



## ***Automatic Lamp & Mat Heating Control Installation***



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### Installation Overview

This section covers the mounting and wiring of the MicroZone system. Anyone responsible for programming and operating the MicroZone should also read the *Operation section*.

There are two symbols commonly used throughout this section:



This symbol means the text describes steps that involve going near terminals with potentially deadly voltage. Always shut off power to all MicroZone modules and all attached devices before opening the cover.



This symbol means the text has extra importance since it is describing the importance of a feature or explaining a step to which you should pay close attention to avoid problems.

### Mounting and Wiring

Mount the MicroZone MC100 control module indoors where the temperature remains between 30 degrees Fahrenheit (- 1 degree Celsius) and 110 degrees Fahrenheit (43 degrees Celsius). Place the controller away from motors and relays/contactors that switch high current.

Do not install it in the same room where the animals live since the air tends to be corrosive to electronic circuits. A separate room or control office is a preferred location.

Use the mounting holes on the enclosures for mounting the modules. Before you drill holes into the enclosure, mark their locations and make sure that you do not drill into circuit boards and cables.



Unless absolutely necessary, do not remove the circuit boards. They are static-sensitive and should always be handled with appropriate grounding and electrostatic precautions.



**Always remove power from the MicroZone modules and controlled devices before removing any MicroZone module covers or servicing any heating device.**

### Conduit and Connections

To avoid electrical shorts or damage due to moisture, you should never run conduit openings through the top of the box. Conduit and hubs should be corrosion-resistant plastic or fiberglass. Use only liquid-tight strain-relief connectors to bring wires into the box.

Trade Size (inches)	Hole Size (inches)
1/2	0.875
3/4	1.125
1	1.375
1 1/4	1.750
1 1/2	2.000
2	2.500
2 1/2	3.000
3	3.625

Conduit Hole Sizes.eps

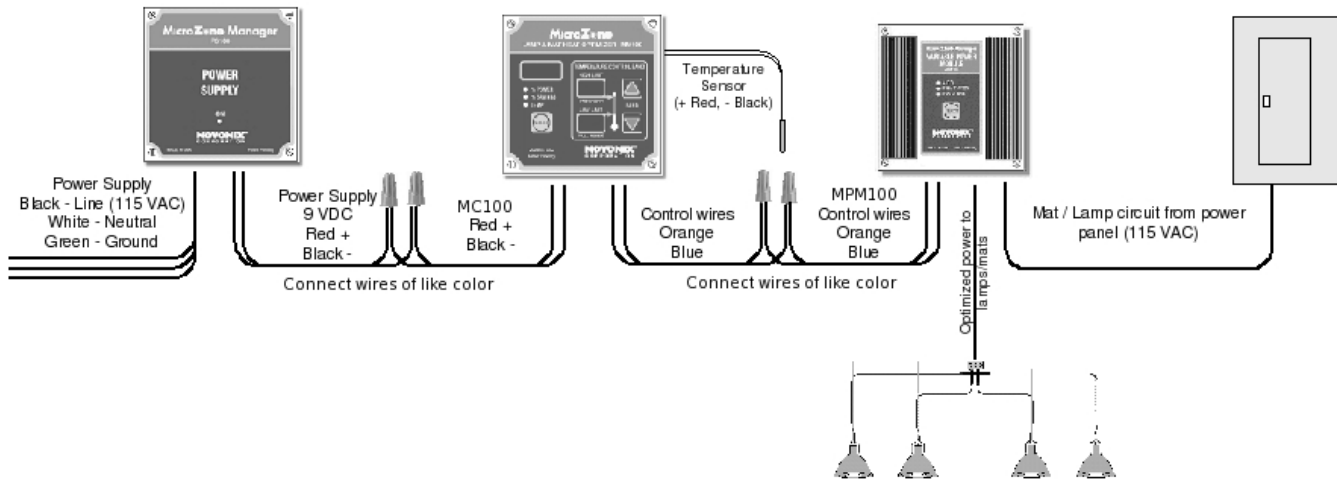
### Module Installation

For trouble-free operation, follow these simple installation guidelines:

- Electrical wiring used to connect the MicroZone modules **must meet all state and local regulatory requirements**. Wire rated for 600 volts (minimum) is recommended.
- Standard electrical conduit or raceways can be used to route wiring for the MicroZone modules.
- Do not install the modules in the same room where the animals live. A separate room or hallway is a preferred location.
- Do not install the modules where they will be subjected to harsh chemicals.

### Wiring/Setup

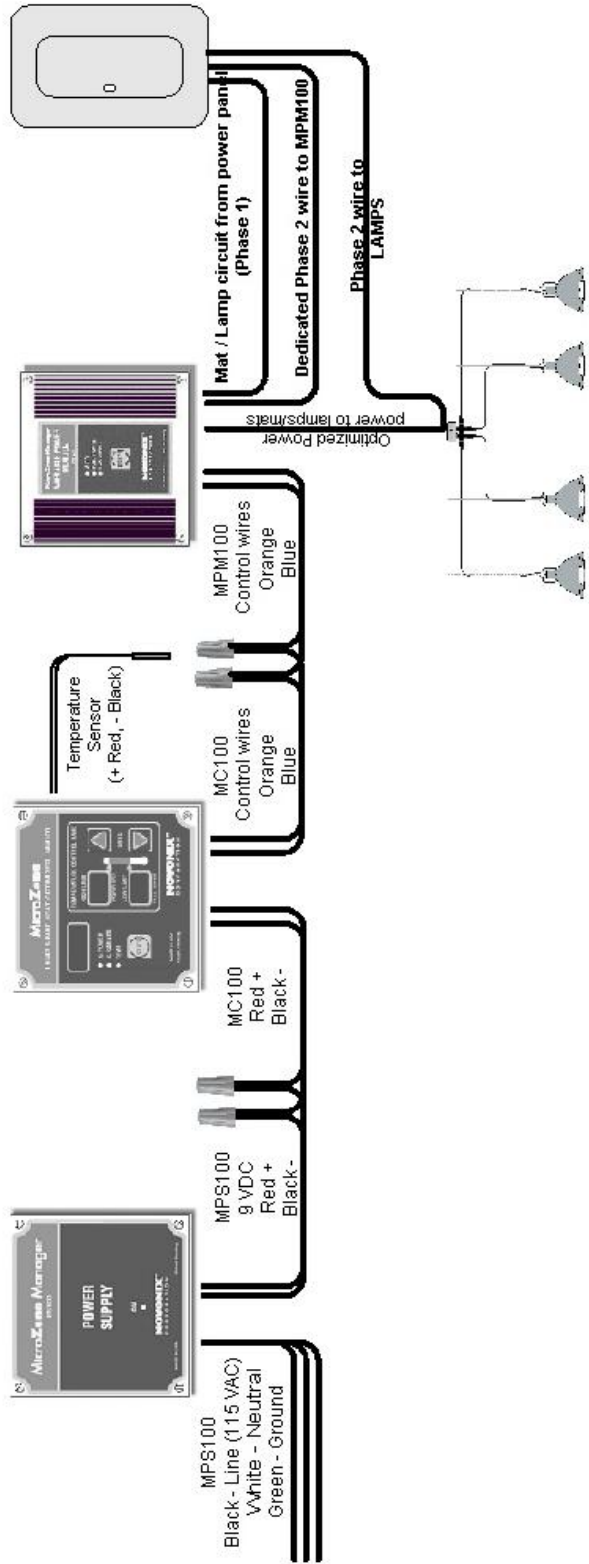
Below is a simplified diagram to show how the MicroZone units interconnect for a 120V installation. A wiring diagram for 240V installation is on the next page. A qualified electrician can easily wire the system with standard (600V-rated) wire.



**Note:** When using two temperature sensors connected to the MC100, see the diagram below.



Diagram for connecting two temperature sensors to the MC100.

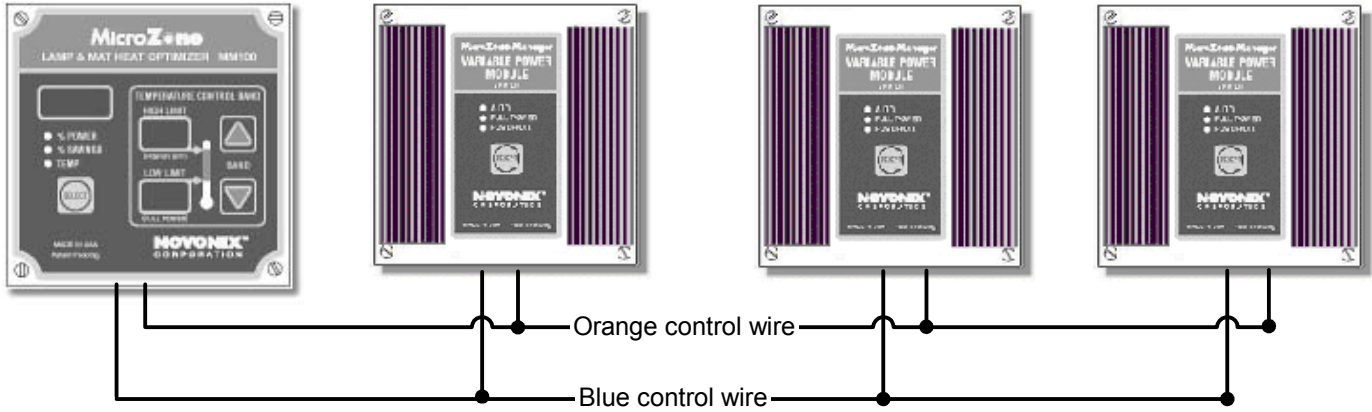


**NOTE:** To ensure proper operation of your MicroZone system, a dedicated Phase 2 wire must be run to the Modulators (MPM100's). This will prevent load current on the Phase 2 wire from interfering with proper operation of the MPM100 modulator.

**(For 120V operation, Phase 1 is the 120V hot line and Phase 2 is the neutral line.)**

### Wiring Multiple MPM100 Power Modulators into a system

When wiring multiple MPM100 modules to a MC100 control unit, connect the orange and blue control wires together in parallel, as shown in the diagram below. You can connect up to twelve power modulators to a single MC100 control unit. Each power modulator will have its own heating device circuit wiring.



### Wiring MPM100 Power Modulator



Ensure power is removed from the power distribution panel before wiring in the heating device feed circuit.

Ensure the power modulator (MPM100) and heating device supply circuits are properly grounded.



**Always remove power from the MicroZone modules and controlled devices before removing any MicroZone module covers.**



**Note that line voltages are still present when STANDBY is selected on units wired for 240V operation.**

## Wiring instructions

### MPS100 Power Supply

- The power supply (MPS100) requires an input of 115 volts AC, 50/60 Hz. Make power connections to the black (line) and white (neutral) power supply wires. Use 14-16 gauge wires for this connection. Connect the GREEN wire to Ground.

### MC100 Control Unit

- Matching wire colors, connect the power supply RED +9V and BLACK COM wires to the MC100 control module's red and black 9-12 VDC input wires.
- Matching wire colors, connect the MC100 control module's ORANGE and BLUE control wires to the MPM100 power module's orange and blue control wires. See the **Wiring Multiple MPM100 Power Modulators into a system** section above for more information.
- Connect the MC100's black and red sensor wires to the temperature sensor. If two temperature sensors ("sensor 1" and "sensor 2") will be connected to the MC100, the sensors should be wired in series (order does not matter):
  - a) Connect the MC100's **Temp - (BLACK)** wire to the **sensor 1 BLACK** wire.
  - b) Connect the **sensor 1 RED** wire to the **sensor 2 BLACK** wire.
  - c) Connect the **sensor 2 RED** wire to the MC100's **Temp + (RED)** wire.
- Suspend sensor from the ceiling to ensure free airflow, keeping it out of the animal's reach. Sensor location should allow it to measure room temperature without interference from direct sunlight, moving machinery, heaters, power wiring, sprinklers, lights, etc.

### MPM100 Power Modulator

- Connect the MPM100's (black) wire to the power panel Phase 1.
- Connect the MPM100's (white) wire to Phase 2 of the power panel with a dedicated wire
- Connect a wire from Phase 2 of the power panel to Line 2 of the heating devices.
- Connect the MPM100's LOAD (red) wire to the L1 line of the heating devices.



**NOTE:** To ensure proper operation of your MicroZone system, a dedicated wire must be run from the load center Phase 2 to the white wire of the MPM100 modulators. This will prevent lamp load current on Phase 2 from interfering with proper operation of the MPM100 modulator. *(For 120V operation, Phase 1 is the 120V hot line and Phase 2 is the neutral line.)*

## **Specifications**

**Operating Environment:** 0° F to 105°, 10 to 95% RH (indoor use only)

### **MPS100 MicroZone Power Supply**

*Input Voltage:* 120VAC, 0.1A, 50/60Hz

*Output Supply:* 200mA max output at 9 VDC

*Output Capacity:* Maximum of 5 MicroZone Controllers within 200 feet using 18AWG, two-conductor wire.

### **MC100 MicroZone Controllers**

*Input Power:* 9VDC

*Temperature Specifications:* +/- 2 degrees Fahrenheit at 30'

+/- 2.5 degrees Fahrenheit at 2000' using 22AWG two-conductor cable

+/- 2.5 degrees Fahrenheit at 5000' using 18AWG two-conductor cable

*Communications Output Capacity:* Maximum of 12 MPM MicroZone Power Modulators within 500 feet using 18AWG two-conductor wire.

**Temperature sensing probe error:** Less than 2° F (HerdStar supplied TS3 sensor)

### **MPM100 MicroZone Power Modulator**

*Input Power:* 120/240VAC, 16A Maximum

*Load Rating:* 0-120VAC or 0-240VAC (2kW@120V or 4kw@240V Maximum)

*Load Type:* Resistive or Incandescent

**Electrical protection:** Short circuit, overload and voltage surge

**Noise filter:** FM radio filter

**Enclosures:** Weather tight (approximately 4" x 4" x 2")

### **IMPORTANT:**

*Do not exceed the listed Load Rating and Operating Environment limits, or attempt to use the MicroZone as an electronic speed control for electric motors.*

## **Service**

For assistance, make sure you have checked the parameters on the MicroZone. If you still need assistance, contact:

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