



## Quick Guide to Installing M-Thermal – Heating and Cooling With or Without Domestic Hot Water (DHW)

### **Add-On to Existing Hydronic Heating**

#### **1. Introduction**

The Mits Air M-Thermal Air to Water Heat Pump is a superior design that can incorporate hydronic heating, cooling, domestic hot water and solar heating assistance. This pamphlet will deal with **heating only** or **heating with domestic hot water**.

#### **2. Needed before you start:**

- a. A buffer tank that will have sufficient capacity for the system.
- b. If you are adding domestic hot water, you will need a buffer tank that incorporates indirect domestic hot water heating.
- c. A two-stage heating, one stage cooling thermostat.  
If you only have two wires going to the existing thermostat and it has only two wires and it will be difficult to pull new wires, consider using a Tekmar 564 thermostat. While the thermostat is a bit more expensive, the labour savings will easily off set this additional cost.
- d. If you have a cast-iron boiler or black iron piping and are planning to use an ECM pump, it is highly recommended that you install a magnetic dirt separator to ensure that rust and magnetite does not cause pump issues.

You will also need two 24vac coil SPST relays and one DPST relay. These are for signal use.

#### **3. Piping:**

Before starting, you will need to decide how you will add the M-Thermal to the system. The best way is to use the buffer tank outlet as the primary loop and the original boiler injecting into the primary loop through closely spaced T's. If you are unsure of which to use, please call our Hydronics Division at **905-362-5293 or hydronics@mitsair.com** and they will be happy to discuss the best strategy for your particular application.

4. The outlet heat pipe of the indoor unit goes to a 3-Way valve. The cooling outlet is then directly piped to the air handler.

#### **5. Controls:**

You will need a two-stage heat thermostat a 24 vac SPST (Single-Pole Single-Throw) relay and possibly a transformer. The relay only requires signal contacts. Please review the wiring schematic.

#### **6. Programming the Controller:**

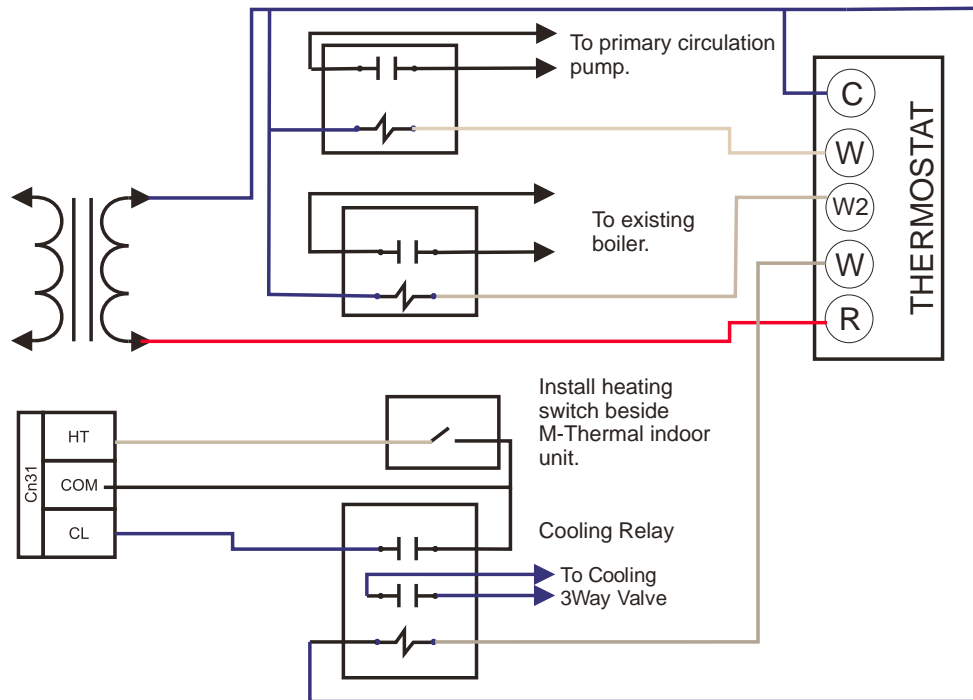
The M-Thermal requires the main display to be programmed for your application before it can operate. At first this looks very confusing, but if you use the fast-programming guide (listed below) this can be done in minutes.

**For suggestions/advice on your design and installation,  
contact the Mits Air Hydronics Team:**

**6125 Netherhart Road, Mississauga, ON, L5T 1G5.  
905-362-5293 or hydronics@mitsair.com**

**Please refer to manufacturer installation manual**

## M-Thermal Wiring Heat-Cool with or without DHW



### Notes:

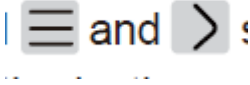
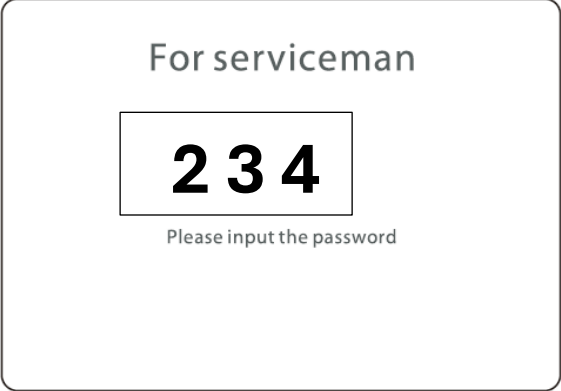
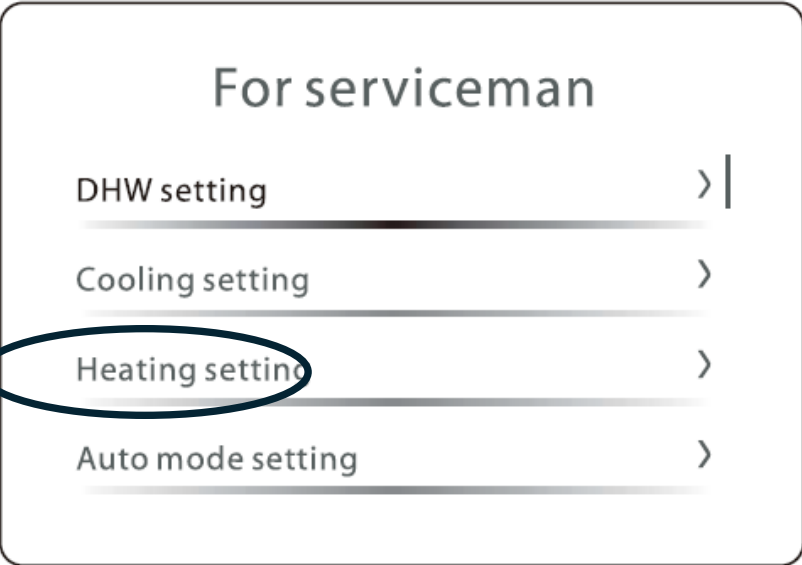
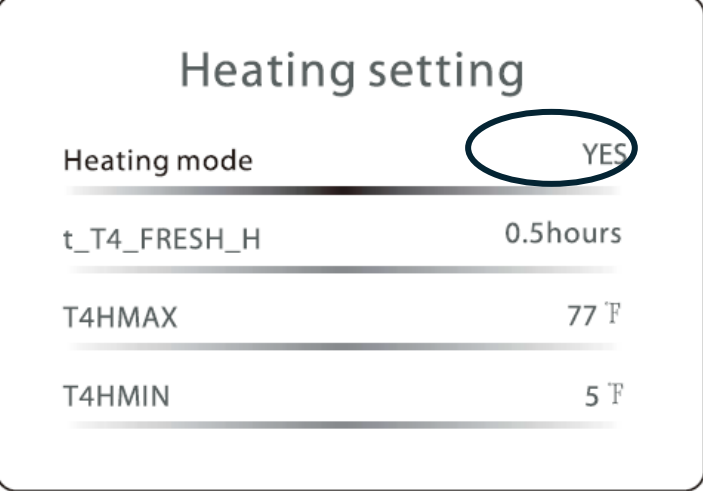
1. This is for single thermostat control only.
2. This would pump from the indoor unit to the buffer tank (hydraulic separator connections). On a cooling call, the three-way valve will change flow from the buffer tank to the air handler.
3. When using to generate domestic hot water, the heating switch must remain "ON" at all times.
4. Should the M-Thermal require additional heat, W2 closes, and boiler turns on, which injects heated water primary loop.

## Start-Up Programming

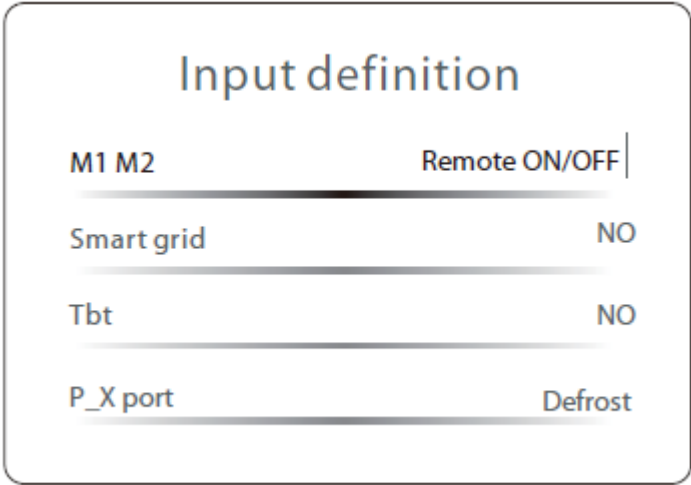
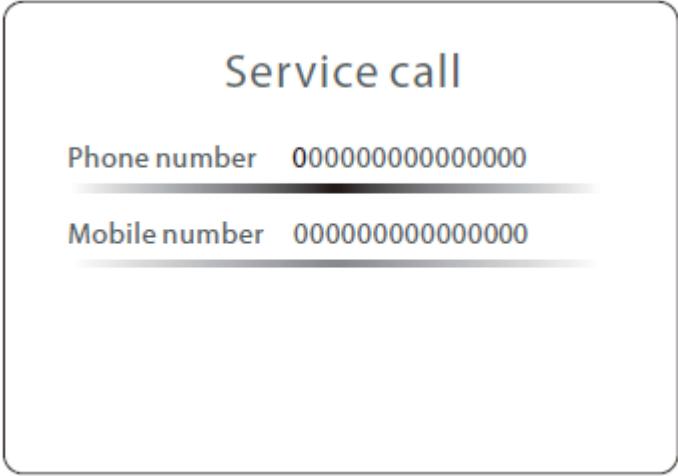
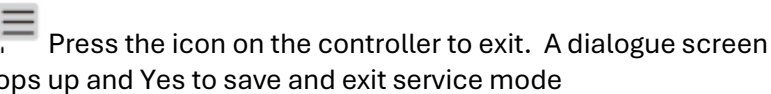
This is a quick guide to doing the programming for Heating, Cooling and Domestic Hot Water (DHW).

You can also refer to the commissioning section of the M-Thermal for in-depth instructions.


### Heating Setting:

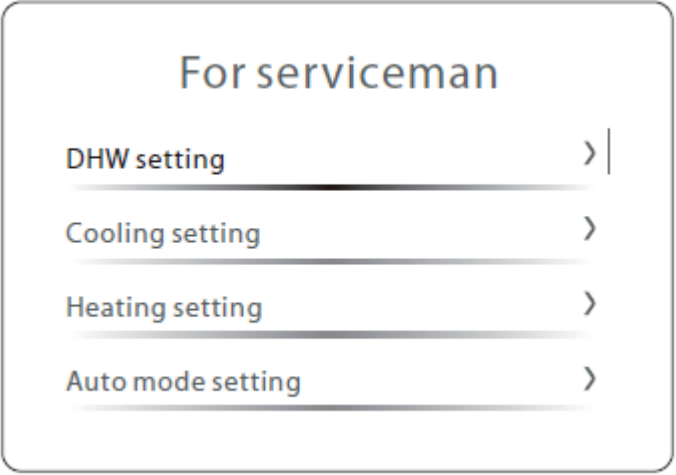
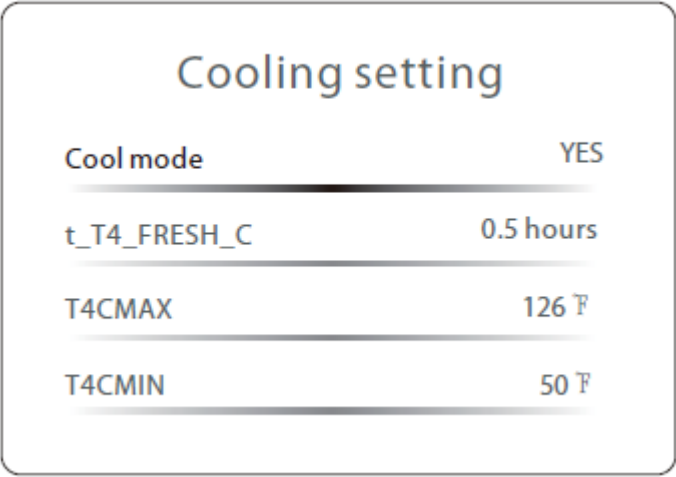

<p>Start To enter the Serviceman Set-Up mode, hold down the two keys for 3 seconds and enter the password 234 and confirm.</p> 	
<p>Press on Heating Setting</p>	
<p><u>You must</u> enable Heating Mode Use the arrow keys to advance or go back..</p>	

<p>Temperature Tupe Setting:</p> <ul style="list-style-type: none"><li>• Set water flow temp to Yes</li><li>• Set Room Temp to No</li><li>• Set double zone to No.</li></ul>	<div data-bbox="657 180 1328 651"><h3>Temp. type setting</h3><table><tr><td>Water flow temp.</td><td>YES</td></tr><tr><td>Room temp.</td><td>NO</td></tr><tr><td>Double zone</td><td>YES</td></tr></table></div>	Water flow temp.	YES	Room temp.	NO	Double zone	YES		
Water flow temp.	YES								
Room temp.	NO								
Double zone	YES								
<p>Room Thermostat Setting</p> <p>Set to no</p>	<div data-bbox="651 676 1323 1146"><h3>Room thermostat setting</h3><table><tr><td>Room thermostat</td><td>NO</td></tr></table></div>	Room thermostat	NO						
Room thermostat	NO								
<ul style="list-style-type: none"><li>• Set IBH (Booster Heater) to YES.</li><li>• Set on to DT!_IBH_ON to 41</li><li>• Set delay to 15 minutes</li><li>• Set IBH to 5</li></ul>	<div data-bbox="665 1173 1338 1644"><h3>Other heat source</h3><table><tr><td>IBH function</td><td>YES</td></tr><tr><td>dT1_IBH_ON</td><td>41 F</td></tr><tr><td>t_IBH_DELAY</td><td>15minutes</td></tr><tr><td>T4_IBH_ON</td><td>5 F</td></tr></table></div>	IBH function	YES	dT1_IBH_ON	41 F	t_IBH_DELAY	15minutes	T4_IBH_ON	5 F
IBH function	YES								
dT1_IBH_ON	41 F								
t_IBH_DELAY	15minutes								
T4_IBH_ON	5 F								


<p>Input definition:</p> <ul style="list-style-type: none"> <li>• Set Smart Grid to NO.</li> <li>• Set Tbt to No.</li> <li>• Set P_X port to Defrost</li> </ul>	
<p>Service Call</p> <p>Enter your information for customer reference. Mobile number is optional</p>	
<p>Save and Exit</p>	


### **Cooling Setting:**

<p>Go to Serviceman Screen and insert the password</p>	
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Select Cooling		
Set Cool Mode to Yes. Adjust settings if necessary.		
Save and Exit		Press the icon on the controller to exit. A dialogue screen pops up and Yes to save and exit service mode

### **Domestic Hot Water (DHW) Setting:**

Go to Serviceman Screen and insert the password		
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Select DHW	<div> <h3>For serviceman</h3> <div> DHW setting &gt;   </div> <div> Cooling setting &gt; </div> <div> Heating setting &gt; </div> <div> Auto mode setting &gt; </div> </div>
Set: DHW Mode to Yes Disinfect to No DHW Priority to Yes Pump D to Yes	<div> <h3>DHW setting</h3> <div> DHW mode YES   </div> <div> Disinfect NO </div> <div> DHW priority YES </div> <div> Pump_D YES </div> </div>
Save and Exit	 Press the icon on the controller to exit. A dialogue screen pops up and Yes to save and exit service mode