



R1 11/14/2011

## **Advanced SmartAire S and PowerAire S Controller Guide**

Tate's SmartAire and PowerAire S units are factory configured for optimal performance in a typical data center environment. The installation of these units in most data center space will result in ideal performance without any user intervention.

Some sites however have differing requirements, and the application of SmartAire and PowerAire S units may not be ideal based on a number of site conditions. These requirements have prompted Tate to publish an advanced guide to the SmartAire and PowerAire S controllers which will allow the expert user more precise control over the functionality of Tate's product.

This document is intended to be only a guide to the operation of the embedded controller. The user takes full responsibility when adjusting the default parameters set in all PowerAire and SmartAire S units when they leave our factory. Adjusts to these parameters may result in undesirable operation of the units, as well as decrease the life expectancy of the units themselves. It is suggest that only those users with a high level of experience in control methodology attempt to make these changes without direct consultation with Tate's data center product management team.

Please feel free to contact Tate with any questions regarding this operations guide.

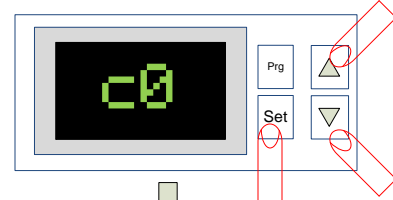
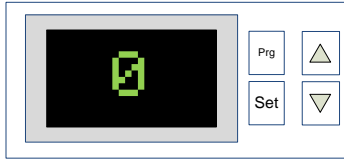
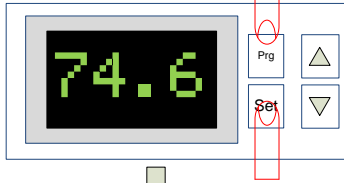
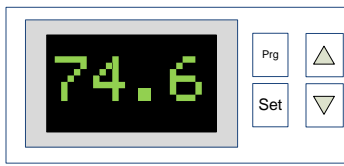
### **Please Help Us Improve This Guide**

We would be very interested to hear any comments you might have on this new guide. We are particularly interested in learning of omissions or subjects that are unclear. Please call, fax, or e-mail and direct your comments to Technical Service. Thank you very much for your assistance.

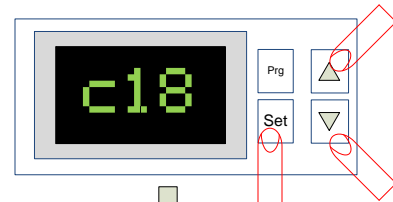
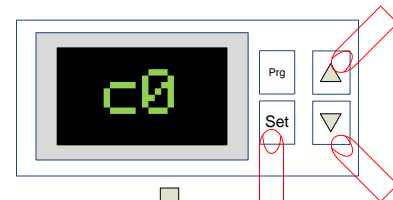
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Press Set to edit, press up and down to edit, press set to save the setting



Please continue to the next page

# Default Home Screen

To enter Advanced Programming Mode

## Press and Hold **Ú!**\* and **À**^c Simultaneously for 5 Seconds

# Controller Password

Enter the controller password, which his 77.

# Password Entered

Press up until the password 77 is displayed on the screen, then press set

# Variable Configurations

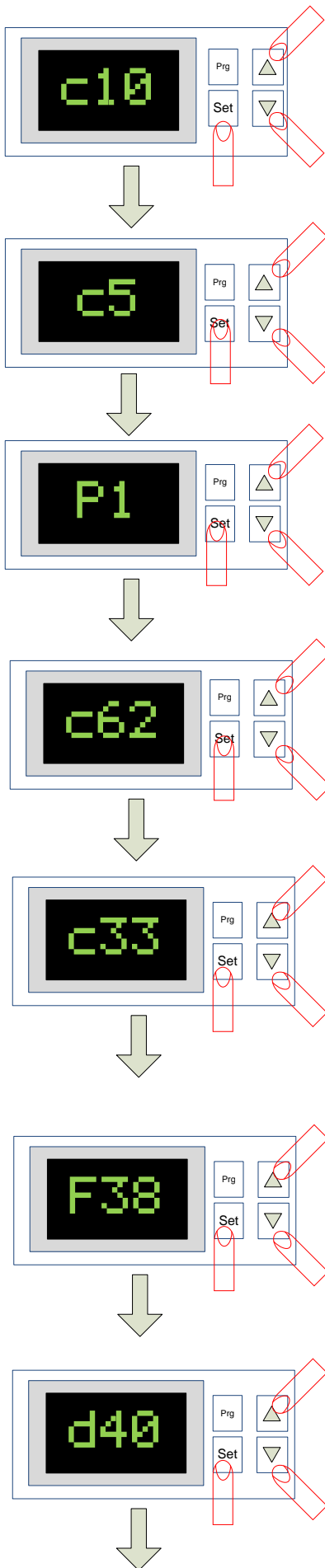
There are many variables that may need to be edited. To reach a variable, use the up and down buttons to scroll to the desired variable, press set to edit the variable, and the current value will be displayed. Use the up and down arrows to edit the value, and press set to save the variables new setting.

# c0 Variable – Unit Type

This variable is used to determine the acting method of the controller. c0 should always be set to 1 for PowerAire S units and set to 2 for SmartAire S units. No other control value is recommended.

# c18 Variable - Units

This variable determines whether the temperature display reads in Celsius or Fahrenheit. A setting of 0 will display Celsius values, a setting of 1 will display Fahrenheit values.



## c10 – Fail Mode

This value can be set to 1 or 0. The default setting is 1 for all PowerAire units where a value of 0 should be entered for all SmartAire units. This will ensure that if the temperature tree or other errors occur that the fan will increase its fan speed to maximum, or that the damper will open to 100%.

## c5 – PID Control Mode

This value enables the PID control mode. The value should always be set to 1 to ensure continuous PID controller operation.

## P1 – Proportional Term

This term is the proportional gain constant, and take the value of  $1/P1$ , a larger P1 will slow the speed of reaction to temperature change. The default value is 45, which produces a conservative response, for faster acting fan control, decrease the value. Instant fan speed response can be achieved by setting this value to 1.

## c62 – Integral Term

This value adjusts the effect of the integral term of the PID controller, this value examines the current difference in the set point, as well as historic error, to determine the change in set point. Increasing this value increases the time the controller examines older data, decreasing it shortens the window of data examined.

## c33 – Special Control Functions

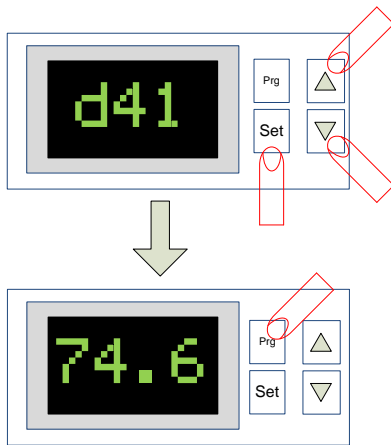
This value must be set to 1 to enter the following configuration variables. Press set to edit the variable, adjust the value to 1, and press set to store the value.

## F38 – Min/Max Control

Setting this value to 1 will enable the minimum and maximum fan speed or damper positions values.

## d40 – Minimum Control Value

This variable assigns, as a percentage, the minimum fan speed or damper positions that the SmartAire S or PowerAire S will settle to when the set point has been satisfied. This can be useful to ensure a minimum desired airflow from the fan or damper at all times.



## d41 – Maximum Control Value

This value determines the maximum fan speed or maximum damper position that the PowerAire or SmartAire S unit can reach when maximum cooling is demanded. This value is useful in restricting the airflow from the fan or the damper. It also can be used to restrict the maximum current draw of the PowerAire S during normal operations.

## Storing all programming

Press and hold the Prg button for 5 seconds. The programming menu will clear and you will be returned to the home screen which will display the current temperature.