



Managed Property Thermostat

MP4211

2-Stage Heat Pump
Auto Changeover
Hardwire

- Non-Programmable
- One-Time Configurable Temperature Set Points
- Patent-pending Abnormal Rate of Change (ARC) Detection Technology
- Placebo Option
- 2-Stage Heat Pump Systems
- Large Display With Backlight
- Selectable Fahrenheit or Celsius
- Status Indicator Lights
- Relay Outputs (minimum voltage drop in thermostat)
- Remote Sensor Compatible

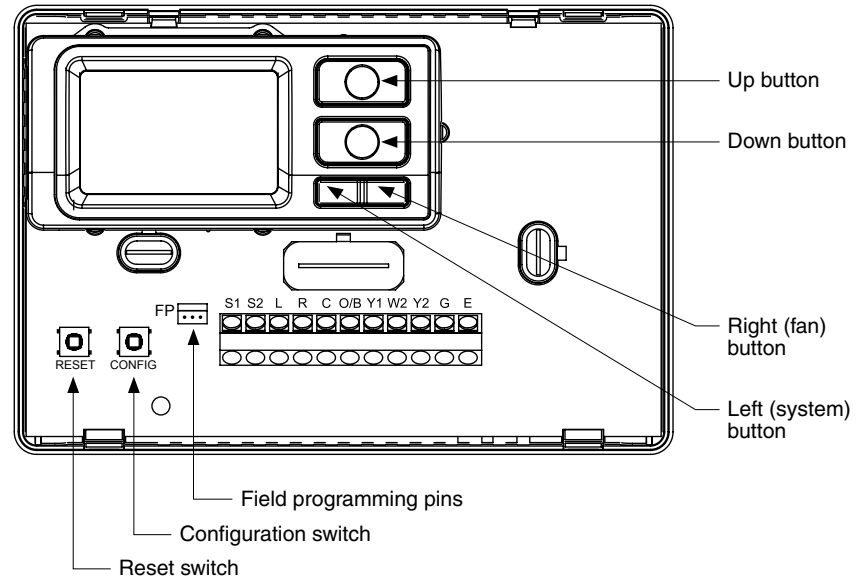


Installation, Operation & Application Guide

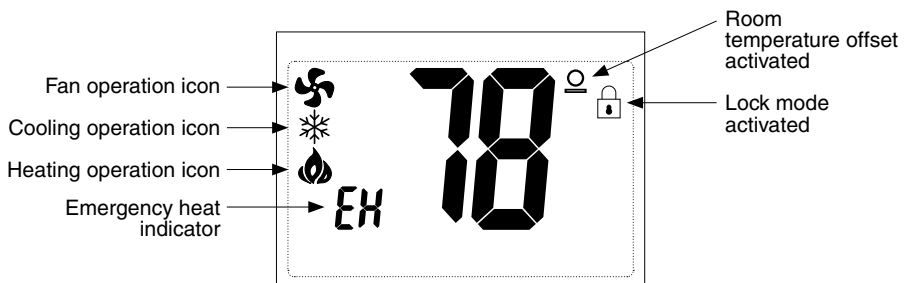
For more information on our complete range of American-made products – plus wiring diagrams, troubleshooting tips and more, visit us at www.icmcontrols.com



Parts Diagram



Icon Descriptions



Specifications

- Electrical rating:** • 24 VAC (18-30 VAC)
• 1 amp maximum per terminal
• 3 amp maximum total load
- Temperature control range:** 45°F to 90°F (7°C to 32°C) **Accuracy:** ± 1°F (± 0.5°C)
- System configuration:** 2-stage heat pump
- Timing:** Anti-short Cycle: 4 minutes (bypass anti-short cycle delay by returning to OFF mode for 5 seconds)
Backlight Operation: 10 seconds
- Terminations:** S1, S2, L, R, C, O/B, Y1, W2, Y2, G, E

Important Safety Information

WARNING! Always turn off power at the main power supply before installing, cleaning, or removing thermostat.

- This thermostat is for 24 VAC applications only; do not use on voltages over 30 VAC
- All wiring must conform to local and national electrical and building codes
- Do not use air conditioning when the outdoor temperature is below 50 degrees; this can damage your A/C system and cause personal injuries
- Use this thermostat only as described in this manual

Package Contents/Tools Required

Package includes: MP4211 thermostat on base, thermostat cover, wiring labels, screws and wall anchors, Installation, Operation and Application Guide

Tools required for installation: Drill with 3/16" bit, hammer, screwdriver

To Remove Existing Thermostat

ELECTRICAL SHOCK HAZARD – Turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.

1. Turn off power to the heating and cooling system by removing the fuse or switching the appropriate circuit breaker off.
2. Remove cover of old thermostat. This should expose the wires.
3. Label the existing wires with the enclosed wire labels before removing wires.
4. After labeling wires, remove wires from wire terminals.
5. Remove existing thermostat base from wall.
6. Refer to the following section for instructions on how to install this thermostat.

To Install Thermostat

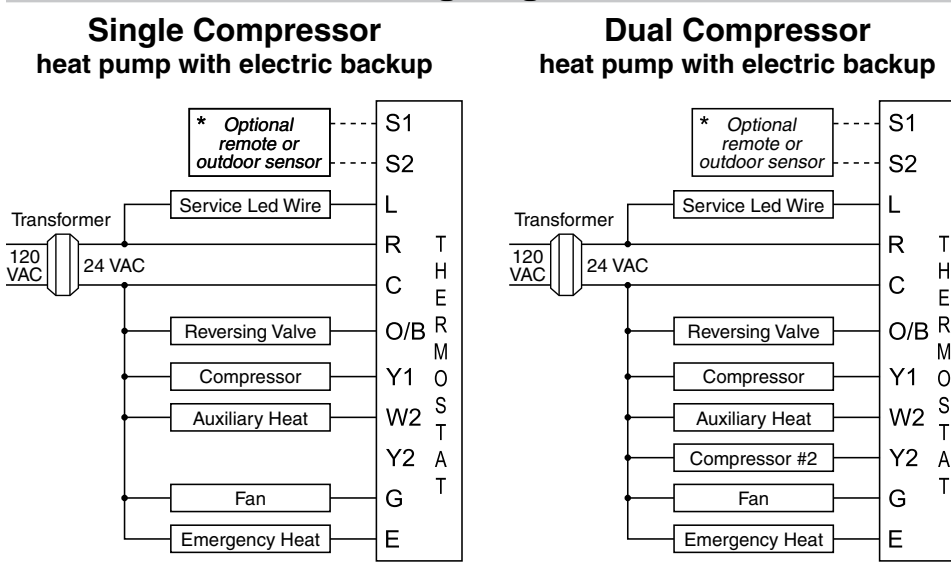
ELECTRICAL SHOCK HAZARD – Turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.

IMPORTANT: Thermostat installation must conform to local and national building and electrical codes and ordinances.

Note: Mount the thermostat about five feet above the floor. Do not mount the thermostat on an outside wall, in direct sunlight, behind a door, or in an area affected by a vent or duct.

1. Turn off power to the heating and cooling system by removing the fuse or switching the appropriate circuit breaker off.
2. To remove cover, pull gently at the seam at the top.
3. Put thermostat base against the wall where you plan to mount it (Be sure wires will feed through the wire opening in the base of the thermostat).
4. Mark the placement of the mounting holes.
5. Set thermostat base and cover away from working area.
6. Using a 3/16" drill bit, drill holes in the places you have marked for mounting.
7. Use a hammer to tap supplied anchors in mounting holes.
8. Align thermostat base with mounting holes and feed the control wires through slit in thermal intrusion barrier and into wire opening.
9. Use supplied screws to mount thermostat base to wall.
10. Insert stripped, labeled wires in matching wire terminals.
CAUTION! Be sure exposed portion of wires does not touch other wires.
11. Gently tug wire to be sure of proper connection. Double check that each wire is connected to the proper terminal.
12. Turn on power to the system at the main service panel.
13. Configure thermostat (see "Configuration Mode") to match the type of system you have.
14. Replace cover on thermostat by snapping it in place.
15. Test thermostat operation as described in "Testing the Thermostat".

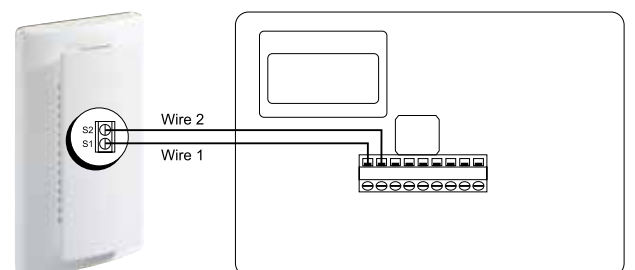
Wiring Diagrams



* Outdoor sensor only reads outdoor temperature
Note: For systems without emergency strip heat, a jumper wire should be placed between W2 & E.

Remote Sensor Installation (Optional)

1. Remove cover from remote sensor housing.
2. Select an appropriate location for mounting the remote sensor.
3. Mount remote sensor unit using hardware provided.
4. Install two strand shielded wire between remote sensor and thermostat. Shielded wire must be used. **Do not** run remote sensor wire in conduit with other wires.
 - **Wire 1** should run between the S1 terminal on the thermostat and the S1 terminal on the remote sensor
 - **Wire 2** should run between the S2 terminal on the thermostat and the S2 terminal on the remote sensor
5. Connect the shielding of the wire to the S2 terminal on the thermostat
6. Configure the thermostat to operate with the remote indoor sensor (see Configuration Mode setting 13) or use it for an outdoor sensor.



Remote Sensor: (Shown: Optional ICM ACC-RT103 Remote Indoor Sensor; for outdoor sensor, order ACC-OD103.)

Note: Remote or outdoor sensor reading can be displayed by simultaneously pressing the Down and SYS buttons.

Terminal Designator Descriptions

- L – Service Led indicator
- R – 24 VAC hot
- C – 24 VAC common
- O/B – Configurable
 - O – cool active reversing valve
 - B – heat active reversing valve
- Y1 – 1st stage cool, 1st stage heat
- W2 – 2nd stage heat for single compressor systems, 2nd stage for Emergency heat
- Y2 – 2nd stage cool for 2 compressor systems, 2nd stage heat for 2 compressor systems
- G – Fan
- E – 1st stage heat for Emergency heat mode

MP4211 Output Chart

	1 ST Cool	2 ND Cool	1 ST Heat	2 ND Heat
Heat Pump (One Compressor)	Y1, G, O	Y1, G, O	Y1, G, B	Y1, W2, G, B
Heat Pump (Two Compressors)	Y1, G, O	Y1, Y2, G, O	Y1, G, B	Y1, Y2, G, B
Emergency Heat	N/A	N/A	E, G	E, W2, G

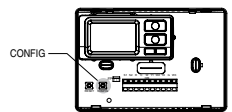
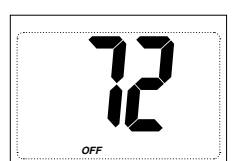
The MP4211 thermostat is configurable for most heat pump systems. The configuration directly affects the outputs. Use the output chart to correctly configure and wire the thermostat to your system.

Configuration Mode

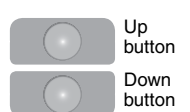
The configuration mode is used to set the MP4211 to match your heat pump system.

To configure the MP4211, perform the following steps:

1. Verify the MP4211 is in the OFF mode.
Press the SYS (left) button until off mode displays.
2. Remove the cover of the thermostat by gently pulling near one of the corners at the top of the thermostat.
3. Press the CONFIG button for 1 second while the MP4211 is in OFF mode.



Press the up or down button to change settings within each screen.



Press the right button to advance to the next screen.

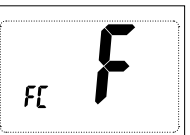
Note: Pressing the left button will return you to the previous screen.

To exit configuration mode, press the CONFIG switch for 1 second.

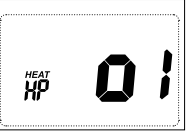
Configuration Mode Settings

The setup screens for Configuration Mode are as follows:

1. **Temperature Scale** (F or C)
Choose Fahrenheit or Celsius.
Press the up or down button to select.
Press the right button to advance to the next screen.
2. **1st Stage Temperature Differential** (1°F to 5°F) (0.5°C to 2.5°C)
Set the number of degrees between your "setpoint" temperature and your "turn on" temperature.
Press the up or down button to set differential value.
Press the right button to advance to the next screen.
3. **2nd Stage Temperature Differential** (1°F to 5°F) (0.5°C to 2.5°C)
Set the number of degrees between when stage 1 turns on and when stage 2 turns on.
Press the up or down button to set differential value.
Press the right button to advance to the next screen.
4. **Staged Off Outputs**
Select whether the outputs for heating and cooling are staged off independently or are satisfied simultaneously.
1 = outputs staged off independently
0 = outputs off simultaneously
Press the up or down button to set.
Press the right button to advance to the next screen.
5. **Minimum Deadband** (1°F to 9°F) (1°C to 5°C)
Set the minimum separation between heat setpoint and cool setpoint in Auto Changeover Mode.
Press the up or down button to set deadband value.
Press the right button to advance to the next screen.
6. **System** – Set for reversing valve operation and number of compressors in your system.

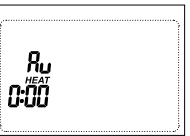


Choose	System	Reversing Valve Active	Number of Compressors or Compressor Stages
Heat Pump	HP	O	1
	HP	b	1
	HP	O	2
	HP	b	2



Press the up or down button to select.
Press the right button to advance to the next screen.

7. **Auxiliary Delay ON** – (0-30 minutes)
Set the delay time in minutes for auxiliary heat to be locked out after a call for second stage.
Press the up or down button to select.
Press the right button to advance to the next screen.



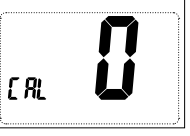
8. **Maximum Heat Setpoint** (45°F to 75°F) (7°C to 24°C)
Adjust to control the maximum heat set temperature allowed.
Press the up or down button to select.
Press the right button to advance to the next screen.



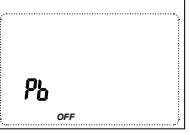
9. **Minimum Cool Setpoint** (70°F to 90°F) (21°C to 32°C)
Adjust to control the minimum cool set temperature allowed.
Press the up or down button to select.
Press the right button to advance to the next screen.



10. **Room Temperature Offset** (+9°F to -9°F) (+4.5°C to -4.5°C)
Adjust to calibrate displayed room temperature to match actual room temperature (**must be adjusted before permanent lock**).
Note: When not set to 0, will display
Press the up or down button to select.
Press the right button to advance to the next screen.



11. **Placebo Feature** – Set point can be set to wide range but they will be controlled to maximum heat set point and minimum cool set point.
0 = Feature OFF
1 = Feature ON
Press the up or down button to select.
Press the RIGHT switch to advance to the next screen.



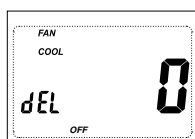
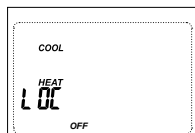
12. **Permanent Lock Screen**
Hold up and down button until counter reaches 0 to permanently lock configuration screens.

!!! VERY IMPORTANT !!!
Configuration screens #8 to #12 can't be changed after they are permanently locked. To reconfigure, a locked thermostat must be returned to ICM Controls for reprogramming, which involves a fee.

13. **Temperature Sensor** (1-3)
1. Only on-board sensor determines room temperature.
2. Only remote sensor determines room temperature.
3. Average temperature of on-board and remote sensor.
***Note:** If there is no remote sensor, option 1 must be selected.
Press the **up** or **down** button to select.
Press the **right** button to advance to the next screen.

14. **Cooling Fan Delay Off Time** (0, 30, 60, 90 seconds)
Select the fan purge time for cooling.
Press the **up** or **down** button to select.
Press the **right** button to advance to the next screen.

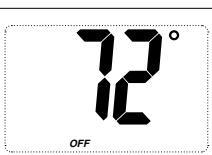
Press **CONFIG** button for 2 seconds to exit configuration.



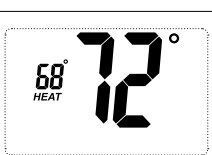
Operating Modes

There are five possible operating modes for the **MP4211**. Off, Heat, Emergency Heat, and Cool & Heat modes are accessed by pressing the **SYS** (left) button.

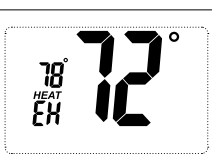
OFF Mode
• In this mode, the thermostat will not turn on the heating or cooling devices
***Note:** *The indoor fan can be turned on manually in every operating mode by pressing the **FAN** (right) button. The word **FAN** shows on the display and the fan icon * appears when the fan operates.*



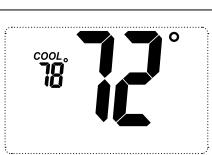
Heat Mode
• In this mode, the thermostat controls the heating system. When the heat outputs, the flame icon appears on the display.
***Note:** *There is a four minute delay for your compressor to restart after it has turned off. To bypass the compressor time delay, go to OFF mode for 5 seconds.*



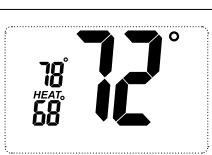
Emergency Heat Mode
• In emergency heat mode, the heat pump system will be disabled and auxiliary heat will become the primary source of heat.
***Note:** *The red EMER will be lit when operating in Emergency heat mode.*



Cool Mode
• In this mode, the thermostat controls the cooling system. When the cooling outputs, the snowflake icon appears on the display.
***Note:** *There is a four minute delay for your compressor to restart after it has turned off. To bypass the compressor time delay, go to OFF mode for 5 seconds.*



Cool and Heat Mode (Auto Changeover)
• In this mode, the thermostat controls the cooling and heating systems, automatically changing over from one to the other as needed.
• The timing display alternates with the set temperature every 10 seconds in the cool and heat mode.



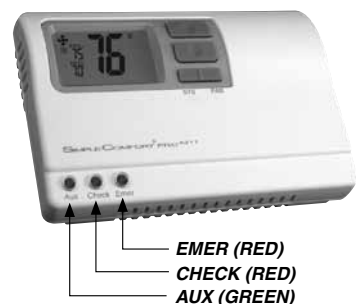
LED Indicators

There are three LED indicators located on the front of the thermostat. They are designed to inform you of the following:

AUX (GREEN): This turns on when the auxiliary (back-up) heating is in operation. This is the second (non-economy) stage of heat.

CHECK (RED): When this turns on, a malfunction has occurred somewhere in the heat pump system. Please contact a qualified service technician as soon as possible to check your system.

EMER (RED): This light turns on whenever the emergency heat is selected. While in the emergency heat mode, the heat pump compressor is off, and the emergency heat (and auxiliary heat) maintains the setpoint temperature.

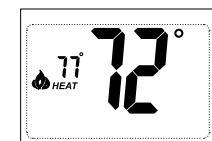


Testing the Thermostat

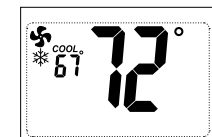
Once the thermostat is configured, it should be thoroughly tested.

CAUTION! *Do not energize the air conditioning system when the outdoor temperature is below 50 degrees. It can result in equipment damage or personal injury.*

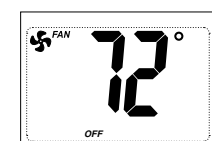
Heat Test
1. Press **SYS** (left) button until heat mode is displayed.
2. Adjust the set temperature so it is 5 degrees above the room temperature.
3. Heat should come on within a few seconds. Red Aux LED may turn on.
4. Adjust the set temperature 2 degrees below the room temperature and the heat should turn off. There may be a fan delay on your system.
***Note:** *There is a four-minute delay to protect your compressor after it turns off. To bypass the compressor time delay, go to OFF mode for 5 seconds.*



Cool Test
1. Press **SYS** (left) button until cool mode is displayed.
2. Adjust set temperature so it is 5 degrees below room temperature.
3. A/C should come on within a few seconds.
4. Adjust the set temperature 2 degrees above the room temperature and the A/C should turn off. There may be a fan delay on your system.
***Note:** *There is a four-minute delay to protect your compressor after it turns off. To bypass the compressor time delay, go to OFF mode for 5 seconds.*



Fan Test
1. Press **FAN** (right) button. Fan displays. Indoor fan turns ON.
2. Press **FAN** (right) button. Indoor fan turns OFF.



ARC Detection Technology

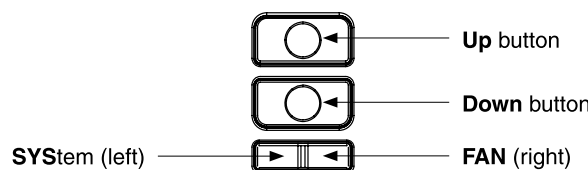
This thermostat comes enabled with ICM Controls' patent-pending Abnormal Rate of Change (ARC) detection technology that helps deter tenants from attempting to "trick" the thermostat into a false reading. Upon sensing an abnormal rise or drop in temperature, the thermostat operation will automatically default into a lockout sequence. The display will show **Err** for an abnormal RISE in temperature, or **Erd** for an abnormal DROP in temperature. When the thermostat returns to normal operation, the error message can be cleared with the press of any button.

Troubleshooting

Symptom	Remedy
No display	Check for 24 VAC at thermostat; display is blank when 24 VAC is not present
System fan does not come on properly	Verify wiring is correct
All thermostat buttons are inoperative	Verify 24 VAC is present; unit locks out when 24 VAC is not present
No response with first button press	First button press activates backlight only
Thermostat turns on and off too frequently	Adjust temperature differential (see Configuration Mode Settings 2 & 3)
Fan runs continuously	Press FAN (right) button to turn fan off
Emer status indicator light on and EH on display	Thermostat is in Emergency mode
Err on display instead of room temperature	Check for a bad connection at S1 and S2 terminals, if used (see Configuration Mode Setting 13)
Heat or Cool not coming on	Verify wiring is correct, gently pull on each wire to verify there is a good connection at terminal block, wait for time delay to expire
Err or Erd on display	Abnormal Rate of Change (ARC) detected. Thermostat defaults into lockout sequence. When normal operation resumes, error message can be cleared with press of any button
Problem not listed above	Press Reset button once*

* **Reset Button Function:** *Time and day are reset, configuration and program settings are unchanged.*

Button Functions



UP
Used to increase the time, set temperatures and to adjust configuration settings.

DOWN
Used to decrease the time, set temperatures and to adjust configuration settings.

SYS (left)
Used to change from OFF, HEAT, EMER HEAT, COOL and COOL & HEAT modes.

FAN (right)
Used to turn on and off the indoor fan.

UP, SYS and Fan
Held in simultaneously for 10 seconds to lock and unlock the thermostat.

DOWN and SYS
Pressed simultaneously to display outdoor temperature if outdoor remote sensor is connected.

ONE-YEAR LIMITED WARRANTY

The Seller warrants its products against defects in material or workmanship for a period of one (1) year from the date of manufacture. The liability of the Seller is limited, at its option, to repair, replace or issue a non-case credit for the purchase prices of the goods which are provided to be defective. The warranty and remedies set forth herein do not apply to any goods or parts thereof which have been subjected to misuse including any use or application in violation of the Seller's instructions, neglect, tampering, improper storage, incorrect installation or servicing not performed by the Seller. In order to permit the Seller to properly administer the warranty, the Buyer shall: 1) Notify the Seller promptly of any claim, submitting date code information or any other pertinent data as requested by the Seller. 2) Permit the Seller to inspect and test the product claimed to be defective. Items claimed to be defective and are determined by Seller to be non-defective are subject to a \$30.00 per hour inspection fee. This warranty constitutes the Seller's sole liability hereunder and is in lieu of any other warranty expressed, implied or statutory. Unless otherwise stated in writing, Seller makes no warranty that the goods depicted or described herein are fit for any particular purpose.



Patent No. 424,953 – Design

Patent No. 6,597,275 – Thermal Intrusion Barrier

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