ZS Zone Sensors
User Guide



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

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Using ZS Zone Sensors

ZS Sensors are thermistor-based temperature sensors that can optionally sense humidity, motion, and either CO_2 or VOC. ZS Sensors communicate with the HVAC system through the Rnet.

A ZS Sensor's functionality is determined by:

- The sensor model
- The sensor's sensing capabilities (temperature, humidity, motion, CO_2, VOC)
- The control program that runs the associated equipment

See the referenced page below to learn what you can see and do with each of the ZS zone sensor models:

ZS Standard (page 2)

ZS Plus (page 3)

ZS Pro (page 5)

ZS Pro-F (page 10)

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ZS Standard Sensor



A ZS Standard sensor has no user controls.

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ZS Plus Sensor

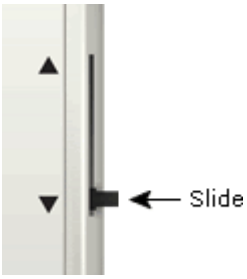


A ZS Plus lets you:

- Make the zone warmer or cooler
- Override the schedule to put the zone in an occupied state
- Force the zone to an unoccupied state
- See that the zone is in an occupied state when the green LED is lit

To make the zone warmer or cooler

Slide the sensor's potentiometer up to make the zone warmer or down to make it cooler. The control program determines how much you can adjust the setpoint.



To override the schedule

Timed override to an occupied state

Press the ⏻ button one time to override the schedule and put the zone in an occupied state for a length of time specified in the control program's **Maximum Duration** field.

Press the ⏻ button again to cancel the override and return control to the schedule.

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Force to an unoccupied state

If allowed by the control program, press and hold the ⏻ button for 3 seconds to force the zone to an unoccupied state.

Press the ⏻ button again to cancel the force to unoccupied and return control to the schedule.

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ZS Pro Sensor



A ZS Pro lets you:

- View information in the display such as zone temperature, setpoints, outside air temperature, and equipment status
- Make the zone warmer or cooler
- Override the schedule to put the zone in an occupied state
- Edit information if allowed by the control program
- Force the zone to an unoccupied state
- See that the zone is in an occupied state when the green LED is lit
  NOTE A ZS Pro with the optional motion sensor automatically goes into an occupied state when it senses motion.

Navigating the sensor's screens

The control program determines what screens you see, what information is in each screen, and what you can adjust. The type of sensor also determines what you see. For example, if the sensor reads temperature, humidity, and CO_2, the Home screen may cycle through the current values.

This screen...	Displays when...
Home	The sensor has had no user interaction for 5 seconds.
Setpoint adjustment	You press the ▲ or ▼ button. See *To make the zone warmer or cooler* (page 7).
Information	You press the *i* button. Tap the button to cycle through various information.
Diagnostic	You hold the *i* button for 3 seconds. Tap the button to cycle through various information to troubleshoot your system.

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Reading the display

Depending on the control program and the type of sensor, you may see any of the following items in the sensor's screens.

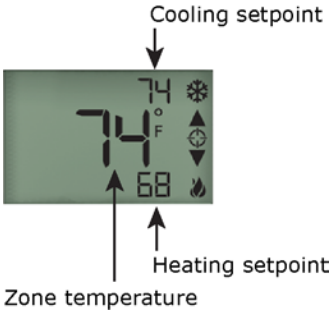
This item...	Indicates...
°F or °C	The temperature is Fahrenheit or Celsius.
%💧	The value shown is percent relative humidity.
	The value shown is outside air temperature or humidity.
	Cooling
	Heating
	The zone's fan is running.
	The fan speed. See *To manually adjust the fan speed* (page 10).
	The value(s) in the display, typically setpoints, are editable using the ▲ and ▼ buttons. If the control program specifies that the value is not editable, you will see  without arrows. See: *To make the zone warmer or cooler* (page 7) *To edit displayed values* (page 9)
	The sensor is in a timed override. See *To override the schedule* (page 7).
	The equipment is running in an energy-saving mode defined in the control program.
	An alarm condition exists. If programmed, the Information screen or Diagnostic Screen may provide details on the alarm.
	A maintenance condition exists. If programmed, the Information screen or Diagnostic Screen may provide details on the maintenance condition.
	The sensor's buttons are locked either because the control program specifies it or because a user locked them at the sensor. See *To lock the sensor buttons* (page 8).
OCC	The displayed setpoint is an occupied setpoint.
UnOCC	The displayed setpoint is an unoccupied setpoint.
CO2	The value shown is CO_2.
UOC	The value shown is VOC.
EFF	The value shown is the effective setpoint.
A number in the bottom left corner	A value in the control program that does not have an associated icon. For example, 304 represents the supply air temperature. See *Appendix: Rnet tag numbers* (page 12) for a list of all numbers and the values they represent.

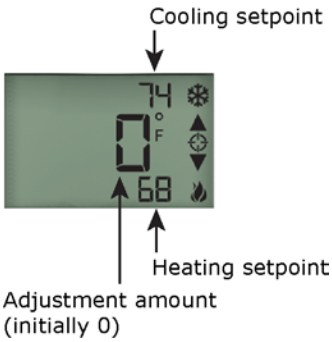
NOTE If a number on the display flashes, this indicates that the sensor cannot display the correct value (for example, the value exceeds the maximum value that the sensor can show).

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To make the zone warmer or cooler

1 From the Home screen, press the ▲ or ▼ button to show the Setpoint Adjustment screen. This screen typically shows one of the following:





NOTE The control program may not show the cooling and heating setpoint on this screen.

2 Press the ▲ or ▼ button to adjust the zone temperature setpoint. The control program determines how much you can adjust the setpoint.

3 Wait a few seconds until the display returns to the home screen before you press any other buttons.

To override the schedule

Timed override to an occupied state

1 Press the ⏻ button one time to override the schedule and put the zone in an occupied state for a length of time specified in the control program's **Increment** field.

2 Press the ▲ button to incrementally increase the time. The maximum length of time that you can override the schedule is specified in the control program's **Maximum Duration** field.

3 Wait a few seconds until the display returns to the home screen before you press any other buttons.

During the override, the bottom of the display shows the time (minutes) remaining in the override and an hourglass to indicate the override state.



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NOTES

- If programmed, you can override the schedule for an indefinite amount of time. To do this, press the ⏻ button one time, then press the ▲ button until the display shows **999**. The override remains in effect until the schedule transitions to occupied or until you cancel it.
- To cancel an override and return control to the schedule, press the ⏻ button twice.

Force to an unoccupied state

If allowed by the control program, press and hold the ⏻ button for 3 seconds to force the zone to an unoccupied state.

Press the ⏻ button again to cancel the force to unoccupied and return control to the schedule.

NOTE You may see the energy-saving icon if the control program specifies it.

To lock the sensor buttons

Simultaneously press and hold the 2 buttons shown below for 5 seconds to lock the sensor's buttons. The display shows a lock icon to indicate the locked state.



Press and hold the 2 buttons again for 5 seconds to unlock the buttons.

NOTE If you press the ⏻ button slightly before the *i* button, the sensor will go into an override state instead of locking the buttons. But, if you press the *i* button first, the buttons will lock.

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To edit displayed values

If the display shows a value other than a zone temperature setpoint with  to the right of it, the value is editable from the sensor.

1 Press the ▲ or ▼ button to adjust the value.

2 Wait until the display returns to the home screen before you press any other buttons.

NOTE If the control program specifies that the value is not editable, you will see  without arrows.

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ZS Pro-F Sensor



The ZS Pro-F lets you do everything you can do with the *ZS Pro* (page 5), plus:

- Manually turn on heating, cooling, or fan only
- Manually adjust the fan speed
- Press the F/C button on the side of the sensor to display temperatures as Fahrenheit or Celsius

To manually turn on the fan, heating, or cooling

Tap the  button to cycle through the options of cooling, heating, fan only, or automatic control by the control program. The display indicates the option for each tap of the button.

To manually adjust the fan speed

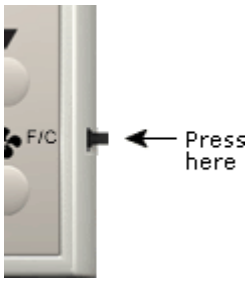
Tap the  button to display the current fan status and speed. Continue tapping until you see the fan speed option that you want.

To set the fan to...	Look for this icon(s)...
Auto. The control program determines the speed.	
Low speed	
Medium speed	
High speed	

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To show the temperature as Fahrenheit or Celsius

Tap the **F/C** button to change the zone temperature display from F° to C° and back.



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Appendix: Rnet tag numbers

This Rnet tag number...	Indicates this type of value...
001	Zone Temp
002	Zone Humidity
003	Zone CO2
004	Zone VOC
100	Fan Status
101	Fan Command
102	Cool Stage 1
103	Cool Stage 2
104	Cool Stage 3
105	Cool Stage 4
106	Heat Stage 1
107	Heat Stage 2
108	Heat Stage 3
109	Heat Stage 4
110	Hot Gas Bypass
111	Reheat
112	Reversing Valve
113	Enthalpy Wheel Status
114	Dehum Wheel Status
115	Filter Status
116	Energy Save Mode
117	Occupied Status
121	Override Status
300	Outside Air Temp
301	Outside Air Humidity
302	Outside Air CO2
303	Mixed Air Temp
304	Supply Air Temp
305	Return Air Temp
306	Effective Cooling Setpoint
307	Effective Heating Setpoint
308	Air Flow
309	Primary Damper Position
310	Cooling Stage
311	Heating Stage
312	Cooling Valve
313	Heating Valve
314	Reheat
315	Secondary Damper Position
316	Supply Air Humidity
317	Return Air Humidity
318	Entering Water Temp
319	Leaving Water Temp

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This Rnet tag number...	Indicates this type of value...
320	Supply Air Static Pressure
321	Return Air Static Pressure
322	Building Static Pressure
323	OA Dampers
324	RA Dampers
325	EA Dampers
326	SA Dampers
327	Economizer
328	Time Remaining Until Transition
329	Environmental Index
330	Demand Level
400	Heating Setpoint Adjust
401	Cooling Setpoint Adjust
402	Occupied Heating Setpoint
403	Occupied Cooling Setpoint
404	Unoccupied Heating Setpoint
405	Unoccupied Cooling Setpoint
406	Occupied Humidity Setpoint
407	Unoccupied Humidity Setpoint
408	Occupied CO2 Setpoint
409	Unoccupied CO2 Setpoint
410	Minimum OA Damper %
411	Static Pressure Setpoint
412	OA Temp Cooling Lockout
413	OA Temp Heating Lockout
414	Changeover Temp
416	Air Flow Setpoint
417	Occupied VOC Setpoint
418	Unoccupied VOC Setpoint
419	Supply Air Temp Setpoint
500	Fan Speed Status
501	HVAC Zone Mode Status
600	Fan Speed Mode Request
601	HVAC Zone Mode Request
800	Temperature units (°F/°C) displayed on sensor

Rnet tag number...	Indicates this type of alarm...
1024	Generic Alarm
1025	High Zone Temp
1026	Low Zone Temp
1027	Filter Change Required
1028	High Discharge Air Temp
1029	Low Discharge Air Temp
1030	Supply Fan Failure
1031	Supply Fan in Hand
1032	Supply Fan Runtime Exceeded

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Rnet tag number...	Indicates this type of alarm...
1033	Exhaust Fan Failure
1034	Exhaust Fan in Hand
1035	Exhaust Fan Runtime Exceeded
1036	Supply Fan VFD Fault
1037	Cooling Coil Pump Failure
1038	Cooling Coil Pump in Hand
1039	Cooling Coil Pump Runtime Exceeded
1040	Heating Coil Pump Failure
1041	Heating Coil Pump in Hand
1042	Heating Coil Pump Runtime Exceeded
1043	High Zone CO@ Concentration
1044	High Zone Humidity
1045	Low Zone Humidity
1046	Smoke Alarm
1047	Sensosr Failure
1048	Freezestat
1049	Emergency Shutdown
1050	Compressor 1 Runtime Exceeded
1051	Compressor 2 Runtime Exceeded
1052	OA Damper Failure
1053	OA Damper in Hand
1054	Enthalpy Wheel Failure
1055	Enthalpy Wheel in Hand
1056	Enthalpy Wheel Runtime Exceeded
1057	Enthalpy Wheel High Discharge Air Temp
1058	Enthalpy Wheel Low Discharge Air Temp
1059	Enthalpy Wheel High Return Air Temp
1060	Enthalpy Wheel Low Return Air Temp
1061	Enthalpy Wheel High Exhaust Air Temp
1062	Enthalpy Wheel Low Exhaust Air Temp
1063	High Supply Air Humidity
1064	Low Supply Air Humidity
1065	High Mixed Air Temp
1066	Low Mixed Air Temp
1067	High Return Air Humidity
1068	Low Return Air Humidity
1069	High Return Air Temp
1070	Low Return Air Temp

Rnet tag numbers 1100–1999 are custom tags. If you see a number in this range, ask your system installer what system value it represents.

A custom Rnet tag number beginning with...	Indicates...
11xx	A binary tag
13xx	An analog tag
15xx	A multi-state tag

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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*
1/18/17	Title	Changed title from ZS Sensors User Guide to ZS Zone Sensors User Guide	X-D
	Using ZS Zone Sensors	Added "Zone" to the title and "motion" in the first paragraph.	
	ZS-Pro	Added note regarding ZS Pro with optional motion sensor	
10/21/16	Appendix: Rnet tag numbers	Added Rnet tag 115, Filter Status	X-O-AE-O

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