

HPU3 Water Source Heat Pump Controller

SUPERSEDES: New

EFFECTIVE: August 21, 2012

Plant ID: 001-4120

PURPOSE: This guide is a consolidation of important HPU3 information that can be used when installing, commissioning and setting up the controller. It is not meant to replace any other HPU3 documents or drawings.

APPLICATION: The application is for controlling a water to air heat pump with up to 2 stages and a reversing valve. The system is also capable of dehumidification.

IMPORTANT FACTS

- There is a 30-second delay after the fan is turned on before the equipment status input is verified.
- If the fan is not being proved with a differential pressure switch or current switch, then the Fan Proof input must be jumpered.
- When going from unoccupied to the occupied mode of operation, the space temperature alarms are delayed 30 minutes.
- When using staged heating or cooling, the stage time setting must be non-zero.
- When using staged heating and cooling, the stage control band must be non-zero.
- Dehumidification is accomplished by enabling the cooling cycle and enabling a digital output.
- Dehumidification is enabled when its respective setpoint is set to a non-zero number.

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 HPU3 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 Unix_HPU3, where x is the order in which all controllers' service pin buttons have been pressed.	

COMMISSIONING THE CONTROLLER

After the HPU3 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 on the HPU3

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 HPU3 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. Create a group and a schedule on the LCI's home page, then assign the controller to the group by pressing **Members** within the group.
5. Select the HPU2 from the list of controllers and change the override Setpoint to a value that will cause the controller to enter the heating mode.
6. Verify the outputs in the Outputs page. Remember to verify the physical equipment has been enabled and disabled accordingly.
7. Now override the setpoint to cause the controller to enter in the cooling mode; verify the outputs in the Outputs page.
8. Verify the output has turned on in the Outputs screen.
9. Verify the physical output has turned on.
10. After verification, clear the overridden setpoints.

Inputs	Verified/initials	Outputs	Verified/initials
Zone Temperature		Heat	
Equipment Status		Cool	
Hi Pressure Status		Fan digital	
Low Pressure Status		Dehumidification	
Power Transducer		Fan Modulated	
Supply Air Temp		Reversing Valve	

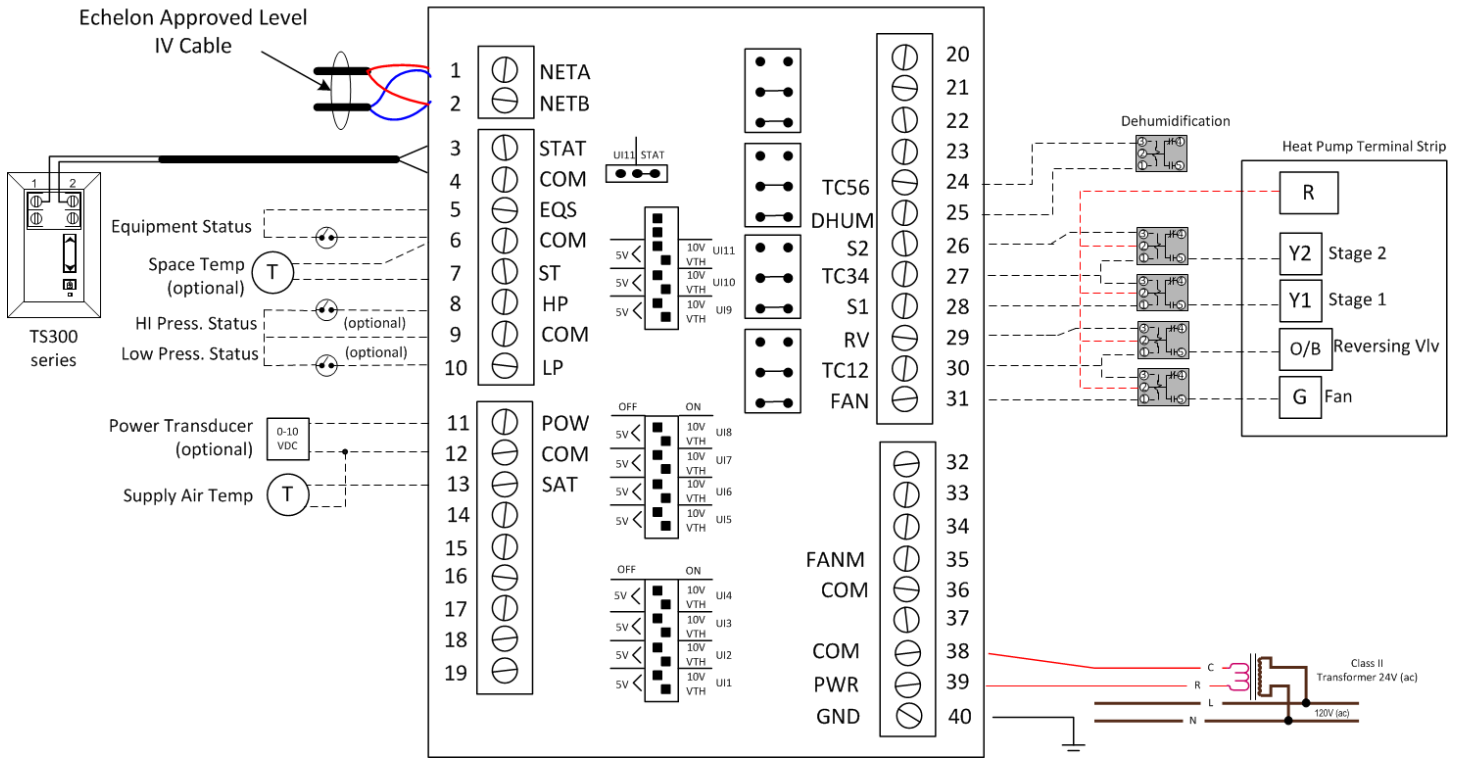
CONFIGURING THE HPU3 SETTINGS

A description of HPU3 settings can be found in the Application Guide on page 25-27. 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.
The fan will not cycle on after the equipment status input alarm has been resolved	If the controller was previously in an equipment status fault condition, the controller must be reset before proper operation can be restored.
The fan and staged pilot relays will not come on even though the LCI indicates it is on.	Ensure that the controller and output pilot relay have been powered with 24 VAC and the output has been correctly wired to the coil of the pilot relay. Also ensure that the pilot relay has a 24 VAC coil.
The Space Temperature or Supply Air Temperature thermistor reading is at its maximum or minimum.	The input is either shorted or open.
The staged outputs will not come on even though the space requires conditioned air.	Is there water flow in the system? Verify the associated CCU2 or LHP2 controller are operating and the HPU3 is a member of the controller. If there is no CCU2 or LHP2 connected, then the Unit Enable input of the ASM2 must detect water flow (On).
Thermistor 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. Also ensure that the controller's digital inputs are dry contacts and that no voltage is being applied or switched to the inputs.
How do I associate my HPU3 controllers with the LHP2?	Use the LHP2's grouping mechanism, specifically <i>Members</i> on the LHP2 HVAC Setup screen of the LCI. Only HPU3s may be associated with the LHP2.
Under what conditions does the HPU3 require a reset for normal operation.	There are two conditions that require a reset: – Equipment failure and hard pressure failure (alarm)

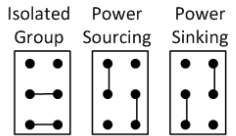
TYPICAL HPU3 WIRING



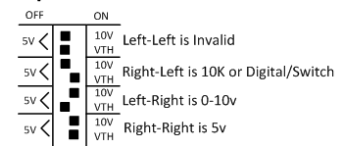
Symbols

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

Output Jumper Positions



Dip Switch Positions



CONTROLS MADE EASY®

Taco Electronic Solutions, Inc., 1160 Cranston Street, Cranston, RI 02920
 Telephone: (401) 942-8000 FAX: (401) 942-2360.

Taco (Canada), Ltd., 8450 Lawson Road, Unit #3, Milton, Ontario L9T 0J8.
 Telephone: 905/564-9422. FAX: 905/564-9436.

Taco Electronic Solutions, Inc. is a subsidiary of Taco, Inc.
 Visit our web site at: <http://www.taco-hvac.com>