

ASIC/1 Wall Sensors

Application

The ASIC/1-8055 VAV Controller, ASIC/1-8255 Fan Coil Controller, and ASIC/1-8355 Packaged AC Controller support several user adjust options that are available through the WS-0XX and WT-0XX wall mounted temperature sensors.

These include:

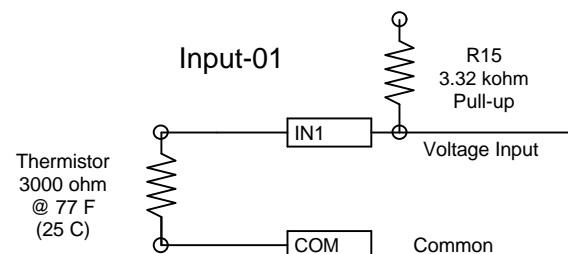
- o Zone Temperature Sensor on Input 1.
- o Afterhours push-button on Input 2 on the WS-0XX and WT-0XX wall sensor.
- o User Adjust Switch on Input 2 on the WT-0XX wall sensor.
- o Variable User Adjust 10 to 30 kohm potentiometer on Input 3 or Input 2 on the WS-021, WS-031, & WS-041.
- o Access to the RS-485 communication bus.
- o Controller interlock for changing device addresses.

This application bulletin describes the operation of the zone temperature and user adjust features of the WS-0XX and WT-0XX when used with the ASIC/1-8X55 controllers and ASIC/1-8015 controllers.

Zone Temperature

The Zone Temperature on the WT-0XX, or WS-0X1 wall sensors is always on input 1. If a wall mounted temperature sensor is not used, the zone temperature control could also be a temperature sensor connected to controller blades IN1 and COM.

The ASIC/1-8X55 Input Configuration is Input Type = 1 - Temperature, Convert Type = 4 Zone Temperature, 0.01 deg F.



Afterhours Push-button

The purpose of the afterhours function is to allow the user to force the controller into the Occupied state, when it is in Unoccupied or Night Setback by schedule or communication. It is also used to toggle the lighting output during occupied periods.

For the ASIC/1-8X55 controller, the afterhours switch is always on IN-2. For the ASIC/1-8015 controller, the afterhours switch is on IN-2 unless the Variable User Adjust feature is used, which looks for the afterhours switch on IN-3.

The Afterhours function is triggered by one of the following methods:

- o If Afterhours Enable is true, by a momentary button press on input #2.
- o If Afterhours Enable is true, by an As If Pushed Message , MT=10h,13.
- o If Occupancy Afterhours Enable is true, by sensing transition to occupancy status Yes.

If Afterhours Enable is set the status of switch contacts is examined and the As If Pushed Message is allowed.

If the controller is in Night Setback or Unoccupied by schedule or communication, when the Afterhours function is triggered, control is forced to the Occupied state for an Afterhours Time Allowed. The controller returns to scheduled state when afterhours time has elapsed.

The time spent in afterhours override mode is accumulated every minute and following the completion of the afterhours period is added into the Afterhours Total Time counter, which is stored in non-volatile memory. The Afterhours Date Stamp is also stored in non-volatile memory; the user should set the stamp to the current date and time whenever the counter is reset to zero by the user.

If the scheduled state goes to Occupied or MWU or if there is a communication override to OCC or MWU, the afterhours time is immediately accumulated, and afterhours is cleared.

Communication override to UNOCC or NSB and resynchronization while in afterhours, is ignored.

In MWU the Afterhours function is disabled.

If Afterhours function is triggered again, the controller accumulates time and begins a new afterhours period.

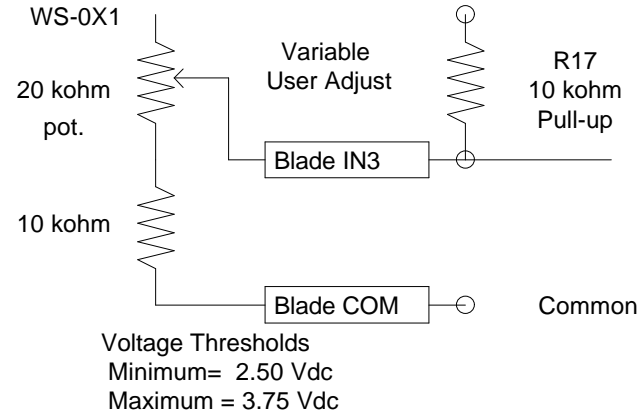
The ASIC/1-8x55 afterhours input may be configured as a raw input, as Input Type = 3 - User Adjust, Convert Type = 0 - Slide Switch, -100%, 0, +100%. or as Input Type = 3 - User Adjust, Convert Type = 2 - Potentiometer, -0 to 30 kohm.

Variable User Adjust (WS-0XX)

The WS-021, WS-031, & WS-041 variable user adjust can be selected for IN-2 or IN-3 using jumper W5. For the ASIC/1-8X55 controller, the user adjust input is typically on Input-3, but can be assigned to any input not used for other purposes.

The potentiometer allows changing the active temperature setpoint upwards or downwards by a fraction of the User-Adjust Setpoint.

The variable user adjust uses a linear 20 kohm potentiometer in series with a 10 kohm resistor, and using a 10 kohm pull-up resistor. Note: this is the standard pull-up resistor value for Input-3.



Input 3 is also used for Interlock. If shorted, it indicates that the interlock is in place. NOTE: The Variable User Adjust will not read correctly while the interlock jumper is in place.

To use Input 3 for Variable user adjust requires the following. setup:

- 1) User Adjust Enable is Yes.
- 2) Input 3 Configuration is Input Type = 3 - User Adjust, Convert Type =2, 10 to 30 kohm, -100%,+100%..

Note: Input 2 should be configured to read Raw value, not User Adjust.

- 3) Input 3 pull-up resistor, R17, is 10 kohm. This is the factory value.

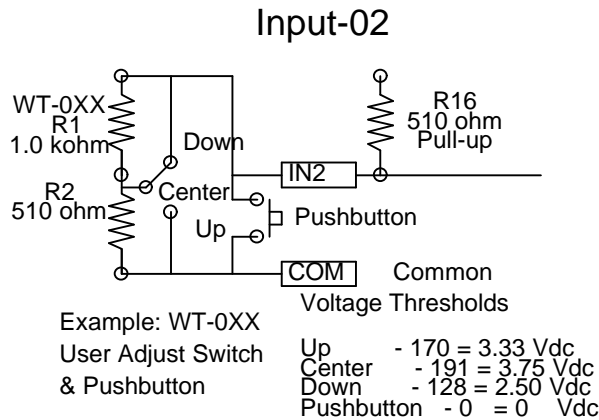
For the ASIC/1-8015 controller with the Variable User Adjust Enabled uses IN-3 for both the variable user adjust and for the afterhours switch. Note: the pull-up resistor value for Input-3 must be changed to 10 kohm in the ASIC/1-8015.

The ASIC/1-8205 and ASIC/1-8305 controllers do not support Variable User Adjust using the WS-0X1 wall sensor.

User Adjust Switch (WT-0XX)

When User Adjust Enable is set, the zone temperature setpoint may be adjusted up or down, based on the condition of Input 2. The User Adjust Switch on Input 2 connects to the ASIC/1 using the SCP-0XX cable. The WT-0XX User Adjust Switch is used by the occupant to reset the active cooling and heating control temperature setpoints. Setting the switch to high position adjusts the active cooling and heating setpoints upwards by the User-Adjust Setpoint. Setting the switch to low position adjusts the active cooling and heating setpoints downwards by the User-Adjust Setpoint.

If the User Adjust Switch option has been enabled, the User Adjust slide switch on wall sensor, WT-021 or WT-031 which requires a pull-up resistor, R16 = 510 ohm, and provides a request to increase or decrease the zone temperature setpoints. The factory installed value of pull-up resistor R16 is 510 ohms.



The ASIC/1-8X55 Input 2 Configuration is Input Type = 3 - User Adjust, Convert Type = 0 - Slide Switch, -100%, 0, +100%.

Communications

The WS-0XX and WT-0XX wall mounted sensors have an 6 position modular connector accessible from the front, that allows the user to plug in the curly cord from the SINC/1-1030 or SINC/1-1025 portable interface and establish communications with the controller.

The ASIC/1-8x55 controllers communicate only in the Remote communication mode. All controllers on the communication bus are accessed through the wall sensor.

The ASIC/1-8015, -8205, or -8305 controllers communicate in either the Remote communication mode where all controllers on the communication bus are accessed, or the Local Communication mode where only the individual controller is accessed through the wall sensor. The WT-0XX wall sensor supports both local and remote communication mode.

The WS-0XX wall sensor supports only the remote communication mode. If the WS-0XX is used with the ASIC/1-8015, -8205, or -8305 controllers, then the communication jumpers ,W3 & W4, must be used to connect the local and remote communication.

Interlock

Input 3 is used by ASIC/1 controllers to detect the installation of a hardware interlock. Input 3 can be connected through the SCP-XXX modular connector or to blade IN3 .. When this input is shorted it indicates the physical connection of an interlock, allowing the controller to return an address when requested.

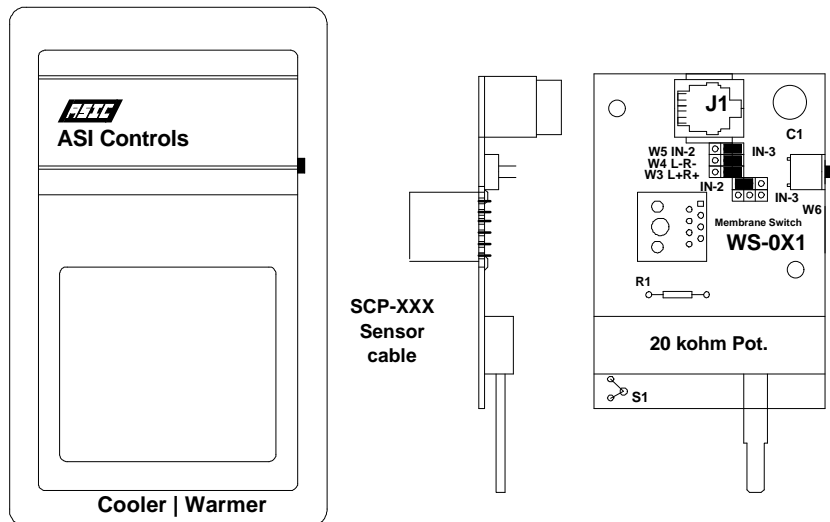
Note: Presence of the interlock on Input 3 interferes with the reading of variable user adjust on input 3.

WS-0X1 Wall Sensor

The ASIC/1-8X55 has a modular 8 pin RJ-45 jack, J2, to provide connection using the SCP-0XX sensor cables to the WS-0X1 wall sensors for Inputs 1, 2, and 3. The WS-0XX wall sensor has a 3 kohm thermistor on input 1, connects to the ASIC/1 controller using the SCP-0XX sensor cable.

The WS-0X1 wall sensor has several jumpers which can be used to configure the wall sensor for a specific application.

- o The WS-011 & WS-031 afterhours switch can be selected for IN-2 or IN-3 using jumper W6. For the WS-041 the membrane switch is also connected at pin headers at W6.
- o The WS-021, WS-031, & WS-041 variable user adjust can be selected for IN-2 or IN-3 using jumper W5.
- o When used with the ASIC/1-8015, 8205, or -8305, the jumpers, W3 and W4, must be moved to connect local (L) and remote (R) communication.

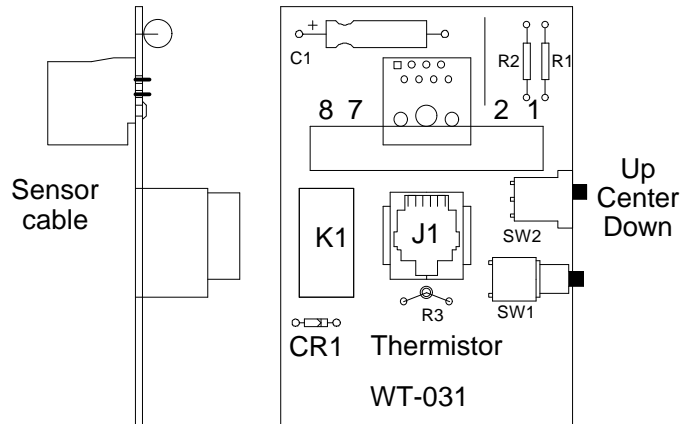


WT-0X1 Wall Sensor

The ASIC/1-8X55 has a modular 8 pin RJ-45 jack, J2, to provide connection using the SCP-0XX sensor cables to the ASI WT-0X1 wall sensors for Inputs 1, 2, and 3.

Adequate wire gauge should be used so that the wire resistance does not interfere with the electrical measurement. For this reason the 24 gauge SCP-XXX sensor cables are limited to 100 feet.

Note: The ASIC/1-8X55 controller does not support the local remote feature of the WT-0XX wall sensor. All communications is in the "Remote" mode.



The WT-0XX wall sensor has a 3 kohm thermistor on input 1, which connects to the ASIC/1 controller using the SCP-0XX cable

If the Afterhours Option is enabled in the controller, shorting input 2 to ground at wall sensor, WT-021 or WT-031, gives indication that the after-hours button has been pushed.

If the User Adjust Switch option has been enabled, the User Adjust slide switch on wall sensor, WT-021 or WT-031 which requires a pull-up resistor, R16 = 510 ohm, and provides a request to increase or decrease the zone temperature setpoints. The User Adjust Switch on Input 2 connects to J2-6, using the SCP-0XX cable. The factory installed value of pull-up resistor R16 is 510 ohms.