

## Zone Measurements – Heat Pump Equipment

Heat pumps are often used for individual zone heating and cooling applications. In a large building, they are usually connected to a water loop maintained at a constant temperature. If this water loop is too hot in the summer or too cold in the winter, the heat pumps will use excessive energy. Measuring the compressor status, the water loop temperatures, and inlet and outlet air temperatures will provide a lot of information that can be used to determine if the heat pumps are working properly.

### QUESTIONS:

1. How large is the mixed air section? If a larger size, you may want to use more than one temp sensor for mixed air readings (item 5).
2. Is outside air utilized, either fixed or via an economizer? If yes, use point 6.
3. Does the unit have an enthalpy economizer? If yes, use point 7.
- 4.

Item Description	Qty	Part Number(s)
1. Ambient temperature and humidity	1	See the Ambient Temperature and Humidity equipment listing.
2. Heat pump current	1	CTS-xxxx-yyy, S-FS-TRMSA module
3. Supply air temperature	1	S-TMB-Mxxx
4. Zone temperature	1	S-TMB-Mxxx
5. Mixed air temperature	1 to 4	S-TMB-Mxxx
6. Return air temperature	1	S-TMB-Mxxx (or combine with sensor used for point 7)
7. Return air relative humidity	1	S-THB-Mxxx

### Zone Measurement Notes:

- CTS-xxxx-yyy refers to Current Transformers where “xxxx” indicates opening size (0750 = 0.75”, 1250 = 1.25”, and 2000 = 2.0”) and “yyy” indicates rated amperage.
- S-TMB-Mxxx refers to Temperature Smart Sensor where “xxx” indicates sensor cable length.
- S-THB-Mxxx refers to the Temperature and Relative Humidity Smart Sensor where “xxx” indicates sensor cable length.
- Additional steps may need to be taken to ensure that your data logger is not exposed to humidity, temperature, or condensation conditions outside of its operating parameters.

### Basic Logger Equipment

The list below consists of the basic equipment that you'll need to do any data logging:

- Energy Logger Pro,
- Serial cable to program the logger and download data, and
- AC power adapters to keep the logger plugged in to an AC outlet, and
- HOBOWare software.

Item Description	Qty	Part Number(s)
Energy Logger Pro	1	H22-001
Serial interface cable	1	CABLE-PC-3.5
AC Power Adapter	1	PAC-1 or ONS-AC-POWER-USA
HOBOWare Pro version 2.2 or Higher	1	BHW-PC or BHW-MAC

**NOTE:** Reference materials for all equipment used in monitoring applications should be reviewed to ensure proper use and safety precautions are observed.