



M-Thermal Split Series

A Refrigerant to Water Heat Pump that can do it all.



Heating



Cooling



Domestic Hot Water

Introducing an all in one electric heat pump to provide year round cooling, heating and domestic hot water.

5 TON (NOMINAL)



CASCADE UP TO 6 SYSTEMS

- ✓ Benefit from highly efficient, convenient and reliable comfort
- ✓ Remove the need for traditional gas boilers
- ✓ Whisper quiet operation
- ✓ Latest green technology with integrated inverter compressors
- ✓ Reduce carbon footprint with R32 environmental refrigerant

Pages 1-5: M-Thermal Brochure and Contractor Price page

Pages 6-12: M-Thermal Quick Guide - Heating & Cooling with or without DHW

Page 13-18: M-Thermal Quick Guide - Hydronic Heating Only with Programming



Outdoor Model - **MAMHA-V16WD2MN8 - 5 TON (NOMINAL)**

Indoor Model - **MAHB-A160CMDM30GN8**

Outdoor Unit	12/14/16		
Rated water flow	gpm	12.11	
Compressor	Type	Twin rotary DC inverter	
Outdoor fan	Motor type	Brushless DC motor	
	Number of fans	1	
Air side heat exchanger	Type	Finned tube	
Refrigerant(R32)	Factory charge	lb	4-3/64
Refrigerant Control	Electronic expansion valve		
Refrigerant piping	Connection Type	Flare	
	Liquid Dia.(OD)	in	3/8
	Gas Dia.(OD)	in	5/8
	Min. pipe length	ft	7
	Max. pipe length	ft	98
Max.installation height vertical difference	Outdoor unit above	ft	65
	Outdoor unit below	ft	65
Sound pressure level(39.37 in ³)	dB(A)	57	
ODU Net dimensions (WxHxD)	in	44-1/64x34-1/16x20-19/32	
ODU Packed dimensions (WxHxD)	in	46-55/64x38-3/16x22-1/16	
ODU Net/Gross weight	lb	213.85 / 243.61	
Operating temperature range	Cooling	*F	23 to 109.4
	Heating	*F	-13 to 95
	DHW	*F	-13 to 109.4
Electrical Specifications	Voltage	V/PI/Hz	208-230/1/60
	MCA	A	34
	MOP	A	50

Indoor Unit	12/14/16			
Function			Heating and cooling	
Setting water temperature range	Cooling	*F	41~77	
	Heating	*F	77~149	
	DHW ²	*F	68~140	
Power supply	208/230 V~ 60 Hz			
Backup E-heater (Optional)	Standard mounted	kW	Optional	
	Optional	kW	3	
	Capacity steps	1		
Power supply	3 kW	208/230 V~ 60 Hz		
Sound pressure level(39.37 in ³)	dB(A)	31		
Dimension (WxHxD)	in	16-35/64x31-7/64x10-5/8		
Packing (WxHxD)	in	20-43/64x41-11/32x14-11/64		
Net/gross weight (Without backup heater)	lb	87.01/96.92		
Net/gross weight (Backup heater installed in the unit)	lb	100.22/110.13		
Water circuit	Piping connections ³	in	1" (Adapter Inc.)	
	Safety valve set pressure	psi	43.51	
	Drain pipe connection	in	1	
	Expansion tank	Volume	gallon	1.32
		Max. water pressure	psi	43.51
		Pre-pressure	psi	14.50
	Water side exchanger	Plate type		
	Water pump head	ft	29.5	
	Water flow range	gpm	3.08~13.21	
	Internal water volume	gallon	0.66-1.93	

Notes:

1. Sound pressure level is the maximum value tested under the two conditions of Heating: A44.6W95 and Cooling: A95W64.4.
2. Maximum domestic hot water temperature 140°F is only available with TBH support.
3. The unit is equipped with an R1 "to NPT1 interface attachment.
4. Some specifications may change, for reference only.



Performance Specifications - MAMHA-V16WD2MN8

Operation	Ambient (F)	Water OUT (F)	Capacity (Btu/hr)	Input (kW)	COP
HEATING	44	95	54489	3.56	15.33
		113	54489	4.44	12.29
		131	54489	5.52	9.89
	35	95	44353	3.71	11.95
		113	43671	4.49	9.73
		131	45718	5.58	8.19
	19	95	45377	4.93	9.2
		113	44012	5.78	7.61
		131	42648	6.19	6.89
Cooling	95	64.4	48448	3.93	12.33
		44.6	47765	5.71	8.37

WARRANTY

2 year on all parts*
5 year on compressor*

- *All warranty effective from the date of installation.
- *Labour warranty is the responsibility of the installing contractor.
- *All M-Thermal Split Series warranties dependent on prior approval of schematics & proper installation in accordance with Manufacturer manuals and guidelines.
- *All Testing & Values are per Manufacturer's testing.

TO REGISTER WARRANTY:
www.mitsair.com/warranty-registration



<p>Head Office: Mississauga</p> <p>1608 Bonhill Road Mississauga, ON L5T 1C7 1 (800) 567-2221 info@mitsair.com</p>	<p>Hydronics & Unico Division</p> <p>6125 Netherhart Road Mississauga, ON L5T 1G5 1 (905) 362-5293 hydronics@mitsair.com</p>	<p>Barrie Branch</p> <p>691 Dunlop Street West Barrie, ON L4N 9W9 1 (800) 688-1673 barrie@mitsair.com</p>	<p>London Branch</p> <p>90 Towerline Place London, ON N6E 2T1 1 (519) 914-9000 london@mitsair.com</p>	<p>Windsor Branch</p> <p>11629 County Road 42 Tecumseh, ON N8N 0H1 1 (519) 914-0332 windsor@mitsair.com</p>
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M-Thermal Split Series

An Air to Water (R32) Heat Pump that can do it all

Effective September 17, 2024



5 TON (NOMINAL)



Indoor Unit Model	Outdoor Unit Model	Contractor Cost \$
MAHB-A160CMDM30GN8	MAMHA-V16WD2MN8	\$6,750.00

Accessories

Model Number	Description	Contractor Cost \$
Mits 3/8" x 5/8" COPPER KIT	65' Line set with 1/4" insulation	\$392.00
CHBRFS-45R	Snow stand – load capacity 200kgs	\$127.00
STN855W-5G	Mitsair Wi-Fi Thermostat	\$85.00

FIELD SUPPLIED: MUST HAVE MINIMUM 20 GALLON BUFFER TANK AND ALL OTHER HYDRONICS PARTS

**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

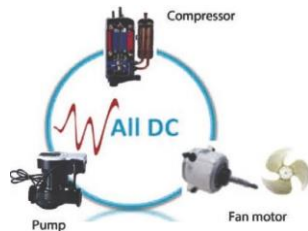
R32 environmental refrigerant

- ❖ Higher heat transfer coefficient and better performance
- ❖ Less charges volume is needed in the system
- ❖ Less costs and easier to get R32
- ❖ Lower GWP and carbon emission (GWP: Global Warming Potential)
- ❖ The GWP value is 675



Inverter system design

All the units are equipped with DC compressor, DC fan motor, DC pump, which allows precise control of motor speed, ensuring that only the power necessary to perfectly match the real load is used and energy saving.

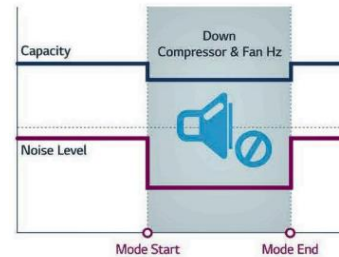


Powerful heating with high efficiency

- ❖ No capacity attenuation at 14°F ambient temperature
- ❖ Operation range down to 13°F
- ❖ Maximum LWT reach 149°F
- ❖ Single point maximum COP 5.20

Extremely silent

- ❖ Two level of silent mode provides more comfort
- ❖ Silent mode minimum sound power level 54dB



Multi-function wired controller and APP control

- ❖ Multiple languages meet customer needs
- ❖ Modbus protocol and network flexibility
- ❖ Holiday away & Holiday home makes life convenient
- ❖ Built-in wifi module supports APP Control



Through APP, user can

- ❖ Check the running state of heat pump, zone switch, operation mode and temperature.
- ❖ Set switch, operation mode and temperature of each zone
- ❖ Know energy consumption and energy-saving suggestion

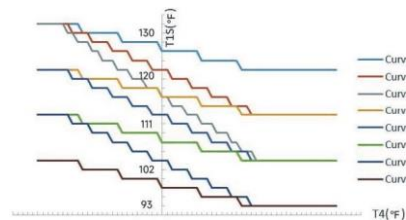
Smart Grid function

Heat pump adjusts the operation according to different electrical signals. Power consumption of the system can be automatically adjusted according to the peak and valley power to reduce the power consumption to the greatest extent



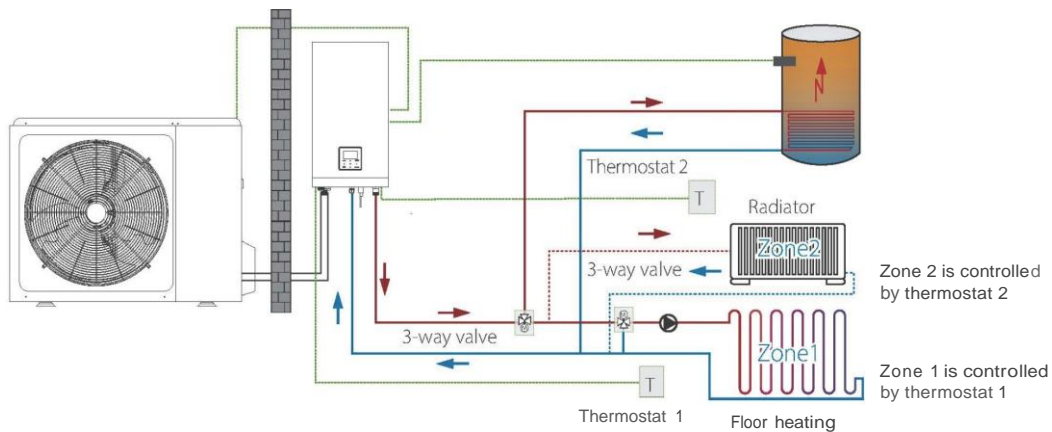
Climate curve function

Totally there are 32 climate correlation curves for choice and one customer curve is optional. Once the curve is selected, the unit set the outlet water temperature automatically according to the outdoor ambient temperature, which realizes intelligent control.



Zones control more flexibility

- ❖ More accurate low temperature area temperature control
- ❖ DC water pump accurate control of water flow and electromagnetic three-way valve cycle regulation to achieve stable low temperature heating



Distributed By:



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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:

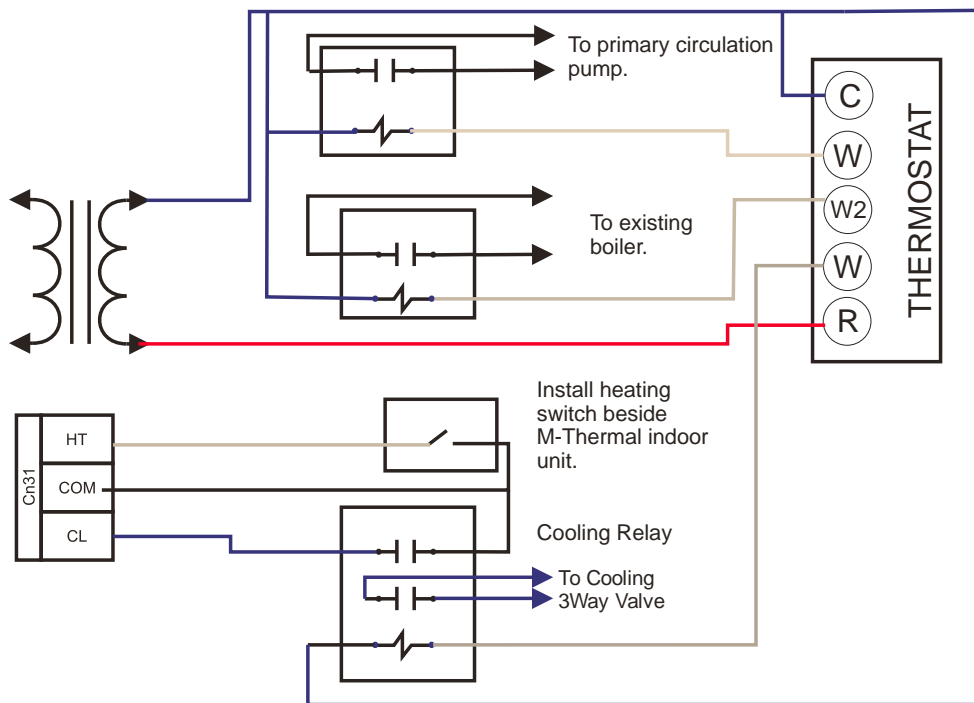
The M-Thermal requires the main display to be programmed for your application before it can operate. At first this looks very confusing, but if you use the fast-programming guide (listed below) this can be done in minutes.

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

**6125 Netherhart Road, Mississauga, ON, L5T 1G5.
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Please refer to manufacturer installation manual

M-Thermal Wiring Heat-Cool with or without DHW



Notes:

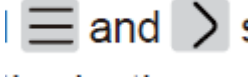
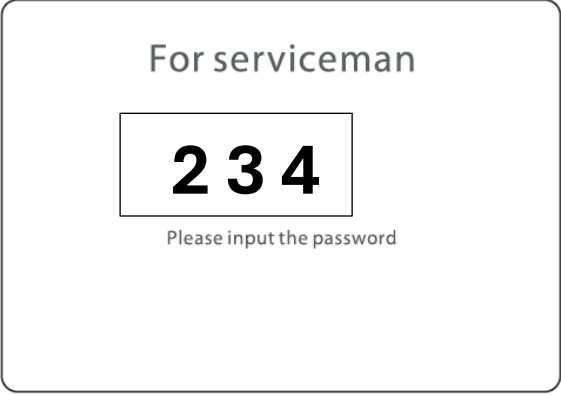
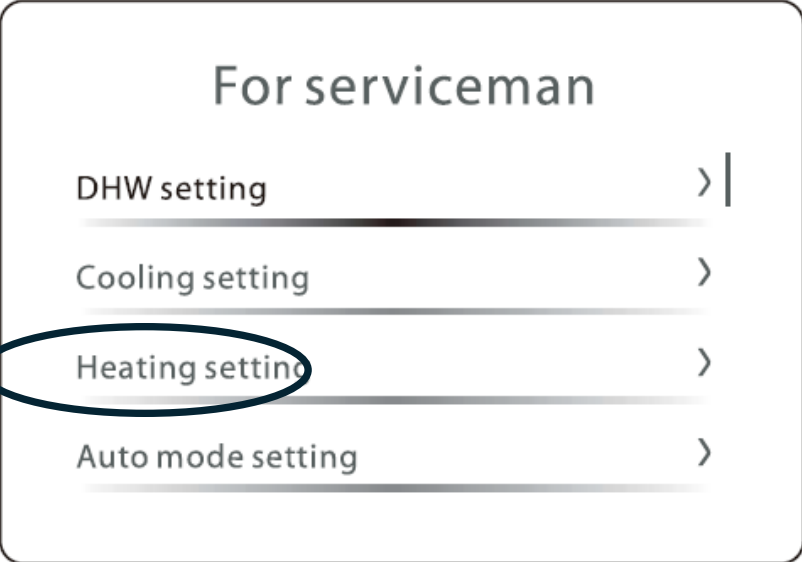
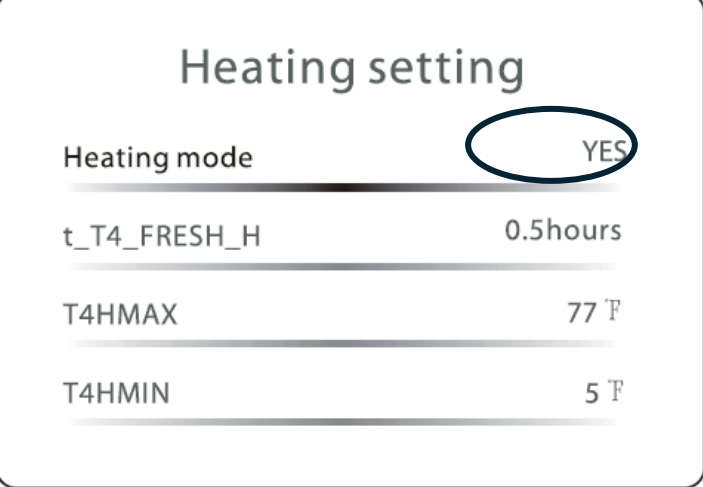
1. This is for single thermostat control only.
2. This would pump from the indoor unit to the buffer tank (hydraulic separator connections). On a cooling call, the three-way valve will change flow from the buffer tank to the air handler.
3. When using to generate domestic hot water, the heating switch 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 enable Heating Mode</u> Use the arrow keys to advance or go back..</p>	

Temperature Tupe Setting:

- Set water flow temp to Yes
- Set Room Temp to No
- Set double zone to No.

Temp. type setting

Water flow temp.	YES
Room temp.	NO
Double zone	YES

Room Thermostat Setting
Set to no

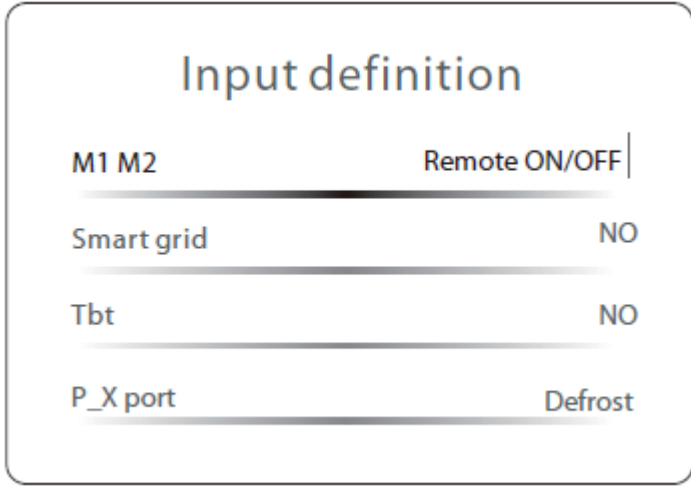
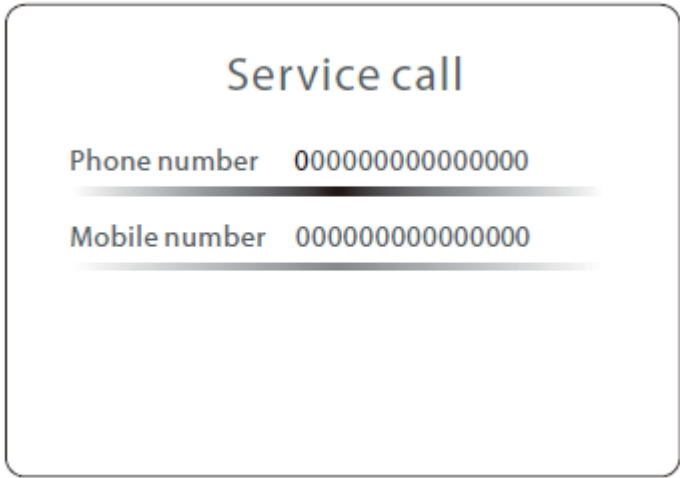

Room thermostat setting

Room thermostat	NO
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- Set IBH (Booster Heater) to YES.
- Set on to DT!_IBH_ON to 41
- Set delay to 15 minutes
- Set IBH to 5


Other heat source

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"> • Set Smart Grid to NO. • Set Tbt to No. • Set P_X port to Defrost 	
<p>Service Call Enter your information for customer reference. Mobile number is optional</p>	
<p>Save and Exit</p>	 Press the icon on the controller to exit. A dialogue screen pops up and Yes to save and exit service mode


Cooling Setting:

<p>Go to Serviceman Screen and insert the password</p>	
--	--

Select Cooling	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <h3>For serviceman</h3> <p>DHW setting > </p> <hr/> <p>Cooling setting ></p> <hr/> <p>Heating setting ></p> <hr/> <p>Auto mode setting ></p> </div>
Set Cool Mode to Yes. Adjust settings if necessary.	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <h3>Cooling setting</h3> <p>Cool mode YES</p> <hr/> <p>t_T4_FRESH_C 0.5 hours</p> <hr/> <p>T4CMAX 126 F</p> <hr/> <p>T4CMIN 50 F</p> </div>
Save and Exit	<div style="border: 1px solid black; padding: 10px;">  Press the icon on the controller to exit. A dialogue screen pops up and Yes to save and exit service mode </div>

Domestic Hot Water (DHW) Setting:

Go to Serviceman Screen and insert the password	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <h3>For serviceman</h3> <div style="border: 1px solid black; display: inline-block; padding: 5px; margin: 10px 0;">234</div> <p>Please input the password</p> </div>
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<p>Select DHW</p>	<div style="border: 1px solid black; border-radius: 10px; padding: 10px; text-align: center;"> <h3>For serviceman</h3> <p>DHW setting > </p> <hr/> <p>Cooling setting ></p> <hr/> <p>Heating setting ></p> <hr/> <p>Auto mode setting ></p> </div>
<p>Set: DHW Mode to Yes Disinfect to No DHW Priority to Yes Pump D to Yes</p>	<div style="border: 1px solid black; border-radius: 10px; padding: 10px; text-align: center;"> <h3>DHW setting</h3> <p>DHW mode YES </p> <hr/> <p>Disinfect NO</p> <hr/> <p>DHW priority YES</p> <hr/> <p>Pump_D YES</p> </div>
<p>Save and Exit</p>	 Press the icon on the controller to exit. A dialogue screen pops up and Yes to save and exit service mode

Quick Guide to Installing M-Thermal Heating Only **Hydronic Heating Only**, With or Without **Domestic Hot Water (DHW)**

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 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 labor 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.

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. 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.

5. Programming the Controller:

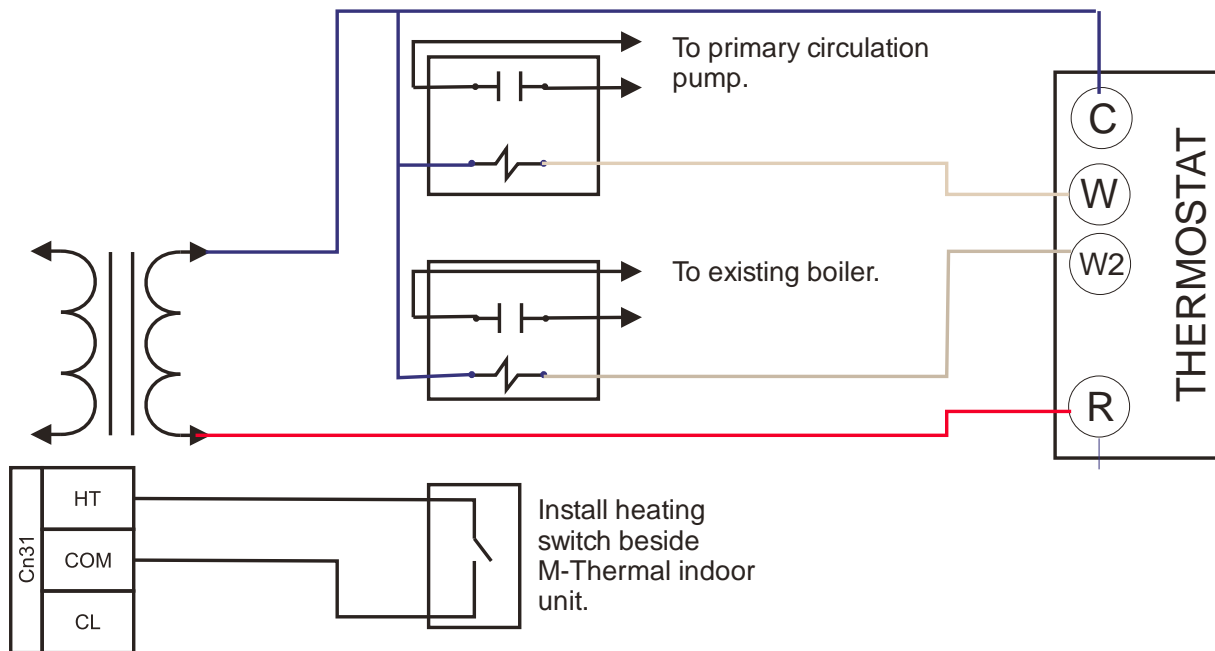
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905-362-5293 or hydronics@mitsair.com**

Please refer to manufacturer installation manual

M-Thermal Wiring Heating Only or with 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).
3. M-thermal must be on continuously if using domestic hot water.
4. W controls primary loop pump for heating purposes.
4. If M-Thermal requires assistance, boiler turns on and injects to primary loop when W2 is activated.

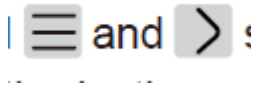
2024-09

Start-Up Programming

This is a quick guide to doing the programming for **Heating**.

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>For serviceman</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">2 3 4</div> <p>Please input the password</p>
<p>Press on Heating Setting</p>	<p>For serviceman</p> <ul style="list-style-type: none">DHW setting > Cooling setting >Heating setting >Auto mode setting >

You must enable Heating Mode
Use the arrow keys to advance or go back..

Heating setting

Heating mode	<input checked="" type="checkbox"/> YES
t_T4_FRESH_H	0.5hours
T4HMAX	77 F
T4HMIN	5 F

Temperature Tupe Setting:

- Set water flow temp to Yes
- Set Room Temp to No
- Set double zone to No.


Temp. type setting

Water flow temp.	<input checked="" type="checkbox"/> YES
Room temp.	<input type="checkbox"/> NO
Double zone	<input type="checkbox"/> YES


Room Thermostat Setting
Set to no

Room thermostat setting

Room thermostat	<input type="checkbox"/> NO
-----------------	-----------------------------

<ul style="list-style-type: none"> • Set IBH (Booster Heater) to YES. • Set on to DT!_IBH_ON to 41 • Set delay to 15 minutes • Set IBH to 5 	<div style="border: 1px solid black; border-radius: 10px; padding: 10px; text-align: center;"> <h3 style="margin: 0;">Other heat source</h3> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">IBH function</td> <td style="text-align: right;">YES</td> </tr> <tr> <td>dT1_IBH_ON</td> <td style="text-align: right;">41 F</td> </tr> <tr> <td>t_IBH_DELAY</td> <td style="text-align: right;">15minutes</td> </tr> <tr> <td>T4_IBH_ON</td> <td style="text-align: right;">5 F</td> </tr> </table> </div>	IBH function	YES	dT1_IBH_ON	41 F	t_IBH_DELAY	15minutes	T4_IBH_ON	5 F
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Smart grid	NO								
Tbt	NO								
P_X port	Defrost								
<p>Service Call Enter your information for customer reference. Mobile number is optional</p>	<div style="border: 1px solid black; border-radius: 10px; padding: 10px; text-align: center;"> <h3 style="margin: 0;">Service call</h3> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Phone number</td> <td style="text-align: right;">0000000000000000</td> </tr> <tr> <td>Mobile number</td> <td style="text-align: right;">0000000000000000</td> </tr> </table> </div>	Phone number	0000000000000000	Mobile number	0000000000000000				
Phone number	0000000000000000								
Mobile number	0000000000000000								
<p>Save and Exit</p>	<div style="border: 1px solid black; border-radius: 10px; padding: 10px;">  Press the icon on the controller to exit. A dialogue screen pops up and yes to save and exit service mode </div>								

Domestic Hot Water (DHW) Setting:

<p>Go to Serviceman Screen and insert the password</p>	<div data-bbox="553 237 1110 625" style="border: 1px solid black; padding: 10px; text-align: center;"> <p>For serviceman</p> <div style="border: 1px solid black; width: 60px; height: 30px; margin: 10px auto; display: flex; align-items: center; justify-content: center; font-weight: bold; font-size: 1.2em;">234</div> <p>Please input the password</p> </div>
<p>Select DHW</p>	<div data-bbox="553 667 1222 1136" style="border: 1px solid black; padding: 10px; text-align: center;"> <p>For serviceman</p> <ul style="list-style-type: none"> <li style="border-bottom: 1px solid black; padding: 5px 0;">DHW setting > <li style="border-bottom: 1px solid black; padding: 5px 0;">Cooling setting > <li style="border-bottom: 1px solid black; padding: 5px 0;">Heating setting > <li style="border-bottom: 1px solid black; padding: 5px 0;">Auto mode setting > </div>
<p>Set: DHW Mode to Yes Disinfect to No DHW Priority to Yes Pump D to Yes</p>	<div data-bbox="553 1178 1230 1646" style="border: 1px solid black; padding: 10px; text-align: center;"> <p>DHW setting</p> <ul style="list-style-type: none"> <li style="border-bottom: 1px solid black; padding: 5px 0;">DHW mode YES <li style="border-bottom: 1px solid black; padding: 5px 0;">Disinfect NO <li style="border-bottom: 1px solid black; padding: 5px 0;">DHW priority YES <li style="border-bottom: 1px solid black; padding: 5px 0;">Pump_D YES </div>
<p>Save and Exit</p>	<p> Press the icon on the controller to exit. A dialogue screen pops up and yes to save and exit service mode</p>