

HPM1 Heat Pump Master Controller

SUPERSEDES: New

EFFECTIVE: August 21, 2012

Plant ID: 001-4118

PURPOSE: This guide is a consolidation of important HPM1 information that can be used when installing, commissioning and setting up the controller. It is not meant to replace any other HPM1 documents or drawings.

APPLICATION: The application is for controlling liquid-to-liquid heat pumps. Applications include two-pipe single-tank, two-pipe two-tank, and four-pipe two-tank hydronic systems.

IMPORTANT FACTS

- The controller requires an Outside Air Temperature sensor from the ASM2.
- Demands can be connected to the HDMD (Heat Demand) and or CDMD (Cool demand) inputs; these inputs are dry contact inputs.
- The HDMD demand input can be connected to Taco Relay panels or similar devices; think of the HDMD input as the TT terminals.
- The controller can be configured for staged or a single analog output control.
- In a 4-pipe, 2-tank application, the Heat Pump can be in the opposite mode from the load side.
- A boiler can be enabled if the heat pump cannot maintain the hot water tank temperature.

INSTALLER/ELECTRICIAN CHECKLIST

Task	Verified Yes/No
Ensure that the 24VAC power source is properly connected to terminals 38 & 39 and that the polarity is correct.	
Ensure that terminal 40 GND is connected to a known good earth ground.	
Ensure that the 3 sets of DIP switches are properly set in accordance with the drawing below, installation or application documents. The DIP switches can be accessed by removing the controllers cover. Note the black square for each position indicates the direction the switch needs to be placed.	
Ensure that the 4 sets of jumpers are properly set in accordance with the drawing and your application. The jumpers can be accessed by removing the controllers cover.	
Ensure that the proper wire is used for inputs and the communication trunk. Analog input wiring must be 18 AWG TSP (can also use multi-conductor). Taco part # Wir-018 (1 Pair + shield). Communication wiring must be Echelon approved cable 22 AWG TP. Taco part # WIR-022.	
Ensure that the shielded input wiring is properly grounded. Remember the shield must only be connected at the controller end, at the sensor end it should be cut even with the wire jacket and taped.	
Ensure that the sensors required for this application are properly installed and wired to the controller. Refer to sensor and controller installation sheets for reference.	
If the LCI is connected and powered up, press the service pin button on the HPM1 so that the controller is recognized and added to the LCI's database. This can be verified by logging into the LCI. The controller appears as Unitx_HPM1, where x is the order in which all controllers' service pin buttons have been pressed.	

COMMISSIONING THE CONTROLLER

After the HPM1 has had all inputs and outputs properly wired, a point-to-point check should be performed to ensure all terminations have been properly made. Use this checklist to verify all inputs are working correctly and reading properly in the LCI; if a point is not used, simply indicate “not used.”

Steps required for verifying inputs and outputs on the HPM1

To verify the inputs and outputs, login to the LCI and perform the following steps:

1. Press **Controllers** button from the Home screen.
2. Select the HPM1 from the list of controllers.
3. Press **Inputs** and verify that there are realistic temperature readings. It is recommended that the temperature sensors be warmed up or cooled down so a response is seen. To verify digital inputs, change the state of the sensor to see a response.
4. To verify the outputs, press **All Settings**.
5. From the list of settings, press **Commissioning** and set the individual pumps and outputs “On.”
6. Verify each output has turned on in the Outputs screen.
7. Verify each physical pump or stage has turned on.
8. After verification, set the output back to “Off” in the commissioning page.

Inputs	Verified/initials	Outputs	Verified/initials
Instantaneous Power		Stage 1	
Ground Temperature		Stage 2	
Tank/HW Tank Temp		Stage 3/TS/Cool Circ	
Chilled Tank Temp		Load Circ/Heat Circ	
Equipment Status		Auxiliary Heat	
Heat Demand		Reversing Valve	
Cool Demand		Ground	
Low Press Alarm		Tank Circulator	
High Press Alarm		Reversing Valve	

CONFIGURING THE HPM1 SETTINGS

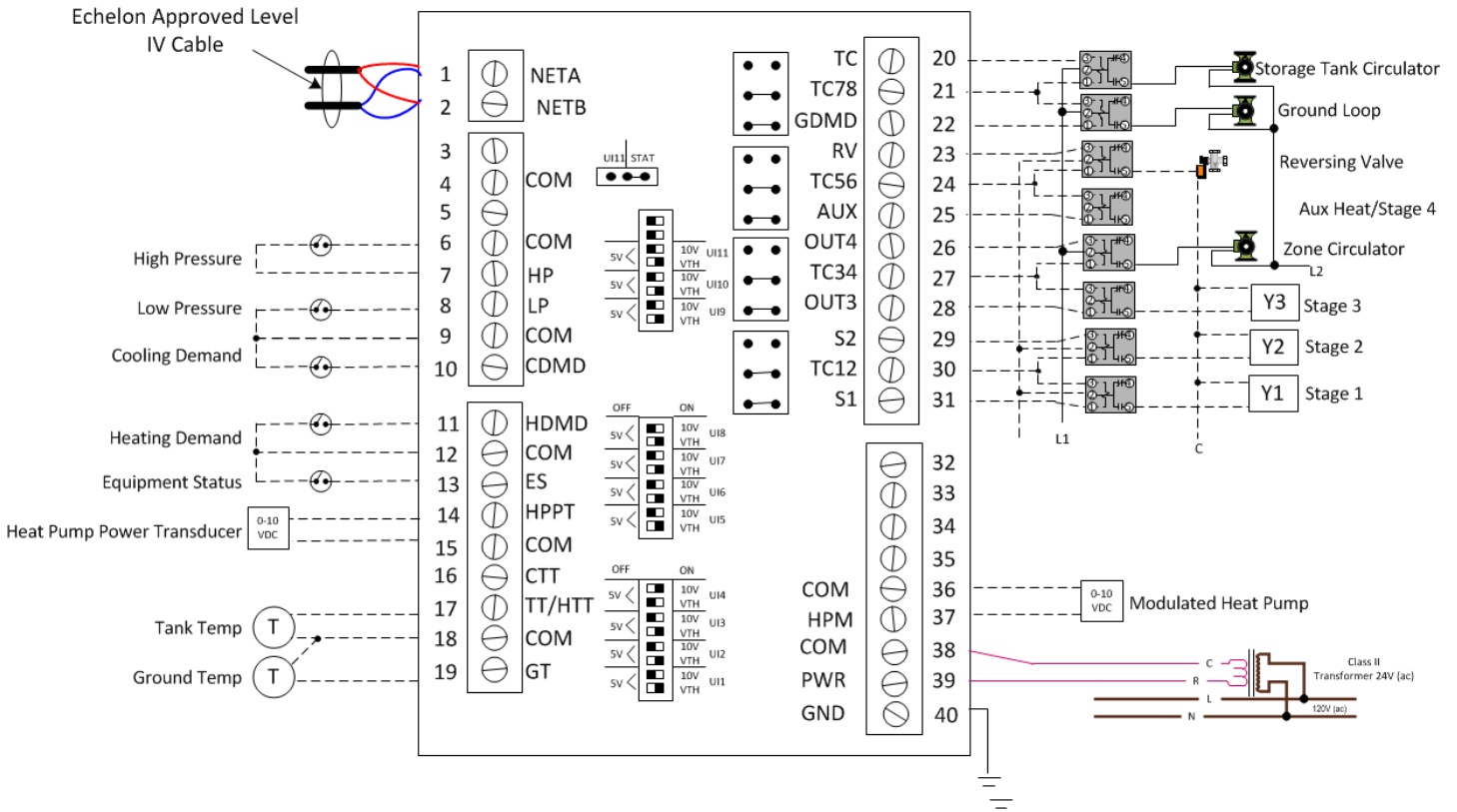
A description of HPM1 settings can be found in the Application Guide on page 31-35. If a copy of the Application Guide is needed, it can be found at www.taco-hvac.com. Once in the web site, select the *Products* tab, and from the drop down list select *iWorx® by Taco Electronic Solutions*. A complete list of links to all documentation is shown on the left side of the web page.

TROUBLESHOOTING & TECHNICAL TIPS

Problem	Solution
Controller is not running and Status LED is not illuminated.	No power to controller. Verify the voltage on the controller's power connector (24 VAC).
How do I reset the controller?	The controller can be reset by the LCI, or you can cycle power to the controller. Refer to the LCI documentation for more information on resetting the controller using the LCI.
Can my iWorx® system contain multiple HPM1 controllers?	Yes, provided that you do not exceed the maximum number of controllers that can be handled by the Local Control Interface (LCI).
Readings fluctuate rapidly, sometimes by several degrees.	The controller is not properly grounded. The controller's ground (GND) pin (T40) must be connected to earth ground.

TYPICAL HPM1 WIRING

HPU1 in 2 Pipe, 1 Tank application, outputs wired as Power Isolated

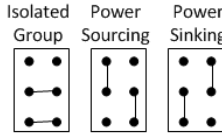


Note; jumper the equipment status input if no device is used

Symbols

- 10 K ohm Precon Type III thermistor
- 24VAC pilot relay or contactor coil
- 0-10 VDC signal

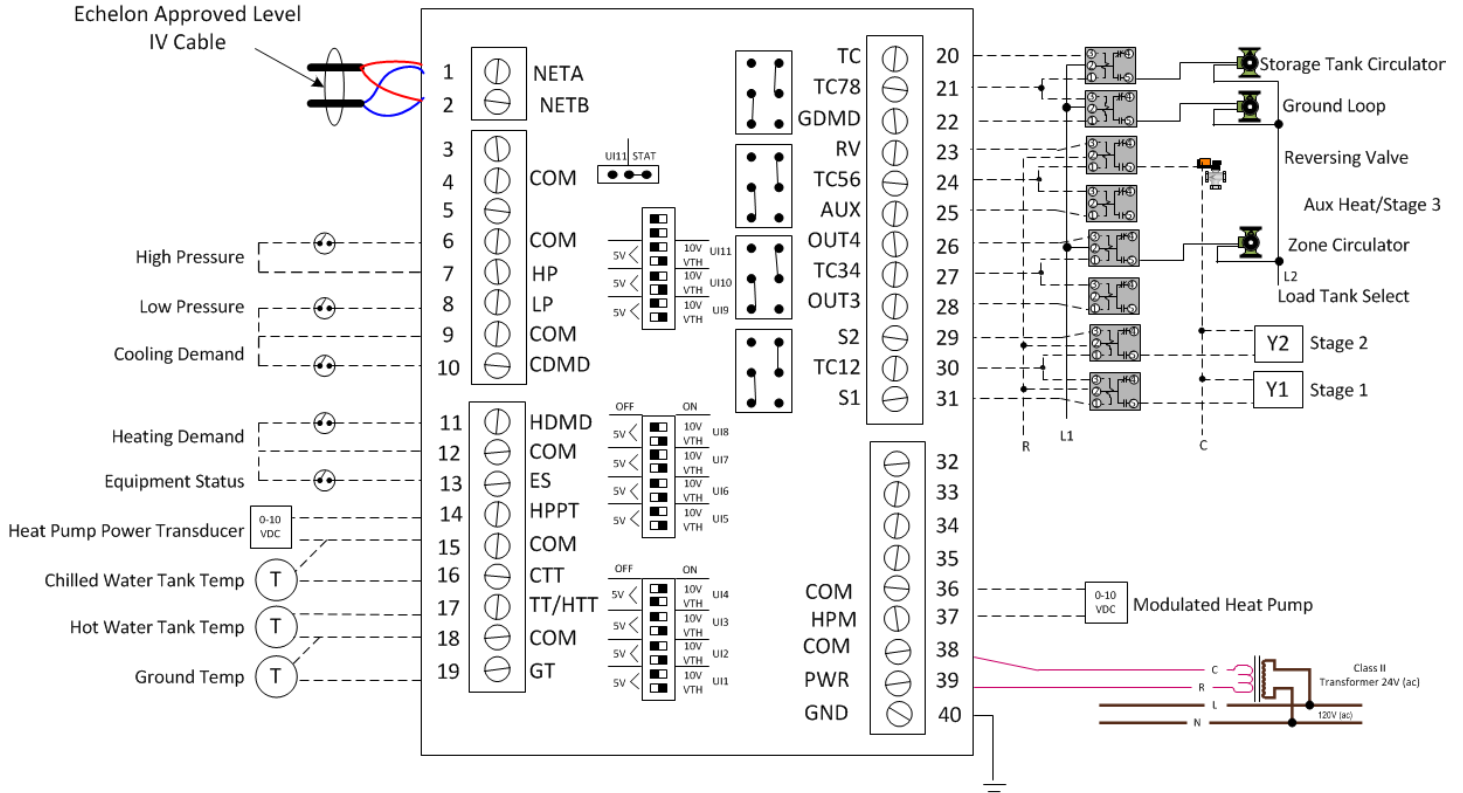
Output Jumper Positions



Dip Switch Positions



HPM1 in 2 Pipe, 2 Tank application, outputs wired as Power Sourced

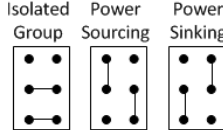


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Note: jumper the equipment status input if no device is used

Output Jumper Positions



Dip Switch Positions



CONTROLS MADE EASY®

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