

# CFC Configuration

Please note : DO NOT attempt to make any changes to these settings unless you are ABSOLUTELY SURE you know what you are doing.

If you are in any way uncertain, call technical support and describe exactly what you are trying to do.

## Control Table

The control table consists of a series of "control points" for each output device.

Using the control table, it's possible to adjust the sequence and temperature bands of the outputs.

In general, the intended sequence is determined at the time of ordering or specifying the controller, and is programmed in as the default configuration. So routine setting up of the controller should not be required.

However, the Control Table menu in configuration means it's possible to check how the controller is meant to operate, and make marginal adjustments if necessary.

There are up to 30 points in the table. Each point looks something like :

PT FAN1	0%
1 OFFSET	+0.0F

This says :

Point 1 - it's the first point in the table. There are up to 30 points.

FAN1 - this applies to FAN1 output device.

0% - go to 0% output level.

OFFSET +0.0F - do this at 0°F temperature offset above Set Temperature.

The next point in the table would look something like :

PT FAN1	100%
2 OFFSET	+2.0F

This says :

Point 2 - it's the next one after the one explained above.

FAN1 - this applies to FAN1 output device.

100% - go to 100% output level.

OFFSET +2.0F - do this at 2.0°F offset *above* Set Temperature.

The program **interpolates** between the points.

So taking these two control points together, it means that between 0.0°F above Set and 2.0°F above Set Temp, FAN1 will go from 0% to 100%. So at 1.0°F above Set Temp, it will be at 50% output.

The next point in the table may be something like :

PT FAN1	0%
3 OFFSET	+2.0F

This is where it may seem to get a little more confusing. Notice that the temperature offset is exactly the same as the previous one in the table.

says :

Point 3 - it's the next one after the one explained above. BUT the program always uses the HIGHER NUMBERED point in the table if there is one.

OFFSET +2.0F - 0% - at 2.0°F above Set Temp, go to 0% output.

What this means is that if the temperature is **between** 0.0°F (above Set) and 2.0°F it will operate according to Points 1 and 2. So at 1.9°F above Set Temp it will be at 95% output. But at +2.0°F (and above), Point 3 has priority over Point 2. So at 2.0°F above Set, Point 3 comes into effect and the fan will switch off (go to 0%).

The next point may be :

PT FAN1	0%
4 OFFSET	+5.0F

Taking points 3 and 4 together, it means that from +2.0°F to +5.0°F, the fan will be 0% (off).

The next point may be :

PT FAN1	100%
5 OFFSET	+5.0F

FAN1 switches to 100% at +5.0°F and above.

This overrides point 4, but only when it reaches +5.0°F. So Point 3 and Point 4 now mean that the fan is Off from +2.0°F to +4.9°F (not 5.0°F).

So what we have done above is to have FAN1 control from 0 - 95% over a 1.9° band, and then switch off, then come back on at full speed only at +5.0° and above.

Between +2.0 and +4.9 the fan is off, so we would expect to see something like the following :

PT FAN2	0%
6 OFFSET	+2.0F

PT FAN2	50%
7 OFFSET	+2.0F

PT FAN2	100%
8 OFFSET	+4.0F

Below +2.0° FAN2 is OFF. From +2.0°F it controls from 50% speed up to 100% speed.

You may then see something like :

PT FAN3	0%
9 OFFSET	+6.0F
PT FAN3	100%
10 OFFSET	+7.0F

This will mean that FAN3 goes from 0 to 100% from +6.0°F to +7.0°F if the output channel is configured (in Output Types).

BUT in this sort of system, you would expect this output to be configured as On-Off. In which case, output levels other than 0% or 100% do not apply. So it will switch on when it reaches +7.0°F, and stay on until it falls to +6.0°F.

## Range of Values

The Control Table accepts values from +0 to +12.7° (i.e. From Set Temp up to 12.7° above Set Temp) and from +0 to -12.8° (i.e. From Set Temp down to 12.8° below Set Temp). This is sufficient for most normal ventilation or heating applications.

But note that ventilation setting values are normally + values - i.e. You increase ventilation if temperature is above target. Heating is normally controlled by a separate heating control function, and not in the Control table.

If a larger range of setting values are required, the Control Resolution must first be changed - see below.

## Control Resolution

BEWARE as a small change here makes a big difference to how a controller operates.

This setting determines the steps in the Control Table - in effect, it acts as a value multiplier.

By default, the value is 0.1°F. So in the Control Table, you can set values of 3.5°, 3.6°, 3.7° and so on. (And the range of values available is from -12.8 to +12.7°.)

If you change the resolution to 0.2°, the range of values is from -25.6 to +25.4°. You can set 3.6°, 3.8°, etc. but you can't set 3.5°.

WARNING - If you change Control Resolution, the Control Table values are automatically changed as well. If you need a wider temperature range, set the Control Resolution BEFORE you change the Control Table.

Example :

<b>CONTROL:</b>	
<b>RESOLUTION 0.1F</b>	
PT FAN1	100%
2 OFFSET	+2.0F

If you now change Control Resolution to 0.2° :

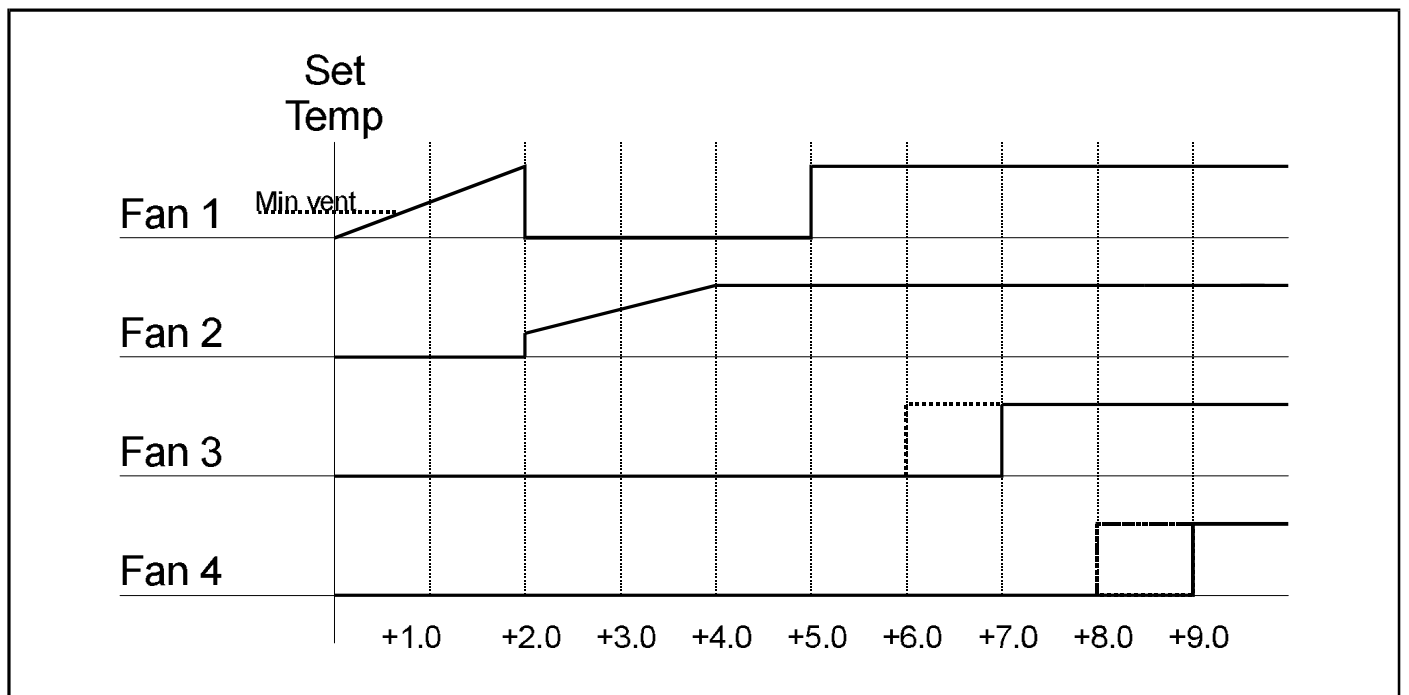
<b>CONTROL:</b>	
<b>RESOLUTION 0.2F</b>	

Then the Table is automatically changed to :

PT FAN1	100%
2 OFFSET	+4.0F

(This affects all the other points in the table, not just this one.)

You can use this feature to automatically widen the temperature range of the system without reprogramming all the Table values.



## Control Hysteresis

This is a DIRECTIONAL hysteresis dependent on trends in ventilation/temperature.

By default, the value is 0.0°. With this value, the program follows exactly the setup defined in the Control Table.

The aim of control hysteresis is to provide hysteresis even when the stages are in themselves completely continuous.

If temperature rises to a certain value (resulting in a certain ventilation level), the program will hold this ventilation level for a certain amount of temperature fall before it starts to decrease ventilation again.

Example :

Room rises to	Room falls to	FAN1
Control Hysteresis = 0.0 (default) Set Temp = 70.0		
71.0		50%
71.2		60%
71.4		70%
71.6		80%
	71.4	70%
	71.2	60%
	71.0	50%
Control Hysteresis = 0.0 (default) Set Temp = 70.0		
71.0		50%
71.2		60%
71.4		70%
71.6		80%
	71.4	80%
	71.2	60%
	71.0	50%

In the case of a single stage fan with speed control, the benefit is somewhat marginal - this example is shown for illustration only.

The chief relevance is where a system is "mode changing" - e.g. Switching between Fan1 at full speed, and Fan 1 with Fan 2 at 50%.

In this case, there may be a tendency to spend periods switching between these two modes, without hysteresis. Control Hysteresis gives a hysteresis to this mode switching to help prevent this.

## Fan Volume Table

The Fan Volume Table is used as the basis for inlet or curtain positioning (either curtain into the room from outside, or a corridor curtain).

*All CFC programs have this menu, but it is only necessary to check/adjust the table in programs with Inlets/Curtains (either Inlets direct into the room, or Corridor Curtains.)*

Entries in the Table look something like :

DEVICE	VOLUME
FAN1	4000

Where DEVICE = FAN1 is the name of the fan bank (one entry for each fan bank) and VOLUME = 4000 is the maximum capacity of the fans on that bank.

Check the entry for each fan bank and adjust if necessary. For example, if FAN2 has two fans, which each have 10,000 cfm capacity, set it to 20000.

(Note : You can use cfm or m<sup>3</sup>/hr, or any other unit, you wish, as long as you use the same units throughout.)

It is not necessary to get the exact values, as long as the *relative* values are correct.

## Fan Wait For Flaps

(Found in programs with Inlet/Curtains, but not systems with Corridor Curtains).

In systems with inlet curtains, it may be necessary to delay switching on some or all of the fans until the curtain has opened to the required position. (Switching on the fans too soon may result in the curtain getting stuck.)

Entries in the Table look something like :

DEVICE	WAIT
FAN1	NO

With this setting, this fan bank can be switched on as and when required, as determined by the Control Table, according to temperature.

OR it may look like :

DEVICE	WAIT
FAN3	YES

With this setting, the fan bank cannot be switched on until the Inlet has opened to the appropriate position.

That is - if temperature rises such that Fan 3 is needed, first the Inlet/Curtain is opened to allow for the extra air

which will be drawn by Fan 3, then Fan 3 is switched on.

The delay is only effective when switching the fan ON.

If temperature falls (so Fan 3 is not needed any more), Fan 3 is switched off at the same time that the curtain starts to close.

## Corridor Control Unit

This setting is only relevant in systems where air is drawn from a shared corridor with curtains.

The Control Settings : menu item looks something like:

<b>CORRIDOR CTRL UNIT:           0</b>
--

Several systems may draw air from a single corridor. One of the units on this corridor will have an additional program for control of the corridor heaters, curtains, cool cells.

The other units must send information about how much air they require, so that the corridor control unit can open the curtain the appropriate amount.

### Example :

Dicam units 1, 2, 3 and 4 draw air from the same corridor. Unit 4 has the extra corridor control program.

In that case, in Units 1, 2 and 3, set Corridor Control Unit = 4.

If the unit does not draw air from a shared corridor, leave the Setting as Corridor Control Unit = 0.

## Curtain Table

If the room has it's own Inlet/Curtain, this is in Control Settings. If the unit is a Corridor Control Unit, it is in Configuration : Corridor.

The menu looks something like :

PT	VOLUME	CURTN
1	0	0%

The Table is a series of points, each with a Volume and a Curtain Position.

The program works out intermediate points automatically as required.

Before you alter the Curtain Table, first make sure the Fan Volume Table is set up with your fan volumes. The add up the Fan Volumes to get the total volume needed.

### Example :

DEVICE	VOLUME
FAN1	4000
FAN2	10000
FAN3	10000
FAN4	20000

In this example, the total fan volume = 44,000

### Example :

PT	VOLUME	CURTN
1	0	0%
2	44000	100%

In this example, the curtain is closed for 0 volume, and fully open when the volume needed is 44000. If the volume needed at a particular time is 22000, the curtain would be 50% open.

The "volume" comes from the Fan Volume Table, and the speed of each of the fans at any particular time.

For example, if Fan 2 has a Fan Volume Table value of 10000, and it is running at half speed, it is counted as 5000.

If the controller has its own air inlet/curtain, positioning is based on it's own air volume.

If it's a Corridor Control Unit, positioning is based on the average of the volumes needed by the units the corridor is supply air to.

If the system has passive air inlets for low volumes, and only opens the curtains for higher air volumes, you may want to leave the curtain shut for low volumes.

### Example :

PT	VOLUME	CURTN
1	10000	0%
2	44000	100%

The Curtain Table doesn't have to be a straight line between just two points :

### Example :

PT	VOLUME	CURTN
1	10000	0%
2	20000	25%
3	44000	100%
4	-----	

In this example, the curtain is closed until a volume of 10,000, open progressively to 25% up to 20,000, then opens fully up to 44,000.

The Curtain Table allows up to 10 points. Points you don't need should be left unset - Volume set to [-----] as point 4 in this example.