




# MAGNUM FIRST M9-TS1 24 Volt Intelligent Thermostat Owner's Manual

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**MAGNUM FIRST M9-TS1 24 Volt Intelligent Thermostat**



## **Product Information: M9-TS1 24 Volt Intelligent Thermostat (with 4.3 LCD Display)**

The M9-TS1 is a 24-volt intelligent thermostat with a 4.3 LCD display. It has a single-gang dimensional drawing of 44.3.388 inches (111.252 mm) width, 6.66.633 inches (168.402 mm) height, and 11.1.166 inches (29.464 mm) depth. It comes with several features, including temperature monitoring range, temperature set point range, fan control, memory accuracy, and heat/cool control.

### **Features**

- 4.3 LCD display
- Temperature monitoring range
- Temperature set point range
- Fan control
- Memory accuracy
- Heat/cool control

### **Equipment Needed for Installation:**

The following equipment is needed for the installation of the M9-TS1 thermostat:

- Magnum First – 1 Seneca Street, 29th Floor, M55 – Buffalo, NY 14203 – phone 716-293-1588 – [www.magnumfirst.com](http://www.magnumfirst.com) – [info@magnumfirst.com](mailto:info@magnumfirst.com)
- Jumper

### **Warnings & Cautions:**

Before installing the thermostat, please read the warnings and cautions section carefully. To avoid the risk of fire, shock, or death, turn off the power at the circuit breaker or fuse and verify that it is off before installation begins. Make sure that it remains off until installation is complete.

### **Planning for Installation:**

Select one of the following thermostat configurations before starting the installation:

- Conventional HVAC Systems
- Heat Pump with Auxiliary Heat
- Heat Pump without Auxiliary Heat
- Boiler with Domestic Hot Water

**Connections & Correct Backplate Orientation:**

Mount the backplate of the thermostat to the wall and make sure that the connectors are oriented correctly. Please refer to the wiring diagram for more information.

**Technical Specifications:**

The technical specifications of the M9-TS1 thermostat are as follows:

- Range Input Voltage: 24V AC
- Max Loads: Varies depending on configuration
- Temperature Monitor Range: Varies depending on configuration
- Temperature Set Point Range: Varies depending on configuration
- Operating Temperatures: Varies depending on configuration
- Storage Temperatures: Varies depending on configuration
- Sampling Rate: Varies depending on configuration
- Display format: Varies depending on configuration
- Fan Control: Varies depending on configuration
- Memory Accuracy: Varies depending on configuration
- Heat / Cool Control: Varies depending on configuration
- Dimensions: Single Gang
- Radio Certifications: Varies depending on configuration

**Wiring Diagram:**

Please refer to the wiring diagram for proper installation and configuration of the M9-TS1 thermostat. The wiring diagram includes the connection and correct backplate orientation, mounting holes, and part numbers (frequency dependant).

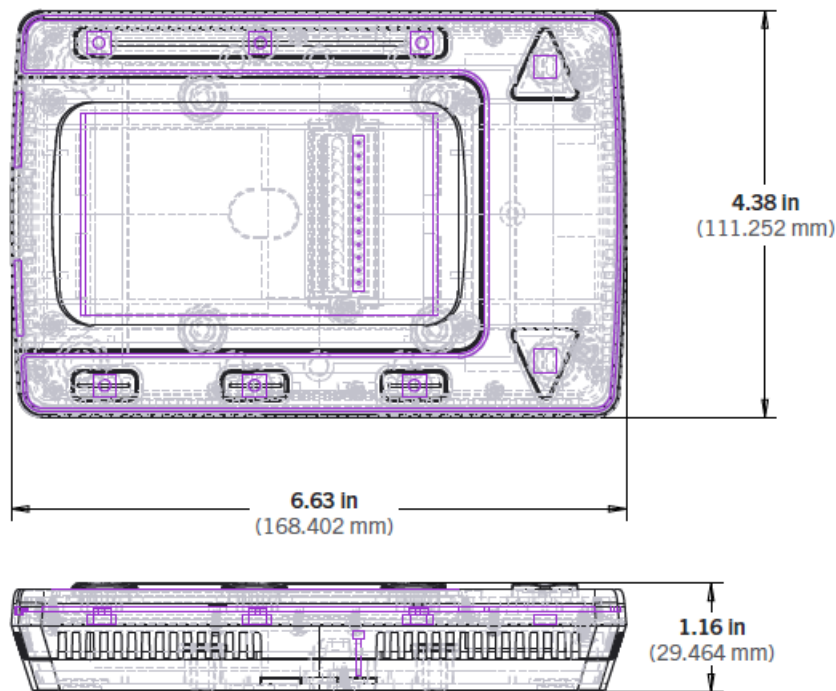
**Product Usage Instructions**

1. Turn off the power at the circuit breaker or fuse and verify that it is off before installation begins.
2. Choose one of the following thermostat configurations – Conventional HVAC Systems, Heat Pump with Auxiliary Heat, Heat Pump without Auxiliary Heat, Boiler with Domestic Hot Water.
3. Mount the backplate of the thermostat to the wall and make sure that the connectors are oriented correctly as per the wiring diagram.
4. Wire the thermostat according to the wiring diagram.
5. Turn on the power and set the desired temperature.

**Description**

The Bi-Directional, intelligent thermostat uses wireless communication to provide quick and easy implementation of energy saving HVAC controls. When the thermostat receives an “occupied” signal from a switch or sensor, the user immediately gains full control over the HVAC settings. When the thermostat receives an “unoccupied” signal, it sets the room back to the preset unoccupied temperature. It is designed for use with most basic gas/electric furnace/air conditioning units, PTHP/PTAC systems, 4-pipe, or 2-pipe fan coil systems.

**Drawing**



## Features Include

- Compatible with key card switch, occupancy sensor, window/door sensor and other wireless transmitters.
- Controllable through smart phone as well as VeneryUI software
- Optional humidity sensor
- Optional manual controls
- Two way communication

## Equipment Needed for Installation

- Phillips Screwdriver
- Electrical Tape
- Wire Nuts

## Planning for Installation

- Take a moment to prepare for installation and ensure optimal communications with other system components in the space
- Always utilize a qualified installer
- Create separation distance between interfering electronics such as fluorescent tube ends, ballasts, electronic transformers, and motors. Avoid mounting inside of metal enclosures.
- Obstructions of metal, concrete and dense building materials will reduce the range. Mount higher and away from obstructions to maximize range.

**WARNING:** To avoid risk of fire, shock, or death, TURN OFF POWER at circuit breaker or fuse and verify that it is OFF before installation begins. Make sure that it remains OFF until installation is complete.

**NOTE:** Read the WARNINGS AND CAUTIONS section before beginning these installation options. Read all steps for this option before taking any action to install the thermostat.

## Select ONE of the Following Thermostat Configurations

### OPTION A: Heat Pump Configuration Installation

- If retrofitting an old thermostat, remove the old device, carefully noting the wire connections on the old unit. Record wire color and terminal legends (Cable wire color for Control Feed, Load Feed, Common, Auxiliary Heat, Compressor, Low Fan, High Fan and Reversing Valve). Refer to Table A.
- Install mounting bracket to the junction box with provided mounting screws.
- Wire thermostat according to function as shown in Figure A.
- Push wires into junction box. Rest bottom of thermostat on mounting tabs in mounting plate. Push top of thermostat towards wall and secure into place with self tapping screw.
- Turn power on.

### OPTION B: 4-Pipe Fan Coil Configuration

1. Read all steps for this option before taking any action to install thermostat
2. If retrofitting old thermostat, remove old device, carefully noting the wire connections on the old unit. Record wire color and terminal legends (Cable wire color for Control Feed, Load Feed, Common Auxiliary Heat, Compressor, Low Fan, High Fan and Reversing Valve). Refer to Table A.
3. Install mounting bracket to the junction box with provided mounting screws.
4. Wire thermostat according to function as shown in Figure B. Note: If the mechanical system has only two fan speeds: Green-Low Fan, Violet-High Fan, Orange-Not Used.
5. Push wires into junction box. Rest bottom of thermostat on mounting tabs in mounting plate. Push top of thermostat towards wall and secure into place with self-tapping screw (included).
6. Turn power On.

### OPTION C: 2-Pipe Fan Coil Configuration

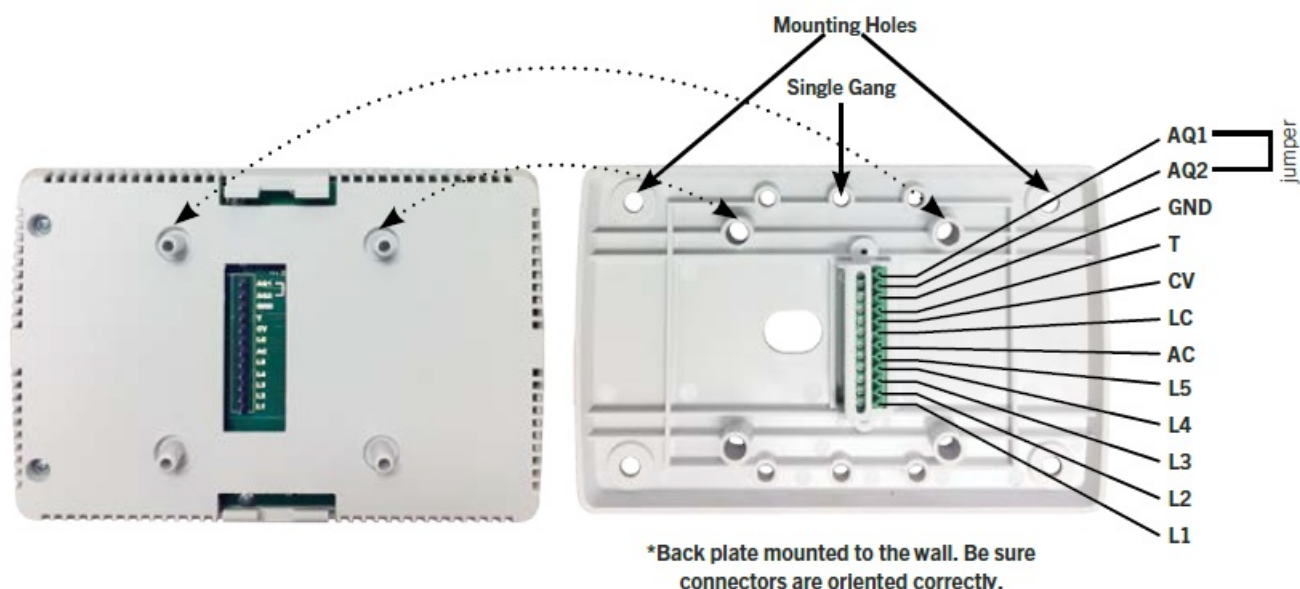
**Note:** Continuous fan is not available on 2-Pipe with Aquastat systems. Continuous fan is available on 2-Pipe with electric heat systems.

1. Follow instructions for a 4-Pipe installation but using Figure C for 2- Pipe Fan Coil with Aquastat or Figure D for 2 PipeFan Coil with Electric Heat.
2. Push wires into junction box. Rest bottom of thermostat on mounting tabs in mounting plate. Push top of thermostat towards wall and secure into place with self-tapping screw (included).
3. Turn power on.

### Warnings & Cautions:

- **HIGH VOLTAGE:** A qualified installer or electrician must install this device. Follow all applicable electrical codes for installation.

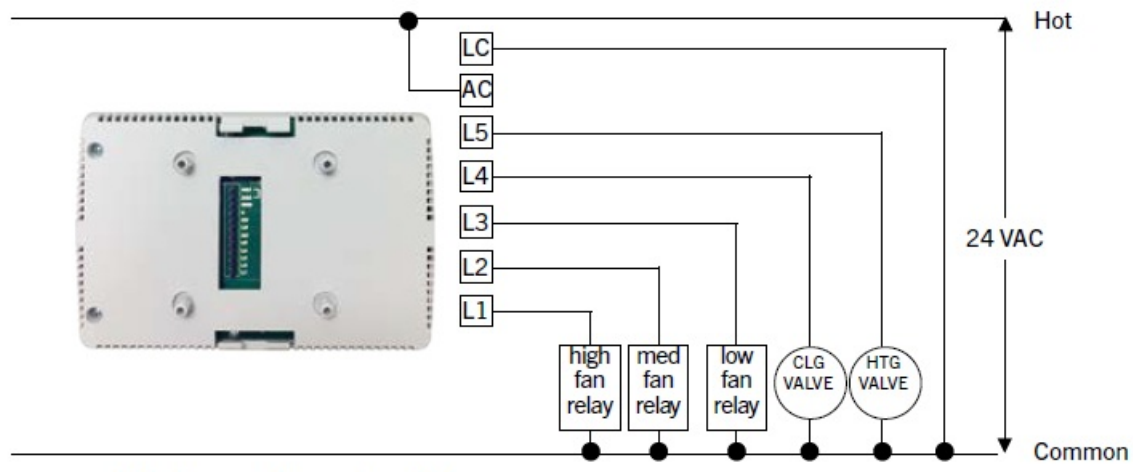
### Connections & Correct Backplate Orientation



## Technical Specifications

Part Numbers (Frequency Dependant)	M9-TS1 (902 MHz – North America) M8-TS1 (868 MHz – Europe and China) MJ-TS1 (928 MHz – Japan)
Range	50-150 feet (typical)
Input Voltage	24 V
Max Loads	24 V (1.5 amp / circuit)
Temperature Monitor Range	32°F to 99.9°F (0°C to 37.7°C)
Temperature Set Point Range	60°F to 85°F (15.5°C to 29.5°C)
Operating Temperatures	14°F to 131°F (-10°C to 55°C)
Storage Temperatures	-4°F to 131°F (-20°C to 55°C)
Sampling Rate	Every 5 seconds
Display format	Liquid Crystal Display (LCD)
Fan Control	Selectable: Auto Cycle, Low, Medium, High, Economy, Off
Memory	Stores up to 30 Switch IDs
Accuracy	+ / – 1°F (0.5°C)
Heat / Cool Control	1 heat and 1 cool circuit; Heat pump reversing valve circuit
Dimensions	4.38" (111.252 mm) x 6.63" (168.402 mm) x 1.16" (29.464 mm)
Radio Certifications	FCC (U.S. SZV-TCM2XXC) – IC (Canada 5713A-TCM2XXC)

## Wiring Diagram



- AQ1: Aquastat Connection – AQ2
- AQ2: Aquastat Connection 2 – Jumper to AQ1
- GND: Common for 0-10 Volt Output and Thermistor Input
- T: Temperature Input – External Thermistor
- CV: Control Voltage Output – 0-10 Volts
- LC: Load Common, AC – COMM
- AC: Load Hot, AC – 24 VAC
- L5: Load 5 – Heat
- L4: Load 4 – Cool / Compressor
- L3: Load 3 – Low Fan Relay
- L2: Load 2 – Medium Fan Relay / Cool 2\*
- L1: Load 1 – High Fan Relay / Reverse Valve / Heat 2\*

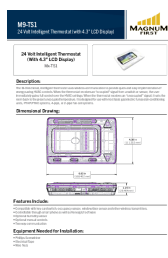
\*Depending on Thermostat Configuration

## Conventional HVAC Systems

Commonly Used Wiring Terminal Designators	Possible Wire Color	Possible Signal Names / Functions	Comments
C	Black	24VAC Common	From one side of the 24 VAC transformer, usually called the common side.
R or V	Red	24 VAC Hot	From the other side of the 24VAC transformer, usually called the hot side. The thermostat may connect this terminal with W (call for heat) or Y (call for cool), if RH and RC are not used / available. Some thermostats also use this supply to power themselves.
RH or 4	Red	24VAC hot usually used for call for heat	Functions as the source of power for the W terminal. The thermostat usually connects this terminal with W when it calls for heat.
RC	Red	24VAC hot usually used for call for cool	Functions as the source of power for the Y terminal. The thermostat usually connects this terminal with Y when it calls for heat.
G	Green	Activate blower fan	The fan switch on the thermostat usually connects this terminal with R when it is in the ON position.
W or W1 or W2	White	Call for heat	The thermostat usually connects this terminal with R or RG when it calls for heat. The thermostat usually connects this terminal with G when the fan switch is set to AUTO. Some thermostats require a jumper from W to Y if a heat pump is used. Other thermostats might use this as a second-stage heating. Sometimes W2 designates auxiliary heating in systems that use heat pumps.
Y	Yellow	call for cool	The thermostat usually connects this terminal with R or RC when it calls for heat. The thermostat usually connects this terminal with G when the fan switch is set to AUTO. Could also be for cooling of the first-stage heating on a heat pump.
S1 and S2	Varies	Outside air temperature display	Used to display the outside air temperature on some digital thermostats.

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## Documents / Resources

 <p><b>M9-TS1</b> 24 Volt Intelligent Thermostat M9-TS1, 24 Volt Intelligent Thermostat</p> <p><b>Features:</b> • 24 Volt Intelligent Thermostat • M9-TS1, 24 Volt Intelligent Thermostat</p> <p><b>Dimensions:</b> • 2.5" (63.5mm) x 3.5" (88.9mm) x 1.5" (38.1mm)</p> <p><b>Features:</b> • 24 Volt Intelligent Thermostat • M9-TS1, 24 Volt Intelligent Thermostat</p> <p><b>Equipment Needed for Installation:</b> • 24 Volt Intelligent Thermostat • M9-TS1, 24 Volt Intelligent Thermostat</p>	<p><a href="#">MAGNUM FIRST M9-TS1 24 Volt Intelligent Thermostat</a> [pdf] Owner's Manual</p> <p>M9-TS1 24 Volt Intelligent Thermostat, M9-TS1, 24 Volt Intelligent Thermostat, Intelligent Thermostat, Thermostat</p>
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## References

-  [BMS | Building Management Systems | Magnum First](#)

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