The MeshScape® 6424 Wi-Controller-B is a wireless stand alone boiler controller regulates boiler water temperature and operates the water circulation pump based solely on outside air temperature inputs, independently from the wireless network or from other devices within it.

**Features at a Glance**

**Wi-Controller-B Features**
- Determines Water Set Point based on outside air temperature
- Controls Burner ON/OFF to regulate water discharge temperature to follow set point
- Turns Water Circulation Pump on/off based on outside air temperature
- Remote water setpoint and air temperature ration adjustment.
- Setback control is independent of wireless communications
- FCC-compliant hardware modules
- RoHS-compliant

**MeshScape GO Networking**

The Wi-Controller-B 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 itself to changes in topology or 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

**Wi-Controller-B Overview**

Wi-Controller-B is a stand alone Boiler controller. It operates as a mesh node in a wireless network. Wi-Controller-B regulates boiler water temperature and operates the water circulation pump based solely on outside air temperature inputs. It operates equipment controls independently from the wireless network or from other devices within it. It sends its status data to the wireless network for monitoring purposes only, but all controls and commands are being performed within the Wi-Controller-B.

Wi-Controller-B is equipped with two thermistors:
- One located outside the building for local temperature readings
- One placed on the discharge water pipe to measure water temperature

Based on their inputs and the calculation method described below, Wi-Controller-B controls the water heater and water circulation pump ON/OFF, maintaining an accurate water temperature in the system.

**Water Set Point Control**

Correlation between water set point and outside air is always linear. Two temperature points need to be specified. Values can be adjusted remotely depending on specific needs.

**Remote Monitoring/Control Software Features**

The MeshScape Wi-Controller-B 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.

**Long Range**

The Wi-Controller-B transmits at a radio power of 60-mW, allowing for communication distances of at least 750 feet clear line of sight.
## Parameter | Value | Unit | Notes |
--- | --- | --- | --- |
### Power
External power supply | 9 ~ 24 | V, AC or DC | Through power jack or screw terminals  
### Opto-isolated Output Channels
Burner start / stop control | 1 | channel | Start / stop control to regulate supply water temperature based on outside air temperature  
Circulation pump start / stop control | 1 | channel | Start / stop control based on outside air temperature  
Maximum voltage | 50 | V, AC or DC |  
Maximum current | 1 | A |  
### Temperature Measurement
Sensor type | Thermistor | 10 KΩ thermal resistor, encapsulated probe immune to moisture and condensation  
Number of sensors | 2 | Outdoor air temperature and supply water temperature measurements  
Sensor wire length | 8 (2.4) feet | 24 AWG zipcord  
Measurement range | -30 ~ +230 °F |  
Accuracy | ±1.00 (±0.56) °F (°C) | At room temperature 77 °F (25 °C)  
Sensitivity | ±0.18 (±0.10) °F (°C) |  
### 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 | At 10⁻⁵ bit error rate  
Receiver sensitivity | -95 dBm |  
RF data transmission rate | 250 Kbits/sec | Automatically realigns RF channel when network (MeshGate) switches to a new channel.  
Channel agility | Yes |  
### Environmental & Mechanical
Operating temperature range | -10 ~ +55 °C | Applied only to radio box; -34 ~ +110 °C operating and measurement range for thermistor probes  
Storage temperature range | -40 ~ +85 °C |  
Dimension | 146x114x51 mm |  
Weight | 10.5 oz |  
### Regulatory Compliance
FCC & IC for unlicensed operation