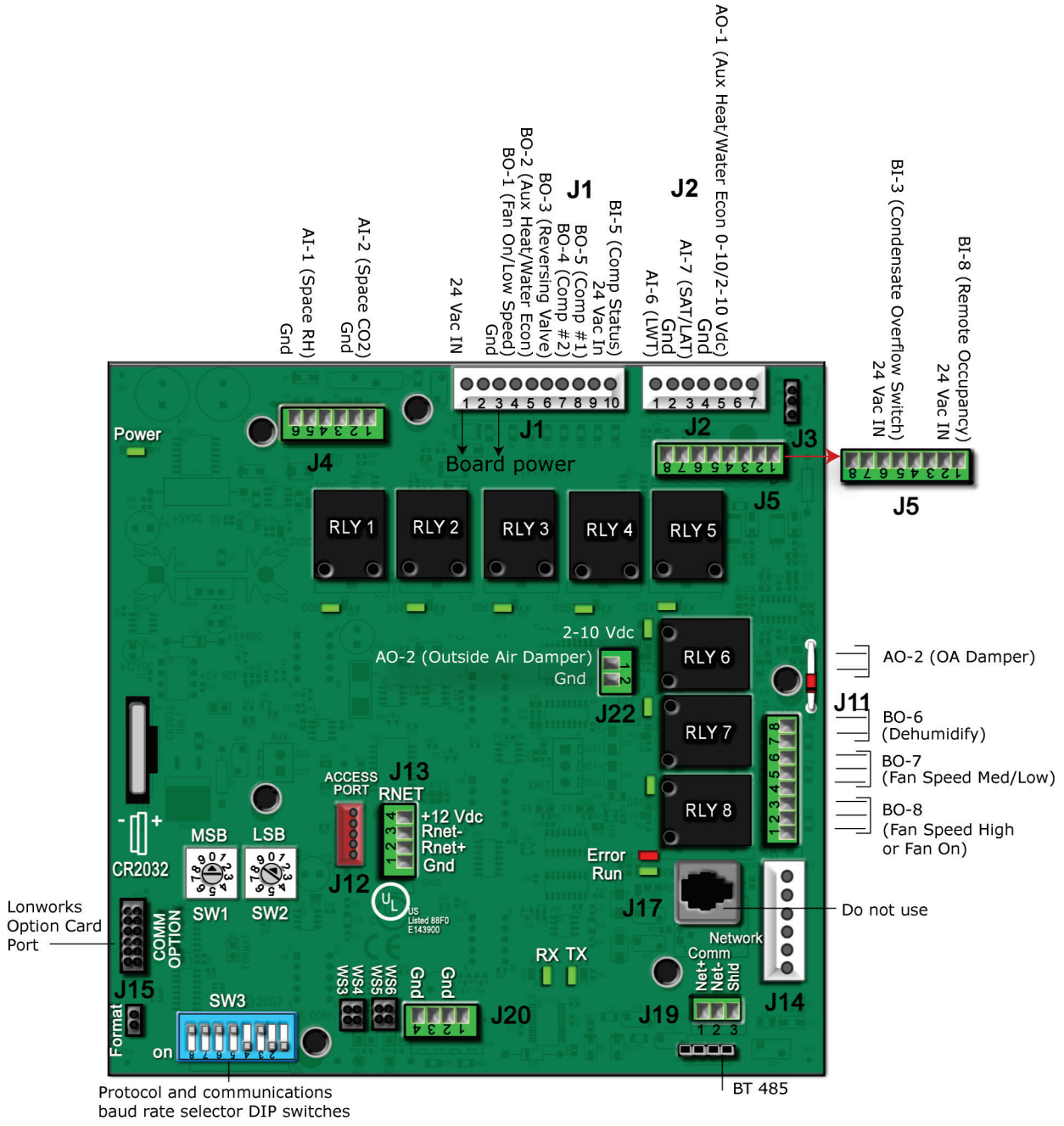
Important changes are listed in **Document revision history** at the end of this document.

Contents

Introduction

What is the WSHP Open?

The Water Source Heat Pump (WSHP) controller is available as an integrated component of a Carrier packaged unit and is part of the Carrier WSHP Open System. Use the following descriptions to configure the WSHP.



Safety considerations

WARNING Disconnect electrical power to the WSHP before wiring it. Failure to follow this warning could cause electrical shock, personal injury, or damage to the controller.

Start-up

To start up the WSHP, you need one of the following user interfaces to the controller. These items let you access the controller information, read sensor values, and test the controller.

This Interface...	Provides a...
Field Assistant application - Runs on a laptop that connects to controller's Local Access port [1]	Temporary interface
Equipment Touch device - Connects to controller's Rnet port [2]	Temporary or permanent interface
i-Vu® application Available for BACnet systems only	Permanent interface
System Touch device Available for BACnet systems only Wire to an MS/TP network connector and a 24 Vac power supply [3]	Temporary or permanent interface

[1] Requires a USB Link (Part #USB-L).

[2] See the *Equipment Touch Installation and Setup Guide* for detailed instructions.

[3] See the *System Touch Installation and Setup Guide* for detailed instructions.

 **CAUTION** If multiple controllers share power but polarity was not maintained when they were wired, the difference between the controller's ground and the computer's AC power ground could damage the USB Link and the controller. If you are not sure of the wiring polarity, use a USB isolator between the computer and the USB Link. Purchase a USB isolator online from a third-party manufacturer.

WSHP Points/Properties

The following tables describe all of the possible settings for your controller on the i-Vu® or Field Assistant **Properties** tab.

See *WSHP Points/Properties on the Equipment Touch* (page 31) for the points and properties available on the Equipment Touch interface.

Status

Navigation: i-Vu® / Field Assistant: **Properties** > **Control Program** > **Status**

Point Name/Description	Default/Range
System Mode – The controller's current operating mode.	R: OFF Fan Only Economize Cooling Heating Cont Fan Test Start Delay Dehumidify Fire Shutdown Shutdown IAQ Override
Space Temperature - Prime Variable – The space temperature value currently used for control.	R: -56 to 245°F
Supply Air Temperature – Displays the current supply air temperature.	R: -56 to 245°F
Leaving Source Water Temp – The temperature of the water leaving the compressor's source water loop. This value is used for control.	R: -56 to 245°F
Entering Source Water Temp – The temperature of the water entering the compressor's source water loop. **NOTE** If water linkage is configured, this temperature is transferred from the UC Open / UC Open XP as part of Linkage data.	R: -56 to 245°F
Outdoor Air Temperature – The outdoor air temperature used for control.	R: -56 to 245°F
Fan / Speed – The commanded state of the supply fan.	R: Off Low Med High On
Supply Fan Status – Displays the current operating status of the fan.	R: Off/On
Compressor Capacity – The percentage of compressors running.	R: 0 to 100%
Damper Output – Displays current commanded output of the outdoor air damper, if equipped.	R: 0 to 100%

Point Name/Description	Default/Range
Water Economizer Output – The current commanded output of the water economizer valve.	R: 0 to 100%
Auxiliary Heat Output – The current commanded output of the heating device.	R: 0 to 100%
Space Relative Humidity – The current space relative humidity. It is used for control if a factory dehumidification reheat coil is installed.	R: 0 to 100%rh
Dehumidification – Displays whether the space requires dehumidification.	R: Off/Active
Indoor Air Quality CO2 (ppm) – Displays the current CO_2 sensor value. Applicable if **IAQ Source** is not set to **N/A**.	R: 0 to 9999 ppm
Shutdown – When **Active**, provides a means to stop heating and cooling in an orderly manner. All alarms are reset and current active alarms are displayed.	D: Inactive R: Inactive/Active

Unit Configuration

Navigation: i-Vu® / Field Assistant: **Properties** > **Control Program** > **Configuration** > **Unit Configuration**

Point Name/Description	Default/Range
Heat Enable – Enables or disables heating operation.	D: Enable R: Enable/Disable
Cool Enable – Enables or disables cooling operation.	D: Enable R: Enable/Disable
Fan Mode – The supply fan's operating mode. Options: **Auto** - The fan cycles on/off in conjunction with heating or cooling. **Continuous** - The fan runs continuously during occupancy and intermittently during unoccupied periods with heating or cooling. **Always On** - The fan runs continuously regardless of occupancy or calls for heating and cooling.	D: Continuous R: Auto Continuous Always On
Fan On Delay – How long the fan should delay starting after heating or cooling starts.	D: 10 sec R: 0 to 30 seconds
Fan Off Delay – How long the supply fan runs after receiving a valid stop command.	D: 90 sec R: 0 to 180 seconds
Minimum Cooling SAT – In cooling mode, the cooling outputs are controlled so that the supply air temperature does not drop below this value.	D: 50°F R: 40 to 60°F
Maximum Heating SAT – In heating mode, the heating outputs are controlled so the supply air temperature does not rise above this value.	D: 110°F R: 40 to 140°F

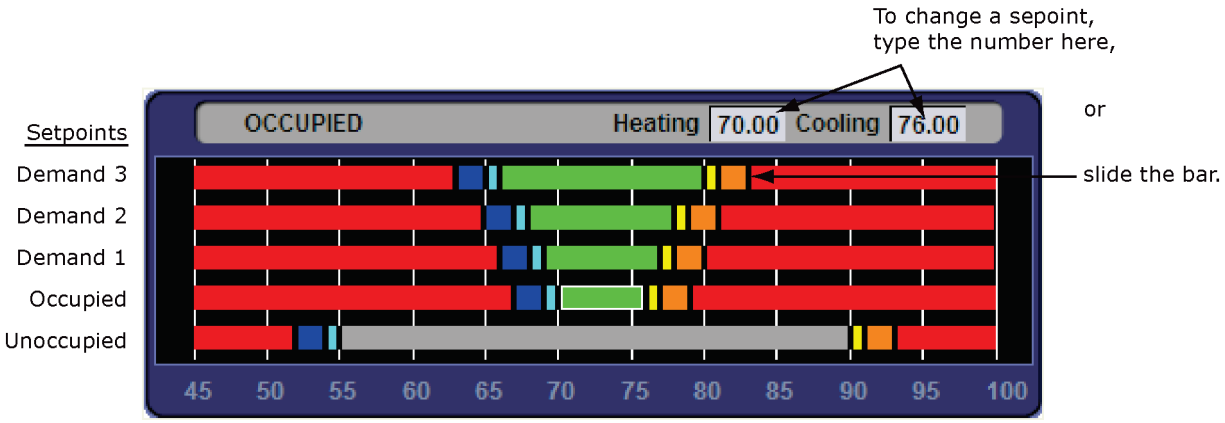
Point Name/Description	Default/Range
Vent Dmpr Pos / DCV Min Pos – The minimum outdoor air damper position maintained during occupied periods.	D: 20% R: 0 to 100%
DCV Max Vent Damper Pos – The maximum outdoor air damper position allowed while DCV is active.	D: 100% R: 0 to 100%
Filter Service Alarm Timer – The amount of time the fan will run before generating a **Filter Alarm**. Set to 0 to disable the alarm and reset accumulated fan hours.	D: 600 hr R: 0 to 10000 hr
Pushbutton Override – Enables or disables the use of a pushbutton override from a local space temperature sensor.	D: Enable R: Enable/Disable
Setpoint Adjustment – Enables or disables the setpoint adjustment mechanism on the local space sensor.	D: Enable R: Enable/Disable
Setpoint Adjustment Range - The maximum amount that a user can adjust the setpoint on the local SPT sensor.	D: 5°F R: 0 to 5°F
Cooling Lockout Temperature – Cooling is inhibited below this outdoor air temperature.	D: 45°F R: -65 to 80°F
Heating Lockout Temperature – Heating is inhibited above this outdoor air temperature.	D: 65°F R: 35 to 150°F
Power Fail Restart Delay – How long the controller delays normal operation after the power is restored.	D: 180 seconds R: 0 to 600 seconds
Occ Override Delay – The amount of time the controller remains occupied after the remote occupancy switch returns to the unoccupied position.	D: 15 minutes R: 0 to 240 minutes
Occupancy Schedules – If enabled, the unit runs as occupied 24/7 until another occupancy control is configured.	D: Enable R: Enable/Disable
Sensor Calibration	
Space Temperature – The current space temperature.	R: -56 to 245°F
Space Temp Calibration – A calibration offset value to allow the local space temperature sensor to be adjusted to match a calibrated standard measuring the temperature in the same location.	D: 0°F R: -9.9 to 10°F
Supply Air Temperature – Displays the current supply air temperature.	R: -56 to 245°F
Supply Air Temp Calibration – A calibration offset value to allow the supply air temperature sensor to be adjusted to match a calibrated standard measuring the temperature in the same location.	D: 0°F R: -9.9 to 10°F
Leaving Source Water Temperature – The current leaving source water temperature.	R: -56 to 245°F
Leaving Source Water Temp Calibration – A calibration offset value that allows you to adjust the local leaving source water temperature sensor to match a calibrated standard that is measuring the temperature in the same location.	D: 0°F R: -9.9 to 10°F
Space Relative Humidity – Displays the current value of relative humidity sensor, if present.	R: 0 to 100%

Point Name/Description	Default/Range
Hardwired Space RH Calibration – A calibration offset value that allows you to trim the local relative humidity sensor to match a calibrated standard measuring the space relative humidity in the same location.	D: 0% R: -9.9 to 10%rh

Setpoints

Navigation: i-Vu® / Field Assistant: **Properties** > **Control Program** > **Configuration** > **Setpoints**

Select a color band on the setpoint graph to see the current setpoints in the **Heating** and **Cooling** fields. See setpoint descriptions below.



Occupied Setpoints

The occupied setpoints described below are the setpoints under normal operating conditions. The Demand Level 1–3 setpoints apply if demand limiting is used.

Demand limiting is a cost-saving strategy to reduce energy consumption. The strategy expands the occupied heating and cooling setpoints when the system reaches one of 3 levels of consumption. With the expanded setpoints, the equipment works less, thereby saving energy. By default, Demand Level 1 expands the occupied heating and cooling setpoints by 1°F, Demand Level 2 by 2°F, and Demand Level 3 by 4°F. If the occupied heating or cooling setpoints change, the (effective) demand level setpoints automatically change by the same amount. See Sequence of Operation for more information.

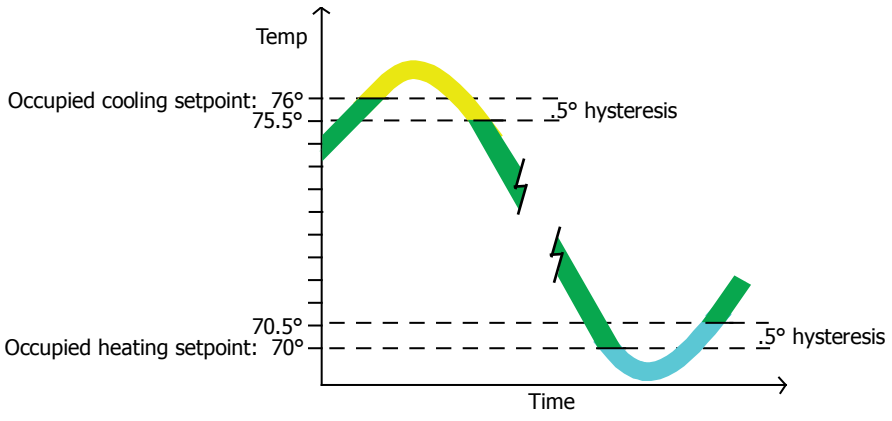
Point Name/Description	**Default** Range: -40 to 245°F			
		Demand Level		
	Occupied	**1**	**2**	**3**
Occupied Heating – Green The heating setpoint the controller maintains while in occupied mode.	70°F	69°F	68°F	66°F
Occupied Cooling – Green The cooling setpoint the controller maintains while in occupied mode.	76°F	77°F	78°F	80°F

Point Name/Description	Default Range: -40 to 245°F			
		Demand Level		
	Occupied	1	2	3
Occupied Heating 1 – Light Blue The space temperature must be less than the **Occupied Heating 1** setpoint for the VVT Master to consider the zone a heating caller in a linked system. In a single-zone application, the heating requirement begins as soon as the space temperature falls below the **Occupied Heating** setpoint. We recommend that the **Occupied Heating 1** value be set no less than 0.5°F below the **Occupied Heating** setpoint.	69°F	68°F	67°F	65°F
Occupied Heating 2 – Dark Blue The space temperature must be less than the **Occupied Heating 2** setpoint to generate a low space temperature alarm. We recommend that this value be set no less than 0.5Δ°F (.27Δ°C) below the **Occupied Heating 1** setpoint.	67°F	66°F	65°F	63°F
Occupied Cooling 1 – Yellow The space temperature must be greater than the **Occupied Cooling 1** setpoint for the VVT Master to consider the zone a cooling caller in a linked system. In a single-zone application, the cooling requirement begins as soon as the space temperature exceeds the **Occupied Cooling** setpoint. We recommend that the **Occupied Cooling 1** value be set no less than 0.5Δ°F (.27Δ°C) above the **Occupied Cooling** setpoint.	77°F	78°F	79°F	81°F
Occupied Cooling 2 – Orange The space temperature must be greater than the **Occupied Cooling 2** setpoint to generate a high space temperature alarm. We recommend that this value be set no less than 0.5Δ°F (.27Δ°C) above the **Occupied Cooling 1** setpoint.	79°F	80°F	81°F	83°F

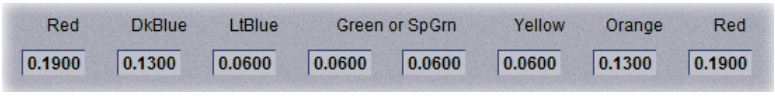
Unoccupied Setpoints

Point Name/Description	Default/Range
Unoccupied Heating – Gray The heating setpoint the controller maintains while in unoccupied mode.	D: 55°F R: -40 to 245°F
Unoccupied Cooling – Gray The cooling setpoint the controller maintains while in unoccupied mode.	D: 90°F R: -40 to 245°F
Unoccupied Heating 1 – Light Blue The space temperature must be less than the **Unoccupied Heating 1** setpoint for the VVT Master to consider the zone an unoccupied heating caller in a linked system. In a single-zone application, the unoccupied heating requirement begins as soon as the space temperature falls below the **Unoccupied Heating** setpoint. We recommend that the **Unoccupied Heating 1** value be set no less than 0.5Δ°F (.27Δ°C) below the **Unoccupied Heating** setpoint.	D: 54°F R: -40 to 245°F
Unoccupied Heating 2 – Dark Blue The space temperature must be less than the **Unoccupied Heating 2** setpoint to generate an unoccupied low space temperature alarm. We recommend that this value be set no less than 0.5Δ°F (.27Δ°C) below the **Unoccupied Heating 1** setpoint.	D: 52°F R: -40 to 245°F
Unoccupied Cooling 1 – Yellow The space temperature must be greater than the **Unoccupied Cooling 1** setpoint for the VVT Master to consider the zone an unoccupied cooling caller in a linked system. In a single-zone application, the unoccupied cooling requirement begins as soon as the space temperature exceeds the **Unoccupied Cooling** setpoint. We recommend that the **Unoccupied Cooling 1** value be set no less than 0.5Δ°F (.27Δ°C) above the **Unoccupied Cooling** setpoint.	D: 91°F R: -40 to 245°F

Unoccupied Cooling 2 – Orange The space temperature must be greater than the **Unoccupied Cooling 2** setpoint to generate an unoccupied high space temperature alarm. We recommend that this value be set no less than 0.5Δ°F (.27Δ°C) above the **Unoccupied Cooling 1** setpoint.	D: 93°F R: -40 to 245°F

Point Name/Description	Default/Range
Heating Capacity – Used for Optimal Start, this is the rate at which the zone temperature changes when the heating system runs at full capacity to maintain designed occupied heating setpoint.	D: 3°F/hr R: 0 to 120°F/hr
Heating Design Temp – The geographically-based outdoor air temperature at which the heating system must run constantly to maintain comfort. This information is available in ASHRAE publications and most design references.	D: 0°F R: -100 to 150°F
Cooling Capacity – Used for Optimal Start, this is the rate at which the zone temperature changes when cooling system runs at full capacity to maintain designed occupied cooling setpoint.	D: 3°F/hr R: 0 to 140°F
Cooling Design Temp – The geographically-based outdoor air temperature at which the cooling system must run constantly to maintain comfort. This information is available in ASHRAE publications and most design references.	D: 100°F R: -100 to 150°F
Hysteresis – The desired difference between the temperature at which the zone color changes as the zone temperature departs from the acceptable range between the heating and cooling setpoints (green) into the Cooling 1 (yellow) or Heating 1 (light blue) and the temperature at which the zone color changes back to the acceptable range between the heating and cooling setpoints. For example, the following graph shows the zone color that results as the zone temperature departs from and returns to the acceptable range in a zone with the following settings: • Color Change Hysteresis = .5Δ°F (.27Δ°C) (applies as the temperature returns to the acceptable range) • Occupied cooling setpoint = 76°F (24.4°C) • Occupied heating setpoint = 70°F (21.1°C) **NOTE** The values in the graph below are Fahrenheit.  	D: 0.5°F R: 0 to 120°F

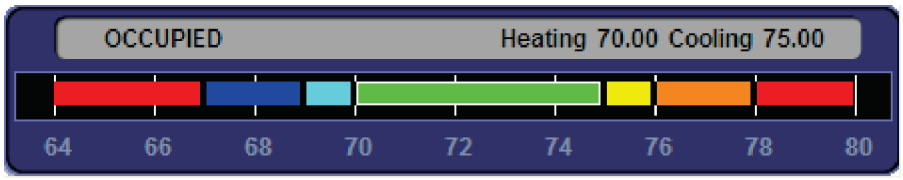
Learning Adaptive Optimal Start



When the Learning Adaptive Optimal Start algorithm runs, the learned heating capacity or learned cooling capacity values are adjusted based on the color that is achieved when occupancy begins. The adjustment amounts for each color are displayed in the thermographic color fields (shown above with English default values).

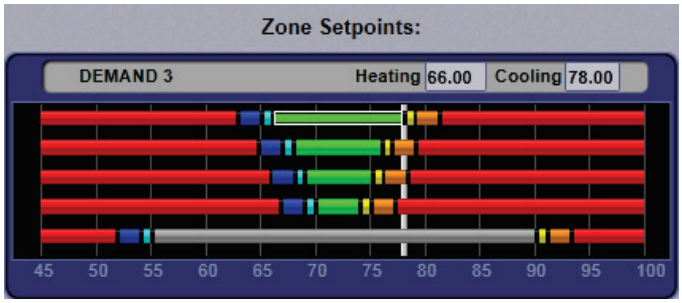
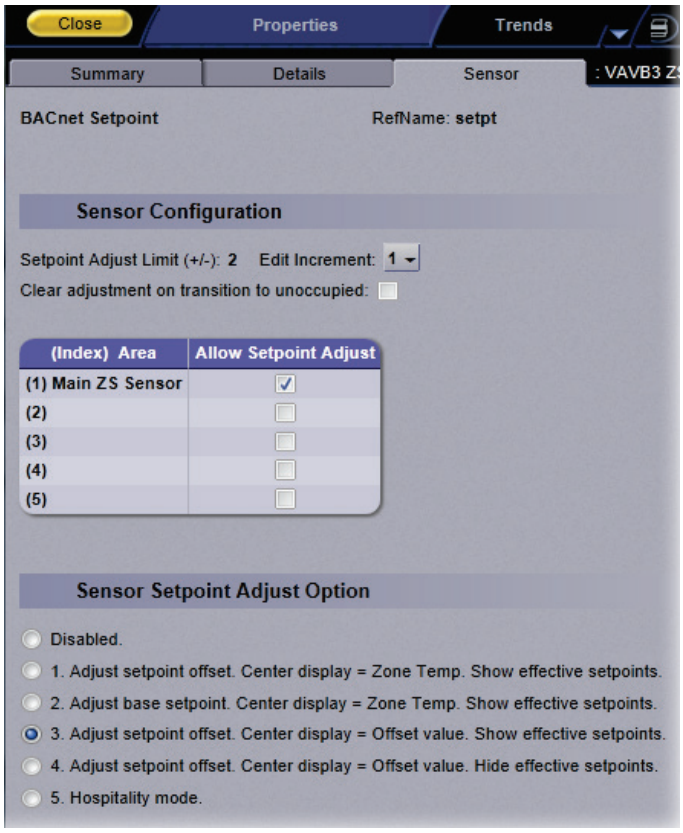
Point Name/Description	Range
Red – The amount the zone's learned heating capacity is adjusted when the Learning Adaptive Optimal Start algorithm runs, when the zone's thermographic color at occupancy is red.	D: 0.1900 R: 0 to 1
DkBlue – The amount the zone's learned heating capacity is adjusted when the Learning Adaptive Optimal Start algorithm runs, when the zone's thermographic color at occupancy is dark blue.	D: 0.1300 R: 0 to 1
LtBlue – The amount the zone's learned heating capacity is adjusted when the Learning Adaptive Optimal Start algorithm runs, when the zone's thermographic color at occupancy is light blue.	D: 0.0600 R: 0 to 1
Green – The amount the zone's learned heating capacity is adjusted when the Learning Adaptive Optimal Start algorithm runs, when the zone's thermographic color at occupancy is green.	D: 0.0600 R: 0 to 1
SpGrn – The amount the zone's learned cooling capacity is adjusted when the Learning Adaptive Optimal Start algorithm runs, when the zone's thermographic color at occupancy is green.	D: 0.0600 R: 0 to 1
Yellow – The amount the zone's learned cooling capacity is adjusted when the Learning Adaptive Optimal Start algorithm runs, when the zone's thermographic color at occupancy is yellow.	D: 0.0600 R: 0 to 1
Orange – The amount the zone's learned cooling capacity is adjusted when the Learning Adaptive Optimal Start algorithm runs, when the zone's thermographic color at occupancy is orange.	D: 0.1300 R: 0 to 1
Red – The amount the zone's learned cooling capacity is adjusted when the Learning Adaptive Optimal Start algorithm runs, when the zone's thermographic color at occupancy is red.	D: 0.1900 R: 0 to 1

Effective Setpoints



The **Effective Setpoints** graph shows the current occupied or unoccupied setpoints. If occupied, these values are the current programmed setpoints plus the offset of any setpoint adjustment that may be in effect. If unoccupied, the values are the programmed unoccupied setpoints. The values in the above graphic are Fahrenheit.

Point Name/Description	Default/Range
Heating – (Occupied or Unoccupied, depending on mode) The current programmed **Heating** setpoint adjusted by any offset that may be in effect.	R: 0 to 120°F
Cooling – (Occupied or Unoccupied, depending on mode) The current programmed **Cooling** setpoint adjusted by any offset that may be in effect.	R: 0 to 120°F
Learned cooling capacity – The cooling capacity learned by Learning Adaptive Optimal Start that is required to bring the space temperature down to the occupied cooling setpoint prior to the occupied time.	R: °F
Learned heating capacity – The heating capacity learned by Learning Adaptive Optimal Start that is required to bring the space temperature up to the occupied heating setpoint prior to the occupied time.	R: °F
Optimal Start – The number of hours prior to occupancy, at which the Optimal Start function may begin to adjust the effective setpoints to achieve the occupied setpoints by the time scheduled occupancy begins. Enter 0 to disable Optimal Start.	D: 1 hr R: 0 to 4 hrs
Optimal Start Type – The method used to change from unoccupied to occupied setpoint. Options: **None*** – Unit will not change to occupied setpoint until the scheduled time or the unit goes into an occupied mode. Setpoints do not ramp, but change immediately from unoccupied to occupied values. **Temp Compensated*** – Unit changes to occupied setpoints at a variable time prior to the occupied time, which is calculated by the current difference between space temperature and the appropriate heating or cooling setpoint. At that time, the setpoints do not ramp, but change immediately from unoccupied to occupied values. **Learning Adaptive Start** – Unit gradually changes to occupied setpoints by adjusting the unoccupied setpoints over a specified period of time to achieve the occupied setpoint by the time scheduled occupancy begins.	D: Temperature Compensated R: None Temperature Compensated Learning Adaptive
Heat Start K factor (min/deg) – If **Optimal Start Type** is **Temp Compensated**, this is the time in minutes per degree that the equipment starts before the occupied period when the space temperature is below the occupied heating setpoint (including any setpoint offset).	D: 15.00 R: 0 to 99
Cool Start K factor (min/deg) – If **Optimal Start Type** is **Temp Compensated**, this is the time in minutes per degree that the equipment starts before the occupied period when the space temperature is above the occupied cooling setpoint (including any setpoint offset).	D: 15.00 R: 0 to 99
Occ Relative Humidity Setpoint – The control setpoint used during occupied periods.	D: 60% R: 0 to 100%
Unocc Relative Humidity Setpoint – The control setpoint used during unoccupied periods.	D: 95% R: 0 to 100%
DCV Start Ctrl Setpoint – The value that the CO_2 level must exceed to begin the IAQ control function.	D: 500ppm R: 0 to 9999 ppm
DCV Max Ctrl Setpoint – The value that the CO_2 level must exceed for the IAQ function to control the damper to its **DCV Max Vent Damper Pos**.	D: 1050ppm R: 0 to 9999 ppm

Setpoints for ZS Sensors	
To configure setpoint properties for ZS sensors, CTRL+click anywhere on the **Zone Setpoints:** graph at the top of the **Setpoints** section in order to access the **Properties** popup. 	
In the popup, select the **Properties** > **Sensor** tab to configure ZS sensors for **Setpoint Adjust**. 	
Edit Increment – Amount of offset in degrees for each press of the up or down arrows on the ZS Sensor for setpoint adjustment.	D: 1 R: 0.1 0.5 1

Allow Setpoint Adjustment – Check to allow setpoint adjustments on the specified ZS sensor.	D: (1) enabled R: disabled/enabled
Sensor Setpoint Adjust Option – Check to select the ZS setpoint adjustment display.	D: 3.

Alarm Configuration

Navigation: i-Vu® / Field Assistant: **Properties** > **Control Program** > **Configuration** > **Alarm Configuration**

Point Name/Description	Default/Range
Space Temperature Alarm	
Occupied Alarm Hysteresis – This value is added to the occupied high effective setpoint and subtracted from the occupied low effective setpoint to establish the occupied high and low limits that the space temperature must exceed before an occupied SPT alarm is generated. The alarm returns to normal when the space temperature drops below the high effective setpoint or rises above the low effective setpoint.	D: 5°F R: 2 to 20°F
Alarm Delay (min/deg) – Determines the amount of delay before an occupied space temperature alarm is generated when the controller transitions to the occupied mode. The delay time equals this value multiplied by the difference between the sensor temperature and occupied alarm setpoint plus 15 minutes.	D: 10 minutes R: 0 to 30 minutes
Unoccupied Low SPT Alarm Limit –The value that the space temperature must drop below to generate a **Space Temperature Alarm** in the unoccupied mode. There is a fixed hysteresis of 1Δ°F (.5Δ°C) for return to normal.	D: 45°F R: 15 to 90°F
Unoccupied High SPT Alarm Limit – The value that the space temperature must exceed to generate a **Space Temperature Alarm** in the unoccupied mode. There is a fixed hysteresis of 1Δ°F (.5Δ°C) for return to normal.	D: 95°F R: 45 to 100°F
Supply Air Temperature Alarm	
Low SAT Alarm Limit – The value that the supply air temperature must drop below to generate an **SAT Alarm**. There is a fixed hysteresis of 1°F for return to normal.	D: 45°F R: 15 to 90°F
High SAT Alarm Limit – The value that the supply air temperature must exceed to generate an **SAT Alarm**. There is a fixed hysteresis of 1°F for return to normal.	D: 120°F R: 90 to 175°F
Condensate Overflow Alarm	
Overflow Alarm Delay – The delay time before an alarm is generated after the alarm condition occurs.	D: 10 seconds R: 5 to 600 seconds
Space Humidity Alarm	

Point Name/Description	Default/Range
Occupied High RH Alarm Limit – The value that the relative humidity sensor must exceed to generate a **Space Relative Humidity** alarm in the occupied mode.	D: 100%rh R: 45 to 100%rh
Alarm Delay (min/%RH) – Determines the amount of delay before an occupied RH alarm is generated when the controller transitions to the occupied mode. The delay time equals this value multiplied by the difference between the sensor RH value and the occupied RH setpoint plus 15 minutes.	D: 5 minutes R: 0 to 30 minutes
Unocc High RH Alarm Limit – The value that the relative humidity sensor must exceed to generate a **Space Relative Humdity** alarm in the unoccupied mode.	D: 100%rh R: 45 to 100%rh
IAQ / Ventilation Alarm	
Occupied High CO2 Alarm Limit – The value that the CO_2 sensor must exceed to generate an **Indoor Air Quality Alarm** in the occupied mode if **DCV Control** is set to **Enable**. There is a fixed hysteresis of 100ppm for return to normal.	D: 1100ppm R: 0 to 9999 ppm
Alarm Delay (min/ppm) – The fractional portion of a minute used to determine the amount of delay before an indoor air quality alarm is generated when the controller transitions to the occupied mode. The delay time equals this value multiplied by the difference between the sensor CO_2 value and the setpoint plus 15 minutes.	D: .25 minutes R: 0.1 to 1.0 minute
Alarms Displayed on ZS or SPT Sensor	
Fire/Smk Alarm – If set to display, shows the alarm indicator on the communicating zone sensors, if the **Fire/Smoke Alarm** is active.	D: Display R: Ignore/Display
Space Temperature Alarm – If set to display, shows the alarm indicator on the communicating zone sensors, if the **Space Temperature** alarm is active.	D: Ignore R: Ignore/Display
Supply Air Temp Alarm – If set to display, shows the alarm indicator on the communicating zone sensors, if the **Supply Air Temp** alarm is active.	D: Ignore R: Ignore/Display
Compressor Alarm – Shows the alarm indicator on the communicating zone sensors with display, if the compressor lockout is in alarm.	D: Display R: Ignore/Display
Source Water Temp Alarm – If set to display, shows the alarm indicator on the communicating zone sensors with display, if the **Source Water Temperature** is in alarm.	D: Display R: Ignore/Display
Condensate Overflow Alarm – If set to display, shows the alarm indicator on the communicating zone sensors with display, if the **Condensate Overflow** alarm is active.	D: Display R: Ignore/Display
Dirty Filter Alarm – If set to display, shows the alarm indicator on the communicating zone sensors, if a **Filter** alarm is active.	D: Display R: Ignore/Display
Space High Humidity Alarm – If set to display, shows the alarm indicator on the communicating zone sensors with display, if the **Space Relative Humidity** alarm is active.	D: Ignore R: Ignore/Display
Space High CO2 Alarm – If set to display, shows the alarm indicator on the communicating zone sensors with display if the **Space CO2** is in alarm.	D: Ignore R: Ignore/Display
Fan Failure Alarm – If set to display, shows the alarm indicator on the communicating zone sensors with display, if the **Supply Fan Failure** alarm is active.	D: Ignore R: Ignore/Display

Point Name/Description	Default/Range
Maintenance Displayed on ZS Sensor	
Airside Linkage Fault – If set to display, shows the maintenance indicator on a ZS Sensor with display, if the Airside Linkage is in a Fault condition.	D: Ignore R: Ignore/Display
Net OAT Fault – If set to display, shows the maintenance indicator on a ZS Sensor, if the network outside air reading is not valid.	D: Ignore R: Ignore/Display
SPT Sensor Fault – If set to display, shows the maintenance indicator on a ZS Sensor with display, if the zone temperature sensor reading is not valid.	D: Ignore R: Ignore/Display
Source Linkage Fault – TIf set to display, shows the maintenance indicator on a ZS Sensor with display, if the Source Linkage is in a Fault condition.	D: Ignore R: Ignore/Display

Service Configuration

Navigation: i-Vu® / Field Assistant: **Properties** > **Control Program** > **Configuration** > **Service Configuration**

Point Name/Description	Default/Range
# of Fan Speeds – The number of fan motor speeds.	D: Three R: One Two Three
Fan (G) Output Type – When set to **Fan On**, **G** output is energized when any fan speed is active (required for ECM and 33ZC fan control board). When set to **Fan Low**, the output is only energized for **Low Speed**.	D: Fan On R: Fan On Fan Low
Compressor Stages – The number of stages of compression.	D: One Stage R: One Stage Two Stage
Reversing Valve Type – The reversing valve's signal output type.	D: O R: O / B
Auxiliary Heat Type – The type of auxiliary heat being used for leaving air.	D: None R: None 2-Pos HW 1 Stage Electric Modulating HW

Point Name/Description	Default/Range
Aux Heat PID – This Bacnet Object determines what the leaving supply air setpoint target should be. **Configuration** > **Service Configuration** > **Auxiliary Type** must be set to **Modulating** or **2-Position**. **NOTE** The following default values should be changed only by a technician trained in PID Loop algorithms. Action reverse Update Interval 0:01 (mm:ss) Proportional 1 Integral 0.15 Derivative 0 Deadband 3 Bias 0	
E Air Water Economizer – The Entering Air Economizer Type.	D: None R: None 2-Pos Modulating
2Pos Water Valve Type – The 2-postion water valve normal position with no signal.	D: NC R: NC/NO (normally closed/normally open)
Modulating Valve Type – The modulating water valve normal position with no signal.	D: NC R: NC/NO (normally closed/normally open)
Ventilation Damper Type – The ventilation damper control being used.	D: None R: None 2-Pos DCV
Damper Actuator Type – Used to determine damper output signal range (closed – open).	D: 0-10 v R: 0-10 v 2-10 v
Hardwired Humidity Sensor – Set to **Installed** if a humidity sensor is present.	D: N/A R: N/A Installed
Factory Dehum Reheat – Set to **Installed** if factory-installed dehumidification reheat coil is present.	D: N/A R: N/A Installed
Min Setpoint Separation – Minimum separation that must be maintained between the heating and cooling setpoints.	D: 5°F R: 2 to 10°F
Input Ch #8 Function – Determines the function of the input connected to channel #8.	D: Remote Occupancy R: Remote Occupancy/Fan Status
Ch #8 Normal Logic State – Sets the normal logic state of input channel #8.	D: Open R: Open/Closed

Point Name/Description	Default/Range
Overflow Switch Alarm State – Specifies the alarm state of condensate switch input.	D: Open R: Open/Closed
Min Source Water Temp Heating – Determines the minimum source water temperature before the unit starts heating.	D: 50°F R: 25 to 60°F
Max Source Water Temp Heating – Determines the maximum source water temperature before the unit starts heating.	D: 80°F R: 65 to 100°F
Min Source Water Temp Cooling – Determines the minimum source water temperature before the unit starts cooling.	D: 50°F R: 30 to 60°F
Max Source Water Temp Cooling – Determines the maximum source water temperature before the unit starts cooling.	D: 105°F R: 85 to 120°F
CO2 Sensor Min Input (mA) – The minimum milliamp output of the hardwired CO_2 sensor range.	D: 4 mA R: 0 to 5 mA
CO2 Sensor Max Input (mA) – The maximum milliamp output of the hardwired CO_2 sensor range.	D: 20 mA R: 5 to 20 mA
CO2 Sensor Value @ Min (mA) – The hardwired CO_2 value that corresponds to the minimum output.	D: 0 ppm R: 0 to 9999 ppm
CO2 Sensor Value @ Max (mA) – The hardwired CO_2 value that corresponds to the maximum output.	D: 2000 ppm R: 0 to 9999 ppm

ZS Sensor Binder / ZS Zone Temp / ZS Zone Humidity / ZS Zone CO2

Ctrl+click on the name of these properties to access the microblock popup **Properties** page > **Details** tab. See below for instructions on configuring your ZS Sensors.

See the microblock Help for more detailed explanations.

ZS Sensor Binder - Use the **Associated Sensors** table to configure the Rnet to use additional ZS Sensors.

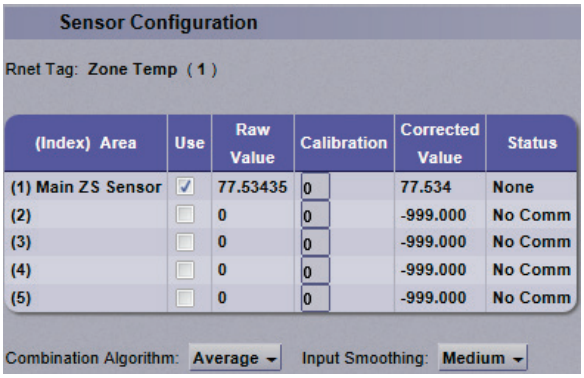
D: **(Index)** - (1)
Network Type - Rnet
Address - 1

Associated Sensors

Index	Area	Network Type	Address	Lock Display	Version	Status	Error
1	Main ZS Sensor	Rnet	1		ZSPFH 1234567890v03.03.10	Sensor Configured	None
2	ZS Sensor 2	Unused	2			Sensor Offline	None
3	ZS Sensor 3	Unused	3			Sensor Offline	None
4	ZS Sensor 4	Unused	4			Sensor Offline	None
5	ZS Sensor 5	Unused	5			Sensor Offline	None

- **Network Type** - Set to **Rnet**
- **Address** - Enter the DIP switch settings that are on the additional ZS sensors (up to 5 total)
- **Lock Display** - Check to make the sensor display-only

ZS Zone Temp - Configure additional ZS temperature sensors used on the WSHP.



- **Use** - Check to include ZS sensors' value in the **Combined Algorithm** (**Average** is the default).
- **Raw Value** - Displays sensed temperature for each ZS temperature sensor's address
- **Calibration** - If needed, enter value to adjust the **Corrected Value** from the **Raw Value**, in order to calibrate an individual ZS sensor's sensed value.
- **Combination Algorithm** - Use **Average**, **Maximum**, or **Minimum** ZS temperature to calculate the **Corrected Value** for temperature control.

D: **(Index) Area** - (1) Main ZS Sensor

Use - checked

Calibration - 0

Combination Algorithm - Average

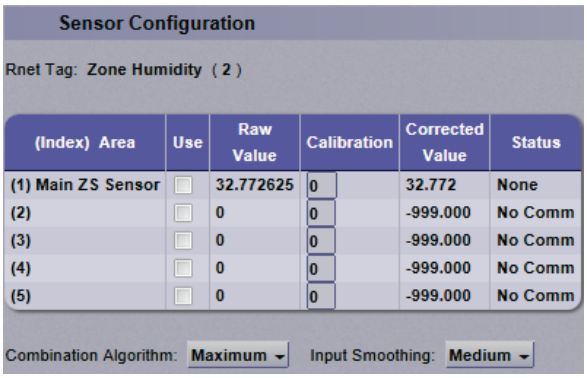
Input Smoothing - Medium

Show on Sensors - Calculated Value

Display Resolution - 1

COV Increment - .1

ZS Zone Humidity - Configure additional ZS humidity sensors used on the WSHP.



- **Use** - Check to include ZS sensors' value in the **Combined Algorithm** (**Maximum** is the default).
- **Raw Value** - Displays sensed humidity for each ZS humidity sensor's address
- **Calibration** - If needed, enter value to adjust the **Corrected Value** from the **Raw Value**, in order to calibrate an individual ZS sensor's sensed value.
- **Combination Algorithm** - Use **Average**, **Maximum**, or **Minimum** ZS humidity to calculate the **Corrected Value** for humidity control.

D: **(Index) Area** - (1) Main ZS Sensor

Use - unchecked

Calibration - 0

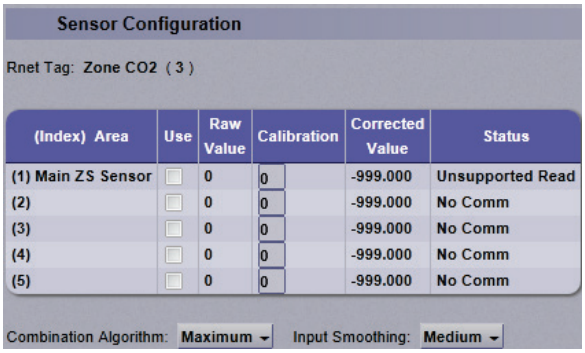
Combination Algorithm - Maximum

Input Smoothing - Medium

Show on Sensors - Calculated Value

Display Resolution - 1

COV Increment - 1

ZS Zone CO2 - Configure additional ZS CO^2 sensors used on the WSHP.  Sensor Configuration Rnet Tag: Zone CO2 (3) (Index) Area | Use | Raw Value | Calibration | Corrected Value | Status (1) Main ZS Sensor | 0 | 0 | -999.000 | Unsupported Read (2) | 0 | 0 | -999.000 | No Comm (3) | 0 | 0 | -999.000 | No Comm (4) | 0 | 0 | -999.000 | No Comm (5) | 0 | 0 | -999.000 | No Comm Combination Algorithm: Maximum Input Smoothing: Medium • **Use** - Check to include ZS sensors' value in the **Combined Algorithm** (**Maximum** is the default). • **Raw Value** -Displays sensed CO^2 for each ZS CO^2 sensor's address • **Calibration** - If needed, enter value to adjust the **Corrected Value** from the **Raw Value**, in order to calibrate an individual ZS sensor's sensed value. • **Combination Algorithm** - Use **Average**, **Maximum**, or **Minimum** ZS CO^2 to calculate the **Corrected Value** for CO^2 control.	D: **(Index) Area** - (1) Main ZS Sensor **Use -** unchecked **Calibration** - 0 **Combination Algorithm** - Maximum **Input Smoothing** - Medium **Show on Sensors** - Calculated Value **Display Resolution** - 1 **COV Increment** - 10
ZS model to show on graphic - Select the ZS model, from the drop-down list, that you want to display on the graphic.	D: ZS Pro-F model R: None ZS Pro model ZS Base model ZS Plus model ZS Pro-F model

System Space Temperature – The network space temperature value that the controller is using for control (if applicable).	D: -999.00°F R: N/A
System Setpoint Adjustment – The space temperature setpoint adjustment value received over the network.	D: -999.00°F R: -5 to 5°F
System Space RH – Allows using another controller's relative humidity value over the network. The remote controller must be equipped with a network-accessible relative humidity sensor value.	D: -999 R: 2 to 100%
System Space AQ – Allows this controller to use a CO_2 value from another controller over the network. The remote controller must be equipped with a network-accessible CO_2/IAQ sensor value.	D: -999 R: 300 to 9999 ppm
System Cool Demand Level – The system cool demand level being received over the network.	D: 0 R: 0 to 3
System Heat Demand Level – The system heat demand level being received over the network.	D: 0 R: 0 to 3

System Outdoor Air Temperature – The OAT received over the network.	D: -999.00°F R: N/A
System Occupancy – The status of the **System Occupancy** network point.	D: Unoccupied R: Unoccupied/Occupied
Service Test	
Service Test – Enable to stop automatic control so you can test the controller's outputs. Automatically resets to **Disable** after 1 hour.	D: Disable R: Disable/Enable
Fan Test – Enable to test the controller's fan speeds. Sequences fan from low to high speed and operates at each speed for 1 minute. Resets to **Disable** when complete. **Service Test** must be set to **Enable**.	D: Disable R: Disable/Enable
Fan / Speed – The commanded state of the supply fan.	R: Off Low Med High On
Compressor Test – Enable to test compressor cooling and heating operation. Sequences cooling stage 1, then stage 2, then heating stage 2 and reduces capacity to stage 1. Operates each step for 1 minute. Resets to **Disable** when complete. **Service Test** must be set to **Enable**.	D: Disable R: Disable/Enable
Compressor Test Mode – Displays which mode is being tested by the **Compressor Test** function.	R: Heating Cooling Inactive Dehumid TG Wait
Dehumidification Test – Enable to test the controller's dehumidification mode. Runs for 2 minutes in test mode, then resets to **Disable** when complete. **Service Test** must be set to **Enable**.	D: Disable R: Disable/Enable
Aux Heat Test – Enable to test the auxiliary output. The fan is sequenced on and enables the heating coil for 1minute. **Aux Heat Test** resets to **Disable** when complete. **Service Test** must be set to **Enable**.	D: Disable R: Disable/Enable
Economizer Test – Enable to test the water loop economizer output. The fan is sequenced on and the water economizer valve is commanded open for 1 minute. **Economizer Test** resets to **Disable** when complete. **Service Test** must be set to **Enable**.	D: Disable R: Disable/Enable
Preload OA Damper – Enable to drive the OA Damper 7.5% open. The installer should secure the damper shaft to the actuator with the damper in the fully closed position at this time. This assures a tight seal when the damper is in the closed position. **Service Test** must be set to **Enable**.	D: Disable R: Disable/Enable
Open Vent Damper 100% – Enable to test the OA Damper output. During the test, the damper is driven slowly to the 100%, or fully open, position. You must perform the **Preload OA Damper Position** test before this test and set **Service Test** to **Enable**.	D: Disable R: Disable/Enable

Maintenance

Navigation: i-Vu® / Field Assistant: **Properties** > **Control Program** > **Maintenance**

Point Name/Description	Default/Range
Unit	
Occupancy Status – The controller's occupancy status as determined by a network schedule, a local schedule, or a timed override.	R: Occupied/Unoccupied
Temp Compensated Start or **Learning Adaptive Start** – Indicates the type of optimal start (if any) that is configured and whether the algorithm is active or inactive.	R: Inactive/Active
Space Temp Source – The source of the controlling space temperature value. Options: **Sensor Failure** – No valid space temperature or sensor status = failed. **SPT Sensor** – An SPT sensor is connected to the controller's Rnet port. **Network** – A network temperature sensor is bound to the controller's space temperature AV. **Airside Linkage** – The space temperature from a linked terminal. **Locked Value** – The controller's space temperature input has been manually locked at a value. **T-Stat Linkage** – The space temperature shared via Thermostat Linkage **ZS Sensor** – A ZS sensor is connected to the controller's Rnet port.	R: Sensor Failure SPT Sensor Network Airside Linkage Locked Value ZS Sensor
Setpoint Adjustment – The amount that a user has adjusted the setpoints at a zone sensor.	R: -56 to 245°F
Effective Heat Setpoint – The current heating setpoint. May include offsets from the configured occupied/unoccupied setpoints resulting from **Optimal Start** or **Demand Limit**.	R: °F/C
Effective Cool Setpoint – The current cooling setpoint. May include offsets from the configured occupied/unoccupied setpoints resulting from **Optimal Start** or **Demand Limit**.	R: °F/C
Relative Humidity Source – The source of the relative humidity value. States: **N/A** – No sensor value associated with this device **Local** – A physical sensor is wired and connected to the appropriate input channel of this controller **Network** – A network sensor value provided to this controller **Linkage** – The sensor value from an active Linkage connection, such as Airside Linkage **Locked Value** –The controller's sensor input is manually locked to a specific value **ZS Sensor** – A ZS Sensor is connected to the controller's Rnet port	R: N/A Local Network Linkage Locked Value ZS Sensor
IAQ Source – The source of the indoor air quality value. States: **N/A** – No sensor value associated with this device **Local** – A physical sensor is wired and connected to the appropriate input channel of this controller **Network** – A network sensor value provided to this controller **Linkage** – The sensor value from an active Linkage connection, such as Airside Linkage **Locked Value** –The controller's sensor input is manually locked to a specific value **ZS Sensor** – A ZS Sensor is connected to the controller's Rnet port	R: N/A Local Network Linkage Locked Value ZS Sensor

Point Name/Description	Default/Range
Outdoor Air Temperature Source – The source of the OAT value. States: **N/A** – No sensor value associated with this device **Local** – A physical sensor is wired and connected to the appropriate input channel of this controller **Network** – A network sensor value provided to this controller **Linkage** – The sensor value from an active Linkage connection, such as Airside Linkage **Locked Value** –The controller's sensor input is manually locked to a specific value **ZS Sensor** – A ZS Sensor is connected to the controller's Rnet port	R: N/A Local Network Linkage Locked Value
Demand Limit – The system has received over-the-network demand limiting request.	R: Inactive/Active
System Cooling Demand Level – The current system cooling demand level used by this control. **NOTE** Not shown if current level is **0**.	R: 0 to 3
System Heating Demand Level – The current system heating demand level used by this control. **NOTE** Not shown if current level is **0**.	R: 0 to 3
Aux Heat Control Setpoint – The calculated setpoint being used for auxiliary heating control.	R: 72.5 to 105°F
Water Economizer Control Setpoint – The calculated setpoint being used for economizer control.	R: 55 to 72.4°F
Calculated DCV Damper Position – The calculated damper position being used for DCV control.	R: 0 to 100%
Active Compressor Stages – The number of compressor stages currently operating.	R: 0, 1, 2
Reset Filter Alarm – Set this to **On** to reset an active **Filter Alarm** and restart the **Filter Service Alarm Timer**. After the alarm returns to normal, this automatically changes to **Off**.	D: Off R: Off/On
Overflow Contact – The current state of the overflow input (if present).	R: Open/Closed
Input Channel #8 – The current state of the input (if present) connected to channel #8.	R: Open/Closed
Smoke Detector Contact – The current state of the smoke detector input (if present).	D: Normal/Closed R: Normal/Closed Alarm/Open
Occupancy	
BAS On/Off – Determines the occupancy state of the controller and can be set over the network by another device or third party BAS. Options: • **Inactive** – Occupancy is determined by a configured schedule. • **Occupied** – The controller is always in the occupied mode. • **Unoccupied** – The controller is always in the unoccupied mode. **NOTE** If **BAS On/Off** is set to either **Unoccupied** or **Occupied**, the **Optimal Start** routine is automatically disabled.	D: Inactive R: Inactive Occupied Unoccupied
Schedules – The controller's occupancy status based on the local schedule.	R: Occupied/Unoccupied

Point Name/Description	Default/Range
Pushbutton Override – **Active** indicates if a user pushed the sensor's override button to override the occupancy state.	R: Off/Active
Override Time Remaining – The minutes left that the equipment runs, if activated by override.	R: 0 to 960:00 mm:ss
Occupancy Contact – The occupied/unoccupied status of the **Occupancy Contact** switch.	D: Inactive R: Inactive Active Occupied
System Occupancy – The status of the **System Occupancy** network point.	D: Inactive R: Inactive Active Occupied

Local BACnet Schedule	R: Off/On
Configure ZS Sensors by setting the following options in the **Local BACnet Schedule** microblock popup. Click **Local BACnet Schedule** to access the microblock popup **Properties** page > **Details** tab. See the microblock Help for more detailed explanations.	
Sensor Configuration	
Allow Force Unoccupied: – Check to allow a user to save energy by forcing the zone into an unoccupied schedule on the ZS sensor. The user does this by holding the sensor's On/Off button for at least 3 seconds. This forced state remains in effect until the schedule transitions to unoccupied or until a user presses the sensor's On/Off button again.	D: Enabled R: Disabled/Enabled
Force Unoccupied without Delay: – Check to allow a user to force a zone to unoccupied immediately instead of the normal 3-second delay. **NOTE** This option is not available if **Allow TLO Set During Occupied** is checked.	D: Enabled R: Disabled/Enabled
Timed Local Override	
Increment: – Minutes that the microblock adds to the zone's occupied time for each click of the zone's local override button or switch.	D: 30:00 mm:ss
Maximum Duration: – Maximum value (up to 960 minutes) the microblock outputs, regardless of additional pulses from the controller's input.	D: 60:00 mm:ss R: 0 to 960:00 mm:ss

Alarms

Navigation: i-Vu® / Field Assistant: **Properties** > **Control Program** > **Alarms**

Point Name/Description	Default/Range
Fire / Smoke Shutdown – Indicates if the unit is in a **Fire / Smoke Shutdown** condition.	R: Normal/Alarm
Space Temperature – Indicates if the space temperature sensor exceeds the high or low alarm limit.	R: Normal/Alarm
Alarming Temperature – The value of the alarming space temperature sensor. Visible only in an alarm condition.	R: The sensor's range
Alarm Limit Exceeded – The alarm limit that the alarming space temperature sensor exceeded. Visible only in an alarm condition.	R: -60 to 250°F
SPT Sensor – Indicates if the SPT communicating zone temperature sensor is no longer communicating.	R: Normal/Alarm
ZS Sensor – Indicates if the ZS communicating zone temperature sensor is no longer communicating.	R: Normal/Alarm
Space Temp Sensor – Indicates that a valid space temperature sensor or sensor value is no longer available to the controller.	R: Normal/Alarm
ZS Sensor Configuration– Indicates a configured ZS Sensor is no longer communicating.	R: Normal/Alarm
Supply Fan – Indicates an alarm condition if the supply fan's status fails to match the fan's commanded state when ON. (Only applicable if Input Ch#8 is set to **Fan Status**.)	R: Normal/Alarm
Indoor Air Quality – Indicates if the occupied CO_2 level exceeds the **Occupied High CO2 Alarm Limit**.	R: Normal/Alarm
Compressor Status – Indicates the current state of the compressor status input.	R: Normal/Alarm
Supply Air Temperature – Indicates if the supply air temperature drops below the **Low SAT Alarm Limit** or exceeds the **High SAT Alarm Limit**.	R: Normal/Alarm
Condensate Overflow – Indicates the current state of the overflow switch.	R: Normal/Alarm
Source Water Temperature – Indicates if the source water temperature exceeds the Min/Max Source Temp Heating or Min/Max Source Temp Cooling values.	R: Normal/Alarm
Filter – Indicates a dirty filter condition when the filter runtime exceeds the value of the **Filter Service Alarm Timer**.	R: Clean/Dirty
Space Relative Humidity – Indicates if the relative humidity exceeds the high RH alarm limit.	R: Normal/Alarm
Outdoor Air Temp Sensor – Indicates if the controller is no longer receiving a valid outdoor air temperature value either through the network or from a local sensor.	R: Normal/Alarm
Airside Linkage – Indicates if Airside Linkage fails.	R: Normal/Alarm
Source Water Linkage – Indicates if Source Water Linkage has failed.	R: Normal/Alarm

Linkage

Navigation: i-Vu® / Field Assistant: **Properties** > **Control Program** > **Linkage**

Point Name/Description	Default/Range
Airside Linkage	
Airside Linkage Collector – Set the **Number of Providers** to zero (0). This value MUST be set to zero in this device and it will receive information from a single VVT Master zone.	D: 0 R: 0 to 32
Airside Linkage – If **Active**, the controller is part of a linked system. If **Not Active**, the controller is a stand-alone device.	R: Active/Not Active
Air Source Mode – Displays the operating mode of this equipment as reported to Linkage.	R: OFF WARMUP HEAT COOL FREECOOL PRESSURE EVAC VENT
Air Source Supply Air Temp – Displays the supply sir temperature value reported to Linkage.	R: -56 to 245°F
Source Water Linkage	
Waterside Linkage Collector – Set the **Number of Providers** to the total number of controllers in the linked system. When configured, the controller can collect information from other WSHP Open controllers.	D: 1 R: 1 to 64
Waterside Linkage Provider – Allows access to configuration of a water linkage system and to the Provider's details. Enter the MS/TP **Network Number** and MAC **Address** of the controller that runs the Loop Pump Monitor control program. **Water source:** **Network Number =** • Collector MS/TP Address = • IP Address = **NOTE** If you change the **Network Number** or **Address** from a BAC*view* device, you must cycle power to the controller for the changes to take effect.	D: 0 R: 0 to 65,534 D: 0 R: 0 to 99 D: 0.0.0.0 R: 0.0.0.0 to 255.255.255.255
Source Water Linkage – If **Active**, the controller is part of a linked system. If **Not Active**, the controller is a stand-alone device.	R: Active/Not Active
Loop Pump Request – Set to **1** if this WSHP requires the source water loop to operate.	R: 0/1
Loop Pump Status – The actual state of the source water loop pump(s).	R: Off/On
Heat Request – Set to 1 if this WSHP is required to operate in a heating mode.	R: 0/1

Point Name/Description	Default/Range
Cool Request – Set to 1 if this WSHP is required to operate in a cooling mode.	R: 0/1
Water Loop Temperature – Displays the actual temperature of the source water leaving the plant and entering this WSHP.	R: -56 to 245°F
Aux Heat Request – Set to 1 if this WSHP requires the auxiliary heat source to operate.	R: 0/1
Aux Heat HW Pump Status – The actual state of the auxiliary heat (boiler) pump(s).	R: Off/On
Aux Heat Boiler Water Temp – Displays the actual temperature of the boiler water leaving the plant and entering this WSHP's auxiliary heating coil. A value of -999°F indicates the value is unavailable.	D: -999° F R: -56 to 245°F
Outdoor Air Temp – Displays the outdoor air temperature being sent to this WSHP through **Source Water Linkage**. A value of -999°F indicates the value is unavailable.	D: -999° F R: -56 to 245°F

I/O Points

Navigation: i-Vu® / Field Assistant: **Properties** > **I/O Points**

WARNINGS

- Do not change the **Value**, **Offset/Polarity**, **Exp:Num**, **I/O Type**, **Sensor/Actuator Type**, **Min/Max**, or **Resolution** I/O configuration parameter for the points listed below. Changing these parameters could cause improper control and/or equipment damage.
- Use extreme caution if locking a point as this may also cause improper control and/or equipment damage.

Point Name/Description	Default/Range
Zone Temp / Zone Temp (SPT Standard, SPT Plus, SPT Pro, and SPT Pro Plus sensors only). Sensor configurations on the microblock's **Properties** > **Details** tab are listed below. For more information, see the *Carrier Sensors Installation Guide*. **NOTE** Do not edit settings on the **Zone Temp** microblock on the right.	R: -56 to 245°F
Sensor Type: **Min Present Value** - Minimum present value the sensor transmits before indicating an alarm.	D: 45
Max Present Value - Maximum present value the sensor transmits before indicating an alarm.	D: 96
Setpoint Adjustment: **Max Adjust** – The amount that a user may adjust the setpoint at the sensors.	D: 5°F R: 0 to 15°F
Reset setpoint adjust to zero when unoccupied - Resets the setpoint bias to zero when the controller transitions to unoccupied.	D: Off

Timed Local Override: **Allow Continuous** (SPT Pro only) – If checked, a user can press the sensor's local override button until the **Max Accum** value is reached, then press one more time to have a continuous override until the next occupied period or until the user cancels the override. The display shows **On** during a continuous override.	D: Off R: Off/On
Each Pulse – The amount of time added to the total override time when a user pushes the sensor's override button.	D: 30:00 mm:ss R: 0:00 to 1440:00 mm:ss
Max Accum – The maximum amount of override time accumulated when a user pushes the sensor's override button.	D: 240:00 mm:ss R: 0:00 to 2000:00 mm:ss
Cancel override – How long a user must push the sensor's override button to cancel an override.	D: 3 seconds R: 0 to 60 seconds
Sensor Array: **Sensor calculation method -** When using multiple SPT sensors, select the process variable to be passed to the controller.	D: Avg R: Avg, Min, Max
BACnet configuration: **Network Visible -** Must be enabled for other BACnet objects to read or write to this point, and for this point to generate alarms.	D: Enabled
Object Name - Do not change.	D: zone_temp
RH Sensor - The current milliamp signal of the controller's **RH** input.	D: 4 to 20 mA R: 0 to 20 mA
CO2 Sensor - The current milliamp signal of the controller's **IAQ** input.	D: 4 to 20 mA R: 0 to 20 mA
Source Water Temperature – The temperature of the water leaving the compressor's source water loop. This value is used for control.	R: -56 to 245°F
ZS Zone CO2 - IAQ/CO2 signal received from CO2-enabled ZS Sensor(s).	
ZS Zone Humidity - RH signal received from humidity-enabled ZS Sensor(s).	
ZS Zone Temp - Temperature signal received from ZS Sensor(s).	
SAT Sensor – The value of the controller's supply air temperature sensor input, prior to any operator-configured **Calibration Offset**.	R: -56 to 245°F
Overflow Contact – The current state of the overflow input (if present).	R: Open/Closed
Smoke Detector Input – The current state of the smoke detector input (if present).	R: Normal/Closed Alarm/Open
Compressor Status – The current state of the compressor status input.	R: Normal/Alarm
Input Channel #8 – The current state of the input (if present) connected to channel #8.	R: Open/Closed
Sensor Invalid – This internal input monitors the communication between the controller and the SPT sensor. **Off** indicates communication is normal.	R: On/Off
Aux Heat – The current commanded heating output when **Auxiliary Heat Type** is set to **Modulating HW.**	R: 0 to 100%

OA Damper – The current, commanded output of the outdoor air damper, if equipped.	R: 0 to 100%
Fan G – The current commanded output for the fan.	R: On/Off
W2 – The current commanded heating output when **Auxiliary Heat Type** is set to **2-Pos HW** or **1 Stage Electric**.	R: On/Off
O/B – The current commanded output of the reversing valve.	R: On/Off
Y2 – The current compressor commanded output if **Compressor Stages** is set to **2 Stage**.	R: On/Off
Y1 – The current compressor commanded output.	R: On/Off
De-HUM – The current commanded state of the dehumidification algorithm.	R: Enable/Disable
Fan Med Spd – The current commanded fan output if **# of Fan Speeds** is set to **3**.	R: On/Off
Fan High Spd – The assigned output channel's current configuration-dependent, commanded fan output if **# of Fan Speeds** is set to **2** or **3**.	R: On/Off

ZS Sensors	
The following properties apply to the ZS Standard, ZS Plus, and ZS Pro only. Sensor configurations on the microblock's **Properties** > **Details** tab are listed below for: • **ZS Zone Temp** • **ZS Zone Humidity** • **ZS Zone CO2**	
Default Value – The value that outputs when communication of all enabled sensors fails or during sensor startup. The default value is used for each sensor's corrected value in the WebCTRL® system when the **Valid?** output is False (**Off**).	D: -999 R: -999 to 999
Sensor Configuration table • **(Index) Area** – The Index number corresponds to the ZS sensors defined in **Configuration** > **Service Configuration** > **ZS Sensor Binder**. (Ctrl+click the property name. See *Service Configuration* (page 16).)	D: (1) Main ZS Sensor R: (1) to (5)
• **Use** – Check **Enable** for each sensor that you want to include in the combination algorithm used to determine the output value.	D: Enabled index (1) R: checked or unchecked
• **Calibration** – If needed, enter a **Calculated Value** by adding the **Calibration** to the **Raw Value** for each ZS sensor.	D: 0 to 10
Combination Algorithm – If using more than 1 ZS sensor, select how the enabled sensors' values are to be combined to determine the output value. When the calculation is performed, only sensors with a valid value will be included.	D: Average R: Average Maximum Minimum

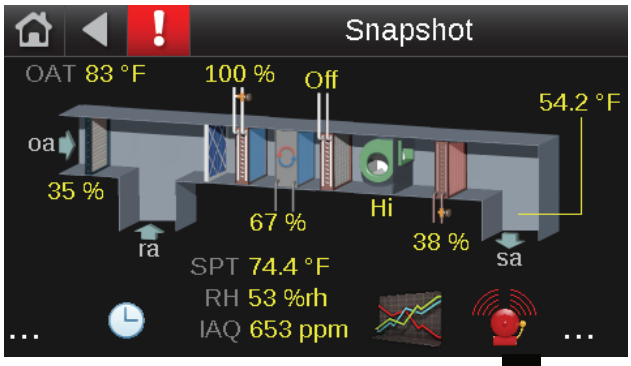
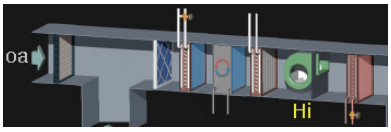
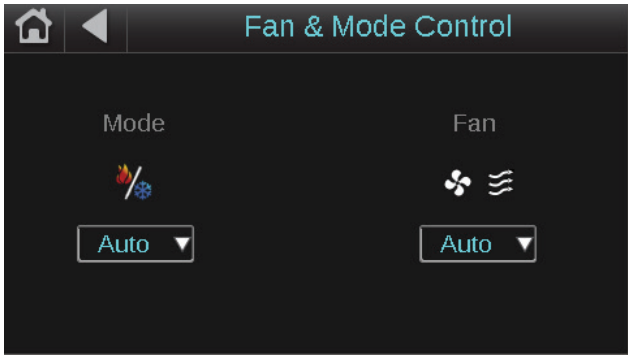
Input Smoothing – If the raw value from the sensor changes frequently, you can select one of the following options to send out an average of several readings on the output wire. • **None** - The raw value • **Minimum** - The average of the last 2 readings • **Medium** - The average of the last 5 readings • **Maximum** - The average of the last 9 readings	D: Medium R: None Minimum Medium Maximum
Show on sensors – Select **Local Value** to have each enabled sensor display its individual sensed value, or **Calculated Value** to have each sensor display the value determined by the **Combination Algorithm**.	D: Calculated Value R: Calculated Value Local Value
Display Resolution – Defines the resolution of the value to be displayed on the sensor. For example, 1 displays only integers (e.g., 74) and 0.5 displays values to the nearest 0.5 (e.g., 74.5).	D: 1 R: 1000 100 10 1 0.5 0.1 0.01 0.001
COV Increment – To reduce Rnet traffic, you can force the microblock to update its output only when the sensed value changes by more than the COV Increment.	D: .1 R: 0 to 100

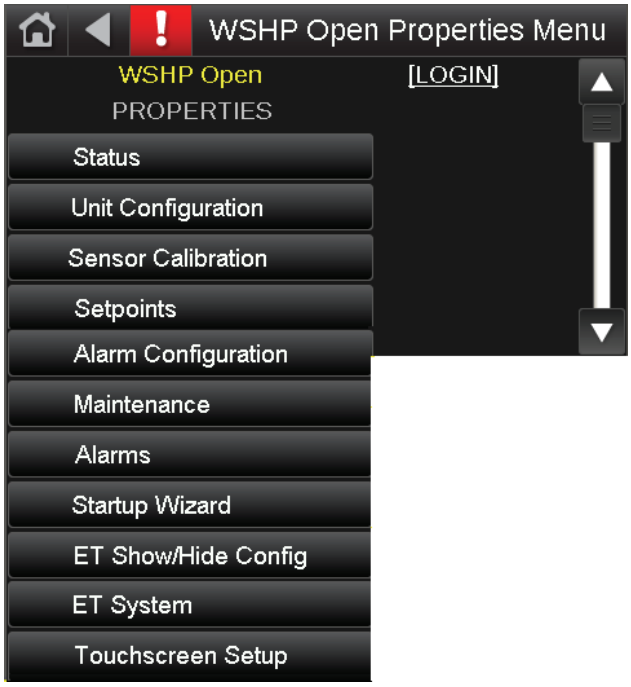
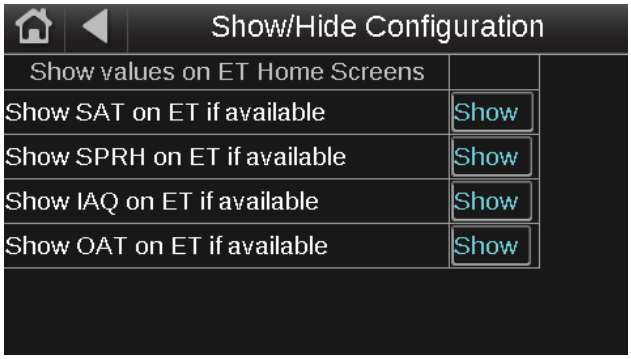
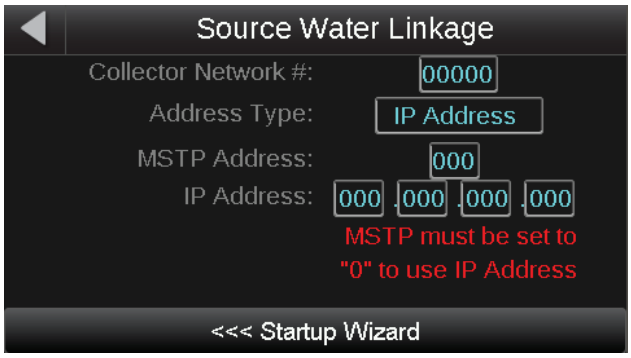
WSHP Points/Properties on the Equipment Touch

NOTE Engineering units shown in this document in the defaults and ranges are strictly for reference. You must enter an integer only.

Navigation screens

Screen Names	Display	Details
Standby	 Not an interactive screen. Touch anywhere to advance to **Home** screen.	Screen displays after the **Inactivity Timer** expires (default is 5 minutes). Displays: • Space temperature • Current setpoints • Mode - Cooling, Heating, Fan Speed, Economizer • Occupancy
Home	 Click ... on the right to navigate to **Snapshot** screen.	Displays: • Space temperature • Current setpoints • Mode - Cooling, Heating, Fan Speed, Economizer • Occupancy Features: • Pushbutton Override • Space Setpoint Offset Adjustment

Screen Names	Display	Details
Snapshot	 Forward to **WSHP Properties Menu** screen - click ... on the right Displays: • SAT, if allowed • RH, if available and allowed • IAQ, if available and allowed • OAT, if available and allowed • Coil & Dampers' positions and % open 	Navigates to: • Alarm status • Schedules • Trends • Back to the **Home** screen - click ... on the left Displays: • WSHP alarms, if present • Fan speed  • Filter status
Fan & Mode Control		Manually set Modes and Fan Speed. Displays: • Fan Mode • Fan Speed • Cool Mode • Heat Mode

Screen Names	Display	Details
Properties		Navigates to **Property** pages Login with one of the following passwords: ○ User level - type `user` ○ Admin level - type `admin` ○ Factory level - type `Touch` **NOTE** Only the buttons that are authorized for a specific password level are visible.
Show/Hide Configuration		Configure Show/Hide conditions for values on the following screens: • Standby • Home • Snapshot **NOTE** Only displayed for the Factory or Admin password. (See above.)
Source Water Linkage	 Click on the bottom to navigate to **Startup Wizard**.	Set up Source Water Linkage using the following properties: • Collector Network# • Address Type: (IP Address/MAC) • MSTP Address of Collector • IP Address of Collector (to set an IP address, the MSTP address must be set to "0")

Startup Wizard

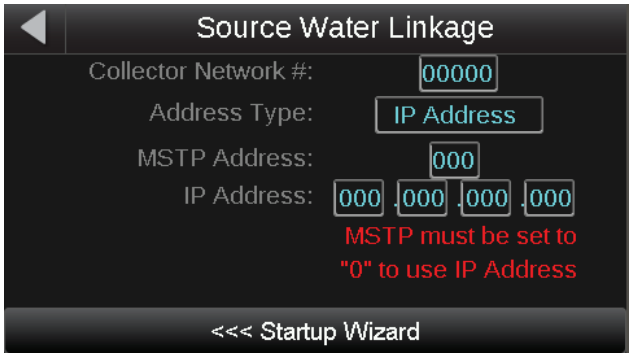
Navigation: Equipment Touch: **Startup Wizard**

Point Name/Description	Range
Aux Heat Type – The type of auxiliary heat being used for leaving air.	D: None R: None 2-Pos HW 1 Stage Electric Modulating HW
Ent Air H20 Economizer – The entering air economizer type.	D: None R: None 2-Pos Modulating
Vent Damper Type – The ventilation damper control being used.	D: None R: None 2-Pos DCV
Hardwired Humidity Sensor – Set to **Installed** if a humidity sensor is present.	D: N/A R: N/A Installed
Fan Mode – The supply fan's operating mode. Options: **Auto** - The fan cycles on/off in conjunction with heating or cooling. **Continuous** - The fan runs continuously during occupancy and intermittently during unoccupied periods with heating or cooling. **Always On** - The fan runs continuously regardless of occupancy or calls for heating and cooling.	D: Continuous R: Auto Continuous Always On
Cool Enable – Enables or disables cooling operation.	D: Enable R: Enable/Disable
Cooling Lockout Temperature – Cooling is inhibited below this outdoor air temperature.	D: 45°F R: -65 to 80°F
Heat Enable – Enables or disables heating operation.	D: Enable R: Enable/Disable
Heating Lockout Temperature – Heating is inhibited above this outdoor air temperature.	D: 65°F R: 35 to 150°F
Max Heating SAT – In heating mode, the heating outputs are controlled so the supply air temperature does not rise above this value.	D: 110°F R: 40 to 140°F
Min Cooling SAT – In cooling mode, the cooling outputs are controlled so that the supply air temperature does not drop below this value.	D: 50°F R: 40 to 60°F

Point Name/Description	Range
Comp Stages – The number of stages of compression.	D: One Stage R: One Stage Two Stages
No. of Fan Speeds – The number of fan motor speeds.	D: Three R: One Two Three
Input 8 Function – Determines the function of the input connected to channel #8.	D: Remote Occupancy R: Remote Occupancy/Fan Status
Factory Dehum Reheat – Set to **Installed** if factory-installed dehumidification reheat coil is present.	D: N/A R: N/A Installed
2Pos Water Valve Type – The 2-postion water valve normal position with no signal.	D: NC R: NC/NO (normally closed/normally open)
Fan (G) Output Type – When set to **Fan On**, **G** output is energized when any fan speed is active (required for ECM and 33ZC fan control board). When set to **Fan Low**, the output is only energized for **Low Speed**.	D: Fan On R: Fan On Fan Low

Source Water Linkage

Navigation: Equipment Touch: **Startup Wizard** > **Source Water Linkage**

Source Water Linkage	**Range**
Source Water Linkage  Use this screen to set up Source Water Linkage using the following properties (listed below). To navigate to **Startup Wizard**, click on the bottom.	
Collector Network# – Enter the source water controller's MSTP network number.	D: 0 R: 0 to 65,534
Address Type: – Select the type of BACnet network of the source water controller.	D: MSTP R: MSTP or IP Address
MSTP Address: – Set the MAC address of the source water controller. **NOTE** The MSTP address and IP address are mutually exclusive. To set an IP address, the MSTP address must be 0.	D: 0 R: 0 to 99
IP Address: – Set the MAC address of the source water controller. **NOTE** The MSTP address and IP address are mutually exclusive. To set an IP address, the MSTP address must be 0.	D: 0.0.0.0 R: 0.0.0.0 to 255.255.255.255

Document revision history

Important changes to this document are listed below. Minor changes such as typographical or formatting errors are not listed.

Date	Topic	Change description	Code*
2/29/16	Start-up	Added topic	C-D
1/12/16		Formatting improvements	C-D
12/2/14	Entire document	Updated to remove all BACview references and add Equipment Touch. Added support for ZS sensors and PMT.	C-AE-BR-O

* For internal use only

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