APPLICATION SOLUTION T48 #01

SMOKE HOUSE TEMP & HUMIDITY CONTROL APPLICATION

Temperature and humidity (T/H) control within a smoke house is essential. For example, smoked salmon requires a specific T/H for the proper smoking process. Traditionally, the operator monitors the T/H of the smoke house and makes the necessary adjustments. This method is inefficient and takes up a lot of the operator's time, which could be spent preparing for the next process. A system needed to be installed, which monitors the T/H of the smoke house and automatically makes the proper adjustments, thus allowing the operator to prepare the next process and increase efficiency.

PRODUCTS USED: T4811000, P4810000

This is accomplished by using a Red Lion Controls T48 temperature controller and a P48 process controller.

HOW IT WORKS

The T48 temperature controller's main control output is used to maintain the temperature at 85 degrees Fahrenheit. An additional alarm is used as a safeguard to notify the operator if the temperature unexpectedly varies above or below, a set amount, from the controlled temperature value. In this case, the alarm is activated at 90 degrees and above or at 80 degrees and below. An auto tune is performed during the conclusion of the initial setup to develop the optimum time proportioning control parameters (PID values). All programming parameters can be locked out all allowing access to only the auto tune feature and the main setpoint value.

The humidity sensor's 4-20 mA output drives the input of the P48 process controller. A simple on/off control requirement is accomplished by setting the proportional band to 0.0%. The main output simply turns on if the humidity drops below the setpoint value and turns off as the humidity increases above the setpoint value plus a programmed hysteresis value. Scaling the main display for percentage allows the operator to conveniently set his humidity level requirement in a percentage value.

DESIGN ADVANTAGES

The deciding factors for this system design was the small, space saving dimension of the 1/16 DIN package and the low cost but accurate control. After several days of operation, the increased efficiency of the pre-process preparation time was realized. The operator could set the proper setpoints and start the system. He could then utilize his time preparing the next set of racks and completing other tasks while the T48 and P48 controlled the smoking process.

DIP SWITCH OR JUMPER SETTINGS

All are at factory settings.

PROGRAMMING (Only non-factory settings shown)

T48 parameters
1-IN
SPLO : 50
SPHI : 90

2-OP
CYCt : 10

3-LC
SP : Ent
OP : LOC
dEv : LOC
UdSP : LOC
Tune : ENBL

4-AL
Act1 : b-ot
RSt1 : AutO
AL-1 : 5

P48 parameters
ProP : 0.0

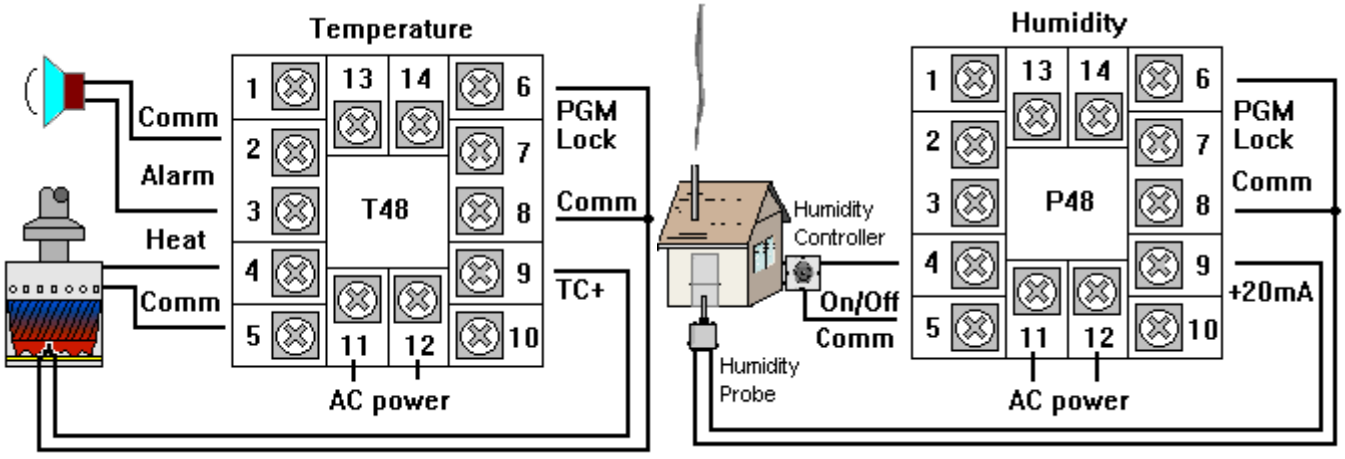
1-IN
dCPt : 0
SPHI : 100

2-OP
CHYS : 1

3-LC
SP : Ent
OP : LOC
dEv : LOC
bdSP : LOC

WIRING

All wiring must be according to the installation guidelines listed in the product's specifications. For the setpoint outputs to function an external isolated voltage source (not shown below) must be connected in series.



This application note is intended to be an example. Your specific application may require changes in products, programming and/or wiring. For specific assistance, you may contact your local Red Lion products supplier or Red Lion Controls Technical Support at 717-767-6511.