

## HPL1-2 Water Source Heat Pump Controller

### *Self-Contained Interoperable Controller Model UCP-1 for Software Version 2*

SUPERSEDES: New

EFFECTIVE: April 11, 2014

Plant ID: 001-4080

Job: \_\_\_\_\_ Engineer: \_\_\_\_\_

Contractor: \_\_\_\_\_ Rep: \_\_\_\_\_

Date: \_\_\_\_\_ Tag/Item #: \_\_\_\_\_

## HPL1-2

The HPL1-2 heat pump controller is a stand-alone microprocessor based controller for liquid source heat pump units. The controller also provides BTU energy monitoring.

### Overview

The application includes liquid source heat pump units with a two-stage compressor, reversing valve, fan, and dehumidification.

Digital inputs are provided for fan proof, fan filter, indoor air quality, and occupancy status. The indoor air quality input may be configured to receive an analog value. Analog inputs are provided for supply and return air and water temperature. A two-wire serial interface is provided for the thermostat. When the thermostat is not used, a thermistor may be connected for space temperature monitoring. An analog input is provided for applications that require power monitoring.

The HPL1-2 incorporates digital outputs in the form of triacs for fan start/stop, two compressor stages, dehumidification, reversing valve and reheat. In addition to fan start/stop, two triac outputs are provided for 3-speed digital fan operation. The controller also incorporates 0-10VDC analog outputs for compressor modulation, fan modulation, and injection circulator modulation.

The controller is based on LonWorks<sup>®</sup> networking technology. The controller may be networked to a higher-level control system for monitoring and control applications.

### Features

- Two-stage or modulated compressor heating/cooling control
- Digital reversing valve control
- 3-speed digital fan or modulated fan control with digital enable
- User-configured combination of digital and analog fan control
- Fan control energized on call for heating or cooling
- Fan proof input
- Dehumidification and reheat control
- LOFlo<sup>™</sup> Zone Mixing Block Integration
- Local backup schedule
- Individual temperature setpoints for occupied/unoccupied heat and cool
- LonWorks interface to building automation systems
- Optional BTU energy monitoring
- Optional water flow metering
- Thermostat with space temperature, humidity, temperature and humidity setpoint adjust, fan override, occupancy override
- Automatic heat/cool changeover

- Global unit enable for main plant synchronization
- Remote sensor capabilities
- Automatic configuration with the LCI
- Supervisor control (JENE/Niagara)
- Real Time Clock
- Alarm/Event reporting
- LONWORKS® interface to building automation systems

## Specifications

### Electrical Inputs

**Resolution:** 10 bit

**Thermostat:** Slink, Precon II or III 10K Thermistor (Space Temp Only)

**Supply Air Temp, Return Air Temp:** Precon III 10K Thermistor

**Supply Water Temperature, Return Water Temperature:** 0-5 VDC VFTS/VTs, Precon Type II or III 10K Thermistor

**Water Flow:** 0-5 VDC VFTS

**Fan Proof Sensor, Occupancy Sensor, Filter Status:** Dry Contact - Normally Open - 5 Volts DC Max

**IAQ Sensor:** Based on configuration, may be either one of the following: Dry Contact - Normally Open - 5 Volts DC Max; 0-10 VDC

### Electrical Outputs

**Modulated Compressor, Injection Pump, Modulated Fan:** 0-10 VDC - 2K Ohm minimum load

**Compressor Stage 1, Compressor Stage 2, Reversing Valve, Reheat, Fan Speed 1, Fan Speed 2, Fan Speed 3, Dehumidification:** 24 Volts AC - 1 amp at 50 °C, 0.5 amps at 60 °C, limited by Class 2 supply

### Recommended Sensor Wire

**Maximum Length:** 500 feet (152 meters)

Cable Type	Pairs	Details	Taco Catalog No.
18AWG	1	Stranded Twisted Shielded Pair, Plenum	WIR-018

### Recommended LON Bus FTT-10A Network Wire

**Speed:** 78KBPS

**Max Volts:** 42.4 Volts DC

**Cabling:** Maximum node-to-node distance: 1312 feet (400 meters); Maximum total distance: 1640 feet (500 meters)

Cable Type	Pairs	Details	Taco Catalog No.
Level 4 22AWG (0.65mm)	1	Unshielded, Plenum, U.L. Type CMP	WIR-022

### Power

**Requires:** 24VAC (20VAC to 28VAC), requires an external Class 2 supply

**Consumes:** 7.2W with no external loads, maximum limited by the Class 2 supply rating

## Mechanical

**Dimensions:** 5.55" (141mm) high, 6.54" (166 mm) wide, 1.75" deep (44 mm), ABS

**Controller Weight:** 0.70 pounds (0.32 kilograms)

**Shipping Weight:** 1.0 pounds (0.46 kilograms)

**Processor:** 3150 Neuron 10 MHz

**Flash:** 48 Kilobytes

**SRAM:** 8 Kilobytes

**Termination:** 0.197" (5.0 mm) Pluggable Terminal Blocks, 14-22 AWG

**Temperature:** 32 °F to 140 °F (0 °C to 60 °C)

**Humidity:** 0 to 90%, non-condensing

**UL Listed** for US and Canada, Energy Management Equipment PAZX and PAZX7

**FCC** Part 15 Class A compliant

## CONTROLS MADE EASY®

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