

# iCon

## Cooling (Advanced Setup)

### Ver 18.06.00

#### Title Page

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## 1. Cooling

### **Overview:**

Any sensor within the system has the ability to control both the heating & cooling of a zone.

The system must be informed that cooling is required. This is achieved by setting parameter 3 in the Environmental settings.

Secondly, each zone must be allocated a Deadband (DB) . This is to ensure heating and cooling do not conflict. This is achieved by setting Deadband value in the Zone Profile.

The system can be used to activate passive cooling (Zone Temp above SP+DB) or activate cooling (Zone Temp above SP+DB+F1/2/3)

### **Cooling Operation**

Cooling is activated when the zone temperature goes above SP + DB,

Cooling can either be enable / disabled at the sensor – see sensor section below.

If two levels of cooling devices are installed e.g. Passive Cooling & Active Cooling, the system can be configured in the following manor.

Passive Cooling

Activated above Zone SP + DB

Active Cooling

Activated above Zone SP + DB + F1

Activated above Zone SP + DB + F2

Activated above Zone SP + DB + F3

F1, F2, F3 can be used to bring in more devices or increase fan speed.

## Configuring Cooling on the system - Steps a & b & c

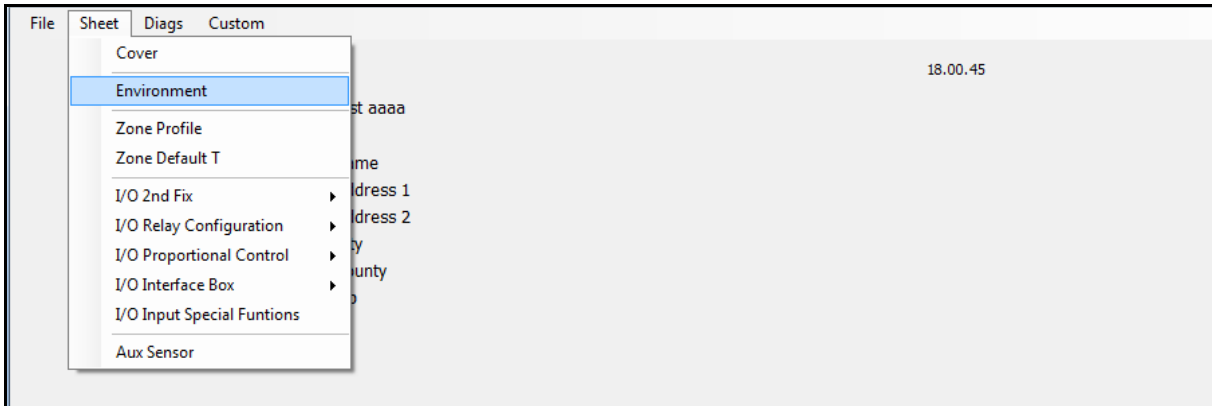
### Comment:

The system must be informed that cooling is required. This is achieved by setting parameter 3 in the Environmental settings.

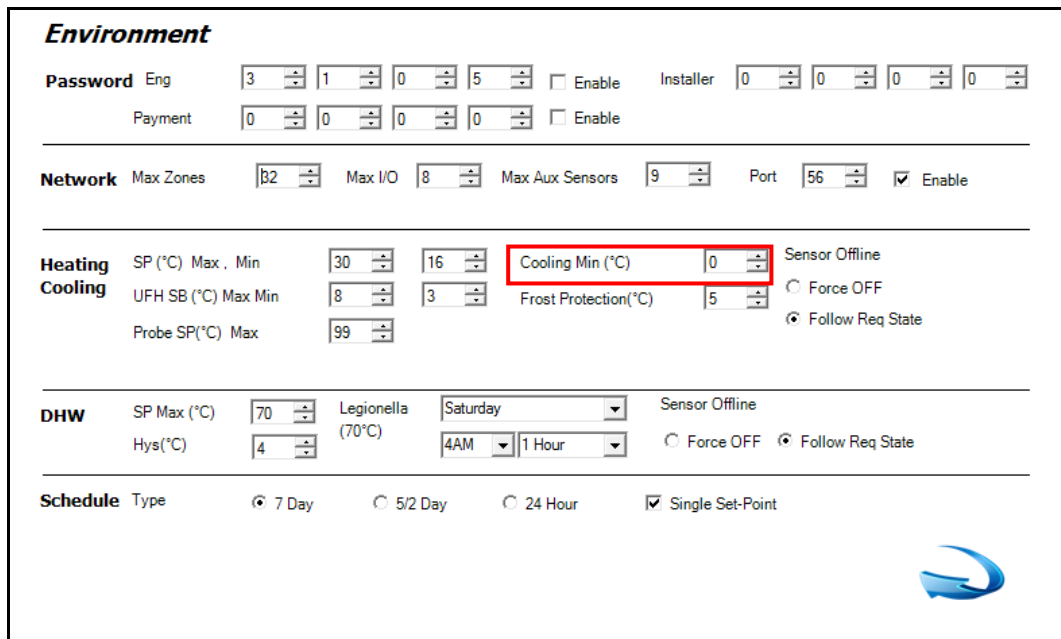
### a) Overall System Cooling Setting - Environmental setting

#### Via CM Application

1. Select Environment Under Config. tab



2. Enter the min cooling cut of point



The screenshot displays the 'Environment' configuration screen. The 'Cooling Min (°C)' field is highlighted with a red box and set to 0. Other fields include 'Password Eng' (3, 1, 0, 5), 'Payment' (0, 0, 0, 0), 'Network' (Max Zones: 32, Max I/O: 8, Max Aux Sensors: 9, Port: 56), 'Heating' (SP Max: 30, Min: 16), 'Cooling' (UFH SB Max Min: 8, 3; Frost Protection: 5), 'DHW' (SP Max: 70, Hys: 4; Legionella: Saturday, 4AM, 1 Hour), and 'Schedule' (7 Day, Single Set-Point). A blue arrow icon is visible in the bottom right corner.

### **Comment:**

This Min Cooling valve serves 2 functions;

- a) Informs the system, that there is cooling required  
(Sensor now display an additional screen - cooling enabled)
- b) Set the min cooling point, below which cooling will not be allowed.  
(Even if the occupant adjust their zone SP very low and the zone temperature reaches above SP+DB (Set Point and Dead Band), cooling will not activate if it is required below this min valve)

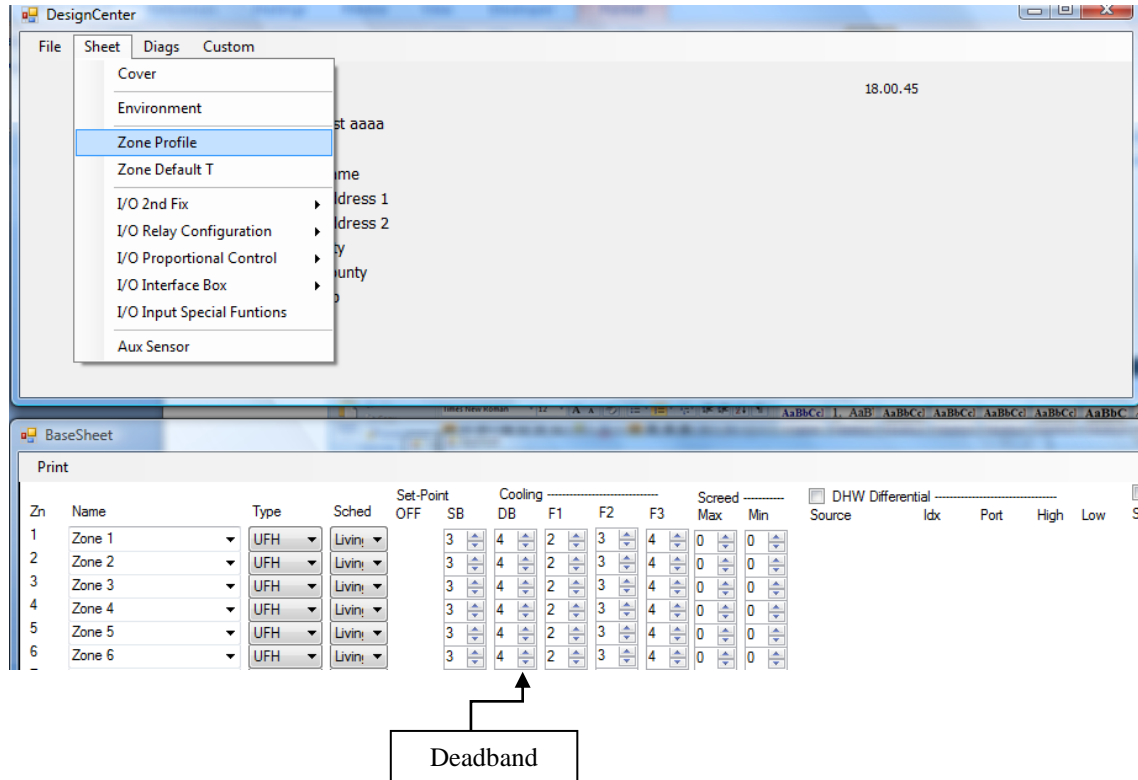
## b) Setting the individual zone cooling activation threshold level – Deadband

### Comment:

Each zone has the ability to have a separate Deadband Value  
 This Deadband value ensures heating and cooling do not conflict.

### Via PC Application

In Zone Profile



The screenshot shows the DesignCenter software interface. The 'Zone Profile' menu is open, listing options like Cover, Environment, Zone Profile, Zone Default T, I/O 2nd Fix, I/O Relay Configuration, I/O Proportional Control, I/O Interface Box, I/O Input Special Functions, and Aux Sensor. Below, the BaseSheet table displays configuration for six zones. A callout box labeled 'Deadband' points to the 'DB' column in the 'Cooling' section of the table.

Zn	Name	Type	Sched	Set-Point		Cooling			Screed		DHW Differential						
				OFF	SB	DB	F1	F2	F3	Max	Min	Source	Idx	Port	High	Low	S
1	Zone 1	UFH	Livin <sub>1</sub>	3	4	2	3	4	0	0							
2	Zone 2	UFH	Livin <sub>2</sub>	3	4	2	3	4	0	0							
3	Zone 3	UFH	Livin <sub>3</sub>	3	4	2	3	4	0	0							
4	Zone 4	UFH	Livin <sub>4</sub>	3	4	2	3	4	0	0							
5	Zone 5	UFH	Livin <sub>5</sub>	3	4	2	3	4	0	0							
6	Zone 6	UFH	Livin <sub>6</sub>	3	4	2	3	4	0	0							

### Note: If DB Set to -1, this zone will ignore cooling

If DB set to “-1”: Zone does not allowing cooling


Note Sensor still can say CL , but at console the system will force Sensor Display back to “Sch”

**Via Console**

- Engineering Menu
- Zone Set Points

**Engineering**


<p><b>Configuration</b></p> <p>Environment</p> <p>Zone Type</p> <p><b>Zone Setpoints</b></p> <p>Zone Default T</p>	<p><b>Diagnostics</b></p> <p>Comms</p> <p>IO Status, Emulation</p>	<p><b>System</b></p> <p>Service History</p> <p>Zone Status</p> <p>Installer Manual</p> <p>Configuration</p> <p>Exit</p>
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**Zone Set-Points**

Zn	Zone Label	Space .....				Screed....	
		DB	F1	F2	F3	Max	Min
1	Zone 1	4	2	3	4	0	0
2	Zone 2	4	2	3	4	0	0
3	Zone 3	4	2	3	4	0	0
4	Zone 4	4	2	3	4	0	0
5	Zone 5	4	2	3	4	0	0
6	Zone 6	4	2	3	4	0	0
7	Zone 7	4	2	3	4	0	0
8	Zone 8	4	2	3	4	0	0

1-8    9-16    17-24    25-32



c) **Configuring relays:**

**Comment:**

Any relay can be configured to be activated by the following list.

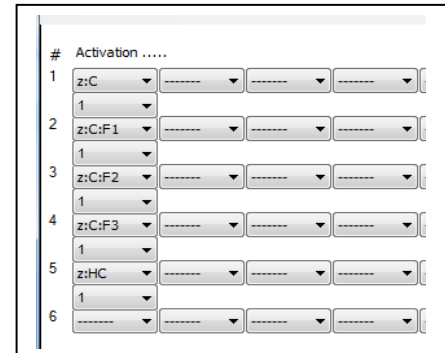
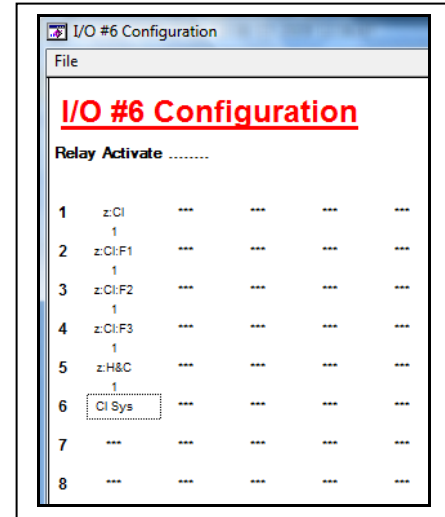
**Via CM Application**

In CONFIG.

- c CI **Zone Air Cooling**  
Zone temperature is greater than the Set-Point (SP) plus the A/C Deadband
- | CI Fan 1 **Zone Air Cooling Fan 1**  
Zone temperature is greater than the Set-Point (SP) plus the Deadband plus the CI Fan 1 Offset
- || CI Fan 2 **Zone Air Cooling Fan 2**  
Zone temperature is greater than the Set-Point (SP) plus the Deadband plus the CI Fan 2 Offset
- ||| CI Fan 3 **Zone Air Cooling Fan 3**  
Zone temperature is greater than the Set-Point (SP) plus the Deadband plus the CI Fan 3 Offset
- & Z-H/C **Zone Heating & Cooling**

**ANY** zone calling for heat when **NO** zone is calling for cooling OR, **ANY** zone is calling for cooling.

(Note: Cooling has priority)



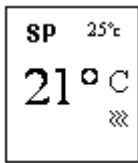
## Cooling at Sensor

Pressing the Mode key will change the Sensor State from

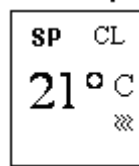
- Timer (Heating Only) to
- Timer (Heating & Cooling – when cooling is enabled at the console by setting to cooling Minimum setting to a value greater than “0”) to
- STOP to
- DISABLE.

As the mode key is presses the display will appear as follows:

**Timer (Heating Only)**

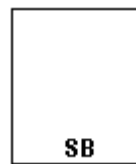


**Timer (Heating & Cooling )**

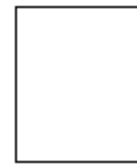


“CL” symbol is displayed momentarily.

**STOP  
(Heating in SetBack,  
Cooling OFF)**



**DISABLE  
(Heating in Frost  
Protection,  
Cooling OFF)**




## Using the Proportional Valve (PV) to manage cooling

*Example 1: 0-10v signal controlling FCU (Fan Coil Unit) using Hottest Zone*

**PV #1**

x-/PV #1	x-/PV #8
x-/PV #2	x-/PV #9
x-/PV #3	x-/PV #10
x-/PV #4	x-/PV #11
x-/PV #5	x-/PV #12
x-/PV #6	x-/PV #13
x-/PV #7	x-/PV #14
x-/PV #8	x-/PV #15
x-/PV #9	x-/PV #16



Output DAC: 0

Max: 10    Cutoff Min: 8    D.Max: 255

Min: 2    D.Min: 0

Min: 25    Max: 28    Source: Hottest Zone (d)

Type: SP + DB    Type: SP + DB + F3

Reference: Zone # 1 T : ErrCoolingNotEnabled

Interval(s): 20    Switch: [No Switch]

Cutoff Hi Enable     Enable Flow  
 Cutoff Lo Enable     Enable Dec  
 Emulate     Nt Low Lim  
 Cal

Up Rev

Reference	
Source	Hottest Zone
Min	SP+SB
Max	SP+SB+F3

### Overview:

The system will scan all the zone for the following criteria

- Zones with cooling enabled.
- Zones calling for cooling
- Zone with the largest  $\Delta T$  , between [SP+SB] and [Zone Temp]

Typically the system will use the hottest zone, however, if a person in another zone adjust down their Set Point (SP) to a low valve , because they required extra cooling, the system will use this zone as it's reference, because the system will recognise this zone has the larger  $\Delta T$  , between [SP+SB] and [Zone Temp]