

MeshScape®

6424 Wi-Stat IIIp-S

Millennial Net Wi-Stat IIIp-S is a new generation Pneumatic Thermostat that can be used as a stand-alone Weekday/Weekend programmable device or can also be easily converted into a wireless Direct Digital Control (DDC) device by the push of a button.

Features at a Glance

Thermal Zone Features

- Wireless DDC or Standalone Weekday/Weekend thermostat
- ~ 60 data points available
- No calibration needed (piezo electric valve actuator)
- +/- 1° F control accuracy for maximum comfort
- Simple configuration to operate in direct or reverse acting mode with various gain and throttling range settings
- Optional opto-isolated relay for fan control or dry contact motion sensor input
- Programmable temperature setbacks and other energy policies
- Up to 4 years of battery life
- Override feature allows local operation during scheduled unoccupied periods
- Detects and displays branch line air pressure
- Easy to install; economical retrofit compatible with existing pneumatic systems
- FCC and IC compliant hardware modules

Wireless Sensor Network Features

- Operates on a license-free 2.4 GHz ISM radio band with 15 user-selectable channels
- Bi-directional wireless communication
- Configures as part of a MeshScape network that includes hundreds of wireless devices
- ~100 feet wireless communication range between adjacent devices
- Extensive (1000s of feet) mesh network coverage

Standalone Operation

Wi-Stat IIIp-S thermostat allows local occupancy scheduling without a building management controller. It is designed for easy retrofit to existing 2 pipe pneumatic HVAC infrastructures without disruptive and expensive rewiring. Wi-Stat IIIp-S replaces existing manual thermostats and enables programmable Weekday/Weekend occupancy schedules, previously not available for pneumatically controlled buildings without supervisory controls. In addition, users will be able to control the set point and set back temperatures and configure all pneumatic settings such as action direction, set point and set back pressure values, gain as well as throttling range. Wi-Stat IIIp-S replaces mechanical bi-metal elements with solid state piezo valve actuator for precision pneumatic controls.

Wireless DDC Application

Wi-Stat IIIp-S can be easily converted to Millennial Net's wireless MeshScape DDC device which utilizes the IEEE 802.15.4 standard 2.4 GHz radio band. The built-in radio can be activated through keypad on the unit to enable Wi-Stat IIIp-S devices to wirelessly communicate with MeshScape routers and the gateway. Through MeshScape gateway, Wi-Stat IIIp-S can seamlessly connect to existing building automation system via BACnet or Modbus interface.

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

MeshScape GO Networking

The Wi-Stat IIIp-S 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:** can run for years on a single battery set
- **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 IIIp-S is designed to be part of the MeshScape system, which can be configured to provide either single-site or multi-site monitoring/control via an internet web interface.



The Wi-Stat IIIp-S is one of a family of Wi-Stats that provide local supervisory control and enable remote monitoring. It overcomes the challenges experienced with point-to-point radios by communicating through a robust wireless mesh sensor network.

Remote Monitoring/Control Features

The Wi-Stat IIIp-S is designed to interface with most BACnet or Modbus® compatible Remote HVAC Monitoring and Control software applications via Wi-BACserv or Meshgate II gateways.

Wi-Stat IIIp-S HVAC Compatibility

- 2-Pipe, Multiple Temperature Set points
- Direct / Reverse Acting, Dead Band Control, Summer / Winter thermostat systems
- Standard barbed fittings for pneumatic pipe connections

Long Range

The Wi-Stat IIIp-S transmits at a radio power of 60-mW, allowing for communication distances of at least 750 feet clear line of sight. Meshing capabilities allow for coverage of 1000s of feet.

Parameter	Value	Unit	Notes
Pneumatic Features			
Thermostat Type	2 - Pipe, Multiple Temperature Setpoints		
Contact Action	Direct / Reverse Acting, Dead Band Control, Summer / Winter thermostat		
Element Type	Piezo electric valve actuator		
Air Connections	5/32" (4.00 mm)		
Airflow Usage	0.011 scfm (5.2 mL/s)		
Throttling Range	0 – 10 F		User configurable
Pressure Measurement			
Sensor type			Surface mount pre-amplified pressure gauge
Measurement range	0 ~ 30	PSI	
Accuracy	1.5% full scale	%	
Pneumatic Output Ports			
Main line	Port M	port	Maximum main line pressure 30 psi
Branch line	Part Br	port	Actively controlled with pressure sensor feedback for various pressure level requirements
Optional Opto-isolated Output Channel or Motion Sensor Input Channel			
Number of channels	1	channel	<ul style="list-style-type: none"> Output - Opto-isolated (dry contact) for separate on/off fan control Input - dry contact motion sensor signal for occupancy detection applications
Maximum output voltage	50	V, AC or DC	
Maximum output current	1	A	
Temperature Measurement			
Sensor type	Integrated circuit sensor		Low current drain, < 90 uA
Measurement range	-50°F ~ +300°F (-10°C ~ +149°C)	°F (°C)	
Accuracy	±1.00 (±0.56)	°F (°C)	
Power			
Internal batteries	3.6	VDC	Four AA size Lithium batteries
External DC supply	12 maximum	VDC	Through screw terminal
Minimum supply voltage	3.1	VDC	
Estimated battery life	Up to 4	Years	4 or more set point changes per day. With minimum line leakage.
Display			
Display type	Liquid crystal		Displays temperature, branch line pressure, set point, occupied / set back mode, heat / cool / fan status, battery voltage & wireless connection status; supports set point adjustment, HVAC mode (auto / heat only / cool only) selection, fan mode selection (auto / on), and maintenance mode selection
Radio			
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 ⁻⁵ bit error rate
RF data transmission rate	250	Kbits/sec	
Sampling interval	5 (default)	min	Remotely configurable
Channel agility	Yes		Automatically realigns RF channel when gateway switches to a new channel.
Environmental & Mechanical			
Operating temperature range	0°F to 131°F (-18°C to 55°C)	°F (°C)	95% RH Max, Noncondensing
Storage temperature range	-4°F to 158°F (-20°C to 70°C)	°F (°C)	95% RH Max, Noncondensing
Dimension	4.75x3.5x1.0 (117x95x25)	in (mm)	
Weight	6	oz	Without Batteries
Regulatory Compliance			
FCC & IC for unlicensed operation			