PEARSON SYSTEMS

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Pearson Temperature Control

To Whom It May Concern:

This remote digital temperature control and display unit is easy to install and use. The unit is typically mounted on the left side of the blue burner cabinet. The temperature probe will replace the Burling Temperature control in the tank, but the 2"x ½" bushing must be replaced with a 2"x ¾" bushing(not supplied). The temperature probe wires can not be run in the same conduit as the power wires or any other wires. The control can be mounted remotely from the burner by extending the control, power, and temp probe wires. Overall length of the wires cannot exceed 300 feet.

On older Powerflame Burners (Non Circuit Board Type) the power supply to the unit can be pulled from 1 and 2A in the burner cabinet to 7 and 8(black & white) on the control. The control wires 10 and 11(blue & red) are run to the low water cut off switch and to terminal 4 in the burner panel. This is the same as the original Burling temperature control.

On newer Powerflame Burners (Honeywell mounted on Circuit Board) the power supply to the unit can be pulled from L1M and L2M in the burner cabinet to 7 and 8(black & white) on the control. The control wires 10 and 11(blue & red) are run to the low water cut off switch and to the control loop terminal in the burner panel. This is the same as the original Burling temperature control. The control loop terminal # will vary depending on burner model, consult the Powerflame wiring diagram or call Pearson Heating with any questions.

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DIGITAL TEMPERATURE CONTROL FOR HOT WATER SYSTEMS

Reading the digital temp control

The digital temperature controls 3 digit **LED** screen displays the actual water temperature in the in the Pearson tank.
The **OUT LED** light is lit when the temperature control and burner circuit is made. This means the controller is telling the burner to operate.
The **DEF LED** light is NA.

Setting the Desired Water Temperature

1. On the digital temp control Pres the **SET** button 2 times. This displays the current set point.
2. Press the **UP** or **DOWN** button to the desired water temperature.
3. Press the **SET** button 1 time to enter the desired water temp.
4. Press the **SET** and **Down** buttons at the same time to return to the temperature in the tank.
5. If you do not hit any buttons the controller will return to the temp in the tank automatically.

NOTE: The Pearson Temperature Control has a factory set point of 150 deg F. The control needs a 5 deg differential to activate the burner. This stops the burner from short cycling. Please contact Pearson Heating if you have any questions.

List of parameters

	Description	Units	Range
SP	Set Point	Degrees	r1 to r2
r0	Differential or hysteresis	Degrees	1 to 20
r1	Lower value for SP	Degrees	-58 to r2
r2	Higher value for SP	Degrees	r1 to 302
d0	Cooling or heating control	Option	Ht/Co
d2	Defrosting duration	Minutes	0 to 59
d8	Defrosting interval time	Hours	0 to 24
c0	Minimum stopping time	Minutes	0 to 59
c1	Cool cycle duration	Hours	0 to 24
c2	ON time of fault cycle	Minutes	0 to 999
c3	OFF time of fault cycle	Minutes	0 to 999
P1	Ambient probe adjustment	Degrees	-10 to 10
H5	Access code to parameters	Numeric	0 to 255
t0	Maximum displayed temp.	Degrees	-58 to 302

Parameter descriptions

SP = Set point. Temperature we wish to regulate the machine (variable from r1 to r2)
r0 = Differential or hysteresis
r1 = Lower value for SP
r2 = Higher value for SP
d0 =Cooling or heating control
If d0 = Ht and TS is the temperature of ambient probe:
If TS >= SP the load is disconnected
If TS < SP-r0 the load is connected
if d0=Co then:
If TS <= SP the load is disconnected
If TS > SP+r0 the load is connected
d2 = Defrosting duration (if d2=0 no defrosting is performed)
d8 = A defrosting cycle is performed every d8 hours (if d8=0 no periodic defrosting is performed)
c0 = Minimum stopping time of the load
c1 = Cool cycle duration
c2 = ON time of fault cycle, when ambient probe is broken
c3 = OFF time of fault cycle, when ambient probe is broken
P1= Ambient probe adjustment. If the probe is not placed in the exact point to control use a standard thermometer to offset the measured temperature.
H5 = Access code to parameters (it is set to 00 from factory)
t0 = Maximum temperature displayed during defrosting and during the next hour to defrosting.

Parameter programming

Set Point (SP) is the only parameter the user can access without code protection.
•Press SET. *SP* text will appear on the display.
•Press SET again. The real value is shown on the display.
•The value can be modified with the UP and DOWN arrows.
•Press SET to enter any new values.
•Press SET and DOWN at the same time to quit programming or wait one minute and the display will automatically exit programming mode.

Access to all code protected parameters.

•Press SET for 8 seconds. The access code value 0 is shown on the display (unit comes with code set at 0 from factory).
• With the UP and DOWN arrows, code can be set to user needs.
•Press SET to enter the code. If code correct, the first parameter label is shown on the display (SP).
• Move to the desired parameter with the UP and DOWN Keys.
•Press SET to view the value on the display.
• The value can be modified with the UP and DOWN arrows.
•Press SET to enter the value and exit.
• Repeat until all necessary parameters are modified.
•Press SET and DOWN at the same time to quit programming or wait one minute and the display will automatically exit programming mode.

**The keyboard code can be reset to ZERO by turning off the controller and turning it on again while keeping the SET pressed.*

Activating/deactivating defrosting

Holding the UP arrow pressed for 8 seconds the defrosting is activated. Repeating this operation the defrosting is stopped. If a cool cycle is activated the defrosting is disabled.

Activating/deactivating cool cycle

Holding the DOWN arrow pressed for 8 seconds a continuous cool cycle is activated. Repeating this operation the cool cycle is stopped. If defrosting is activated cool cycle is disabled.

Default working

In case of probe error, the control performs a continuous regulation, c2 min. load connected - c3 min. load disconnected.
In case of memory error, the control performs a continuous regulation, 5 min. load connected - 5 min. load disconnected.

Led indication and display messages

The led ***OUT*** indicates if the load is connected or not. If a continuos cool cycle is being performed the led flashes (90% ON 10% OFF). If the control is waiting the stopping time c0 to start a cool cycle the led flashes (10% ON 90% OFF).
The led ***DEF*** indicates if the control is performing defrosting.
In normal operation, the probe temperature will be shown on the display. In case of alarm or error, the following messages can be shown:
• *Er* = Memory Error
• *ooo* = Open Probe Error
• --- = Short Circuit Probe Error

Maintenance, cleaning and repair

After final installation of the unit, no routine maintenance is required.
Clean the surface of the display controller with a soft and damp cloth. Never use abrasive detergents, petrol, alcohol or solvents.
All repairs must be made by authorised personnel.