

# 6424 Wi-Stat II

The MeshScape® Wireless Thermostat (Wi-Stat II) Provides Reliable Zone Comfort and Enhanced Energy Economy Through Remote Monitoring and Set Point Management, Enabling Greater Energy Policy Compliance and Usage Analysis

## Features at a Glance

### Thermal Zone Features

- Wireless mesh thermostat provides remote monitoring and HVAC control capabilities
- +/- 1 ° F control accuracy for maximum comfort
- +/- 1.5 ° F LCD display accuracy
- Easy to install; economical retrofit is compatible with and uses the existing thermostat and HVAC wiring for control and power
- Combines the conventional thermostat with a local supervisory control that is within the specified energy policy constraints, with no programming required
- Internet-based occupancy scheduling and monitoring capabilities define and enforce energy policies
- Allows for local thermostat operation within the specified comfort zone
- Override feature allows local operation during scheduled unoccupied periods
- Configurable “dead-zone” based on HVAC system type
- Setback control can continue independent of wireless communications
- CE- and FCC-compliant hardware modules
- RoHS-compliant

### Wireless Sensor Network Features

- Operates on a license-free 2.4 GHz ISM radio band with 15 user-selectable channels
- Configures as part of a MeshScape network that includes hundreds of wireless devices
- Compatible with remote monitoring client/server software
- Upgradeable firmware and device configuration
- Wireless communication ranges available of at least 750 feet between adjacent devices
- Extensive (1000s of feet) mesh network coverage

## Typical Applications

The Wi-Stat II is an intelligent energy conservation device for commercial, industrial, and municipal HVAC environments with retrofit, low cost, and ease of deployment as key drivers. It is ideal for any multi-zone HVAC application where remote monitoring and control of all zones is desired. The Wi-Stat II is familiar and easy-to-use, for it operates with the local conventional thermostat. Local supervisory control features enforce constraints and communicate via the mesh network to a remote monitoring and control application. Alternatively, the Wi-Stat II can be configured to include the Wi-Zone temperature input for improved temperature uniformity within a zone.

## Long Range

The Wi-Stat II transmits at a radio power of 60-mW, allowing for communication distances of at least 750 feet clear line of sight.

### Try it for yourself

Setting up a wireless mesh network is fast and easy. The MeshScape self-forming and self-healing network is designed for rapid deployment and easy operation.

For more information, visit [www.millennialnet.com](http://www.millennialnet.com)

## MeshScape GO Networking

The Wi-Stat II uses the industrially-proven MeshScape GO networking system which features:

- **Self-administrating network:** a self-forming and self-healing mesh network requires no administration
- **Robust:** a network that ensures multi-route, reliable data transmission over extensive distances
- **Responsive:** a network that quickly adapts to changes in topology and radio frequency (RF)
- **Power efficient:** very low power consumption
- **Scalable:** with the application, can scale to hundreds of wireless nodes with minimal overhead
- **Low latency:** very short network data delivery times

The Wi-Stat II is designed to be part of the MeshScape system, which can be configured to provide either single-site monitoring/control via a local PC or multi-site monitoring/control via an internet web interface.



Millennial Net's Wi-Stat II features an integrated Honeywell® thermostat for local control; a user-supplied thermostat is also possible. The Wi-Stat II is one of a family of Wi-Stats that provide local supervisory control and enable remote monitoring as a MeshScape Mesh Node. It overcomes the challenges experienced with point-to-point radios by communicating through a robust wireless mesh sensor network.

## Remote Monitoring/Control Software Features

The MeshScape Wi-Stat II is designed to interface with any Modbus®- or MeshScape-compatible remote HVAC monitoring and control software application. Millennial Net's Wi-EMS Remote HVAC Monitoring and Control provides a full-featured and easy-to-use 365-day occupancy scheduling calendar that reports, trends, and analyzes energy consumption.

## Wi-Stat II HVAC Compatibility

The Wi-Stat family of products is compatible for use with:

- Most 24V Heating and A/C systems
- 1- or 2-stage heat/cool (oil, gas, electric, or single-stage heat pump systems)
- 2 wire, heat-only Hydronic systems (hot water baseboard and radiator)
- Ask for more details

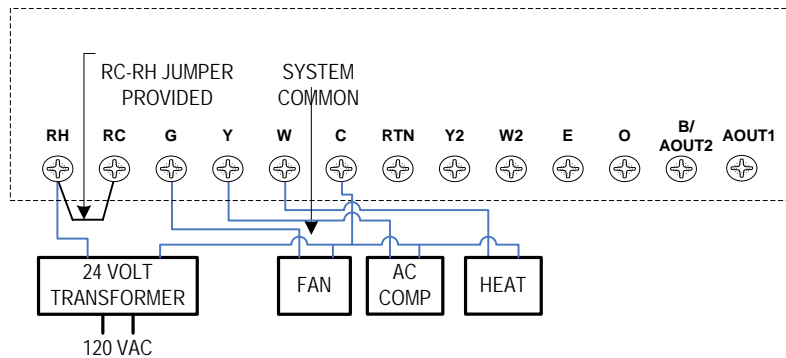
# 6424 Wi-Stat II Specifications

Parameter	Value	Unit	Notes
<b>Power</b>			
External power supply	12 ~ 28	V, AC or DC	
<b>Temperature Measurement</b>			
Sensor type	Thermistor		10 KΩ thermal resistor
Number of sensors	1		
Measurement range	-30 ~ +230	°F	
	-34 ~ +110	°C	
Accuracy	±1.00 (±0.56)	°F (°C)	
Sensitivity	±0.18 (±0.10)	°F (°C)	At room temperature 77 °F (25 °C)
<b>Opto-isolated Output Channels</b>			
Number of channels	3		For single stage systems – heat (W), cool (Y) and fan (G) control
	5	channel	For dual stage systems – 1 <sup>st</sup> heat (W), 1 <sup>st</sup> stage cool (Y), 2 <sup>nd</sup> stage heat (W2), 2 <sup>nd</sup> stage cool (Y2) and fan (G) control
	3		For heat pumps – compressor (Y), fan (G), change over to heat (B), and change over to cool (O) control
Maximum voltage	50	V, AC or DC	
Maximum current	1	A	
<b>Analog Output Channels</b>			
Number of channels	2	channel	
Analog output voltage range	0 ~ 20	VDC	
<b>Radio</b>			
Operating frequency range	2405 ~ 2475	MHz	ISM band
Number of available channels	15		IEEE 802.15.4 channels 11 ~ 25
Channel spacing	5	MHz	
Maximum RF transmit power	18	dBm	
Receiver sensitivity	-95	dBm	At 10 <sup>-5</sup> bit error rate
RF data transmission rate	250	Kbits/sec	
Channel agility	Yes		Automatically realigns RF channel when network (MeshGate) switches to a new channel.
<b>Environmental &amp; Mechanical</b>			
Operating temperature range	-10 ~ +55	°C	
	-14 ~ +131	°F	
Storage temperature range	-40 ~ +85	°C	
	-40 ~ +185	°F	
Dimension	5.5x4.5x1.5	in	
	140x114x38	mm	
Weight	10.5	oz	
	300	mm	
<b>Regulatory Compliance</b>			
FCC and IC for unlicensed operation			

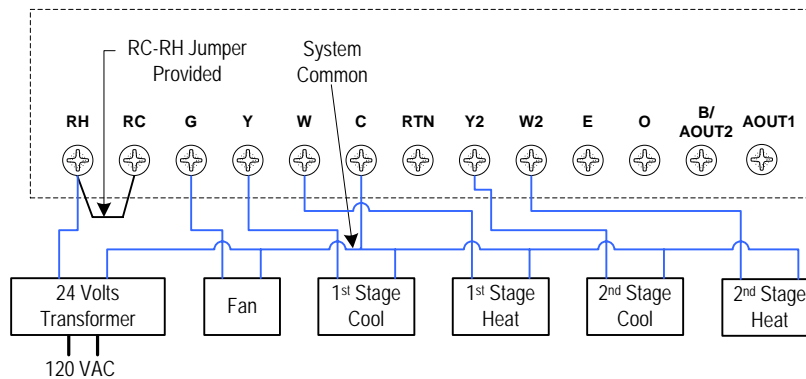


**Note:** a common wire from a 24V HVAC transformer is required for all HVAC Systems

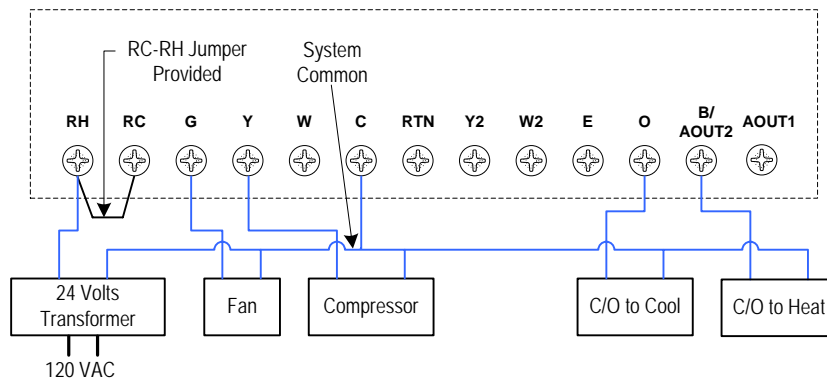
**Single Stage Systems**



**Dual Stage Systems**



**Heat Pump Systems**



**Warning:** O and B terminals should not be connected at the same time; only one of the two should be connected, depending on the heat pump changeover requirement.