


# PROFIRE PID Operator Guide

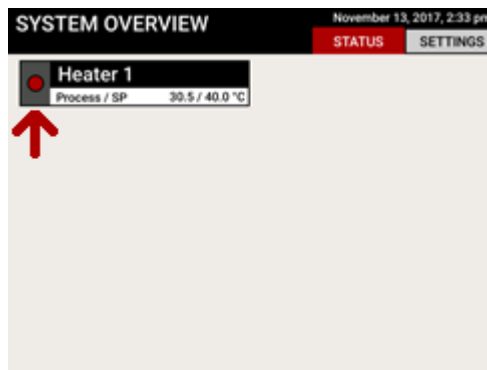
## PID Staging





## 1. Starting the System

### Determining Run Status

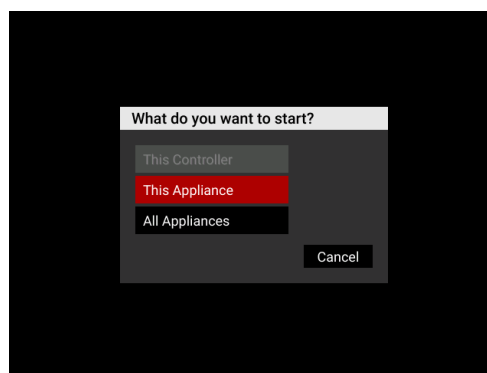
If the UI is not running, the status light of the BMS (located in the top left corner of the enclosure ) will be red. Additionally, on waking the system the appliance (in this case **Heater 1**) on the **System Overview** page will have a red indicator light as seen below.



### Starting an appliance

If the system is not running, select the appliance using the  key. From the appliance **Status** screen, check that there is no asterisk next to the **Alerts** tab (as pictured here: ). If there is an asterisk, navigate to the **Alerts** tab and refer to the Alarms Manual or contact your supervisor.

Once it has been determined that the system is safe to run press the  key.



This dialog allows an operator to start one particular appliance, or all appliances.

After selecting **This Appliance** or **All Appliances**, the system will attempt to start.

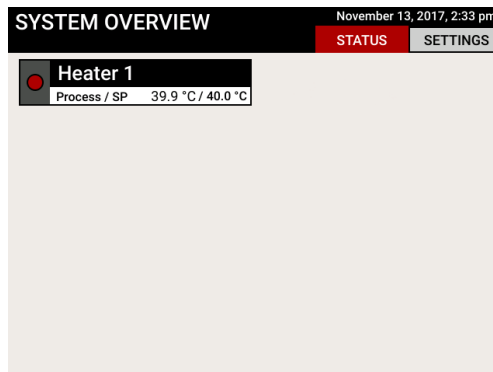
## 2. PID Staging

PID staging is a function that switches process control between two different temperature inputs depending on defined conditions.

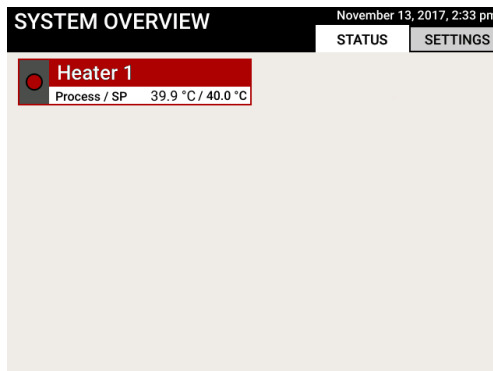
### Typical Usage

When first approaching the PF3100: if the system is running, the outlet temperature should be noted. If the outlet temperature is at its setpoint (or within a reasonable tolerance of the setpoint), then most likely the system is performing as expected. This guide will help highlight where to look to ensure proper function of PID Staging setup, as well as what to do in the event of unexpected behavior.

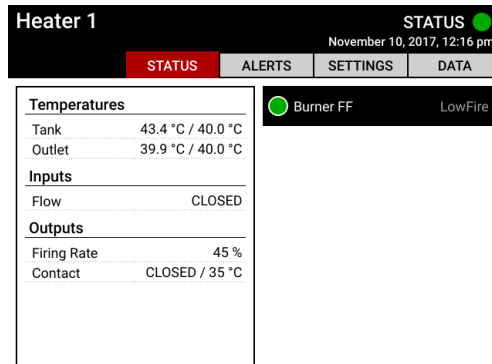
Pressing any key on the PF3100 keypad will wake the UI from sleep and should display the [System Overview](#) screen.



From here, use the arrow keys to navigate to the appliance in question (in this example, [Heater 1](#)).



Once highlighted, press the **OK** key to access the appliance **Status** screen



The appliance **Status** screen displays the core data vital to the system such as the operating temperatures, inputs, outputs, and the state of the burner(s) connected to the appliance.

## Key Points

These are some of the key things to look for from the appliance **Status** screen:

### State of the Controller(s)

Ensure that all controllers are running in a steady state. In the example above (**Burner FF**), the state of the controller is listed as **Low Fire** which is a steady state. **High Fire** and **Pilot** can also be acceptable steady states.


### Outlet Temperature

The outlet temperature should be stable (not fluctuating) and reading at the established setpoint.

### Firing Rate

The Firing Rate should be stable and not wildly fluctuating.

### Alerts Tab

There should be no asterisk next to the **Alerts** tab. If there is an asterisk (as pictured here: ) , then navigate to the **Alerts** tab and refer to the PF3100 Product Manual or contact your supervisor.

Any further investigation of the system requires understanding which mode the PID Staging is in. This can be found by accessing the **Settings** tab, navigating to **Process Control**, and then **Advanced PID Config** and observing which mode is selected in the **PID Staging Mode** setting. Please refer to Section 2 - PID Staging Modes below for a detailed review of the modes. Once the mode is known, the PID Status can be identified.

**PID Status**


The status of the PID can be determined by first selecting the controller (in this example, **Burner FF**).

**Heater 1** STATUS ●  
November 10, 2017, 11:15 am

STATUS ALERTS SETTINGS DATA

Temperatures	
Tank	43.4 °C / 40.0 °C
Outlet	39.9 °C / 40.0 °C
Inputs	
Flow	CLOSED
Outputs	
Firing Rate	45 %
Contact	CLOSED / 35 °C

● Burner FF HighFire

Hitting the  key will bring up this table and display which PID the system is currently utilizing:

**Burner FF** HighFire

Flame Status for Diagnostics

00:00:00:00:dd Lit Pilot

Input / Output

PID Status: Secondary control from: Outlet

Aux Output 100 %

Temperatures

Tank	30.5 °C / 40.0 °C
Outlet	29.7 °C / 40.0 °C

### 3. PID Staging Modes

#### High Input

High Input is dependent upon the staging input. When input is high, PID control is passed to the **Secondary Temperature**. When input is low, PID control remains controlled by the **Primary Temperature**. For example: if the input is closed the **PID Status** will state **Secondary Control** and if the input is open the **PID Status** will state **Primary Control**.

#### Low Input

Low Input is dependent upon the staging input. When input is low, PID control is passed to the **Secondary Temperature**. This will behave almost exactly like **High Input**; however, the states of the Staging Input will do the opposite. For example: if the input is open the **PID Status** will state **Secondary Control** and if the input is closed the **PID Status** will state **Primary Control**.

#### Primary in Range

When the **Primary Temperature** is within the setpoints, **PID Control** is passed to the **Secondary Temperature**. The PID Status is found by selecting the controller from the appliance **Status** screen.

#### Secondary in Range

When the **Secondary Temperature** is within the setpoints, **PID Control** is passed to the **Secondary Temperature**. The PID Status is found by selecting the controller from the appliance **Status** screen.

#### Primary AND Secondary in Range

Both **Primary** and **Secondary Temperatures** must be within the setpoints to pass PID Control to the Secondary Temperature.

#### Primary OR Secondary in Range

Only **Primary** or **Secondary Temperatures** must be within their setpoints to pass PID Control to the Secondary Temperature.

## 4. PROFIRE Contact Information

If you have any concerns or questions about this information, please contact PROFIRE as follows:

### U.S.

1.801.796.5127  
321 South, 1250 West Suite 1  
Lindon, UT  
84042, USA

[solutions@profireenergy.com](mailto:solutions@profireenergy.com)

### CANADA

1.780.960.5278  
Box 3313, Bay 12, 55 Alberta Ave  
Spruce Grove, AB  
T7X 3A6, Canada

[solutions@profireenergy.com](mailto:solutions@profireenergy.com)