

PV (Proportional Valve) (0-10v Modulation)

Eng Manual

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Title Page

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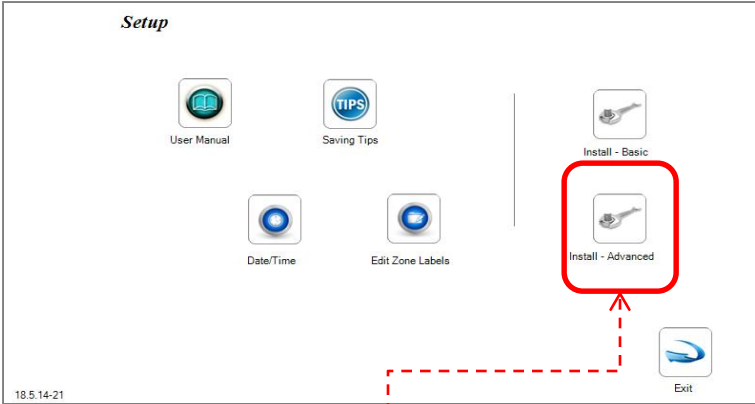
Clonmel

Co. Tipperary

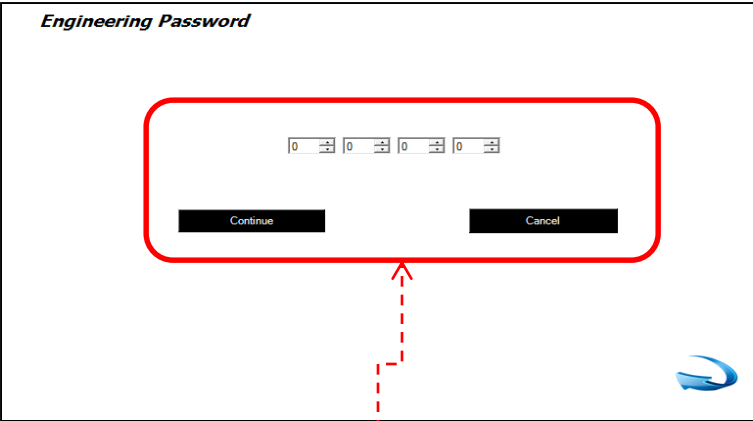
1. Access Engineering Menu



Step 1. Press Setup

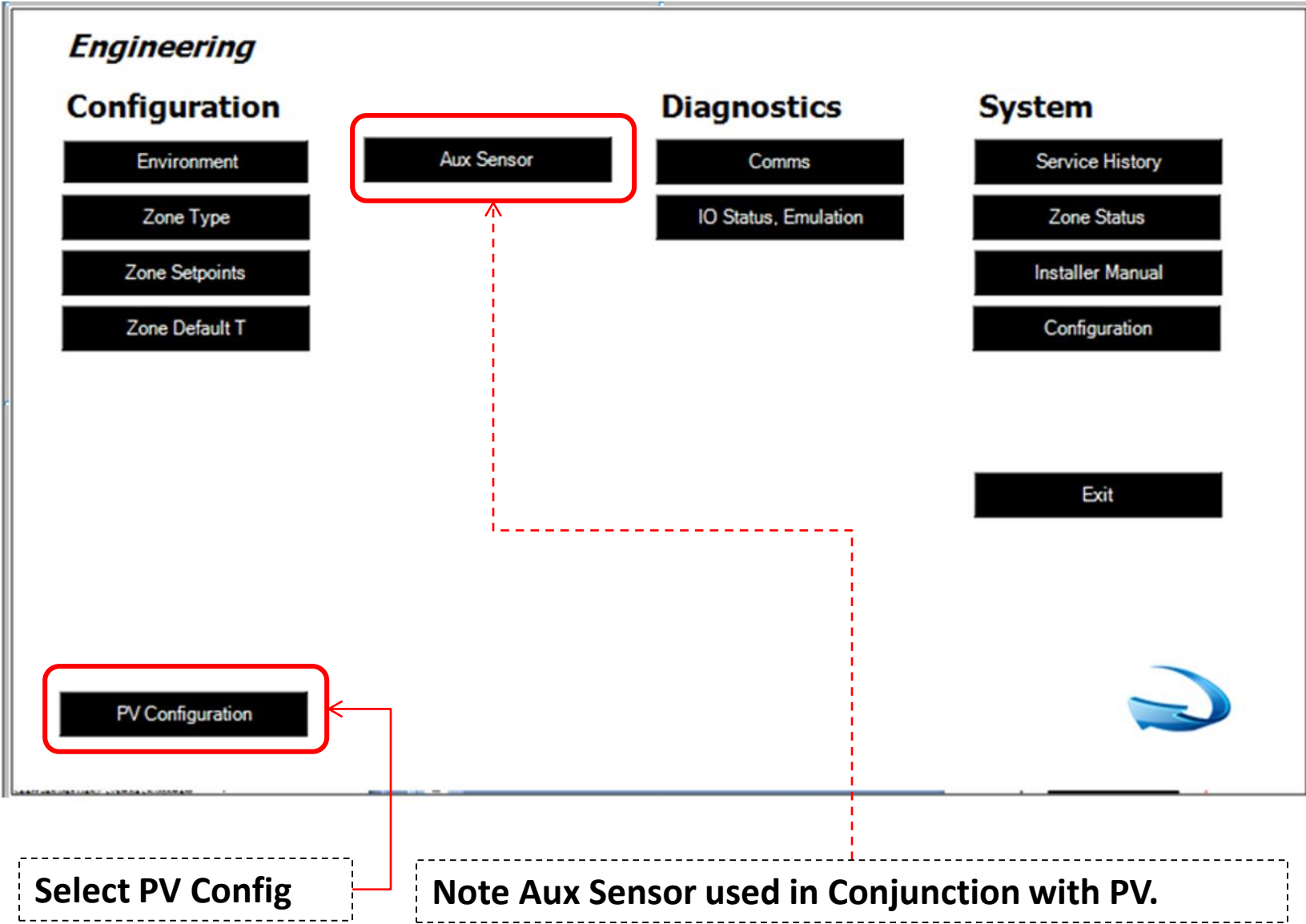


Step 2. Press - Install Advanced

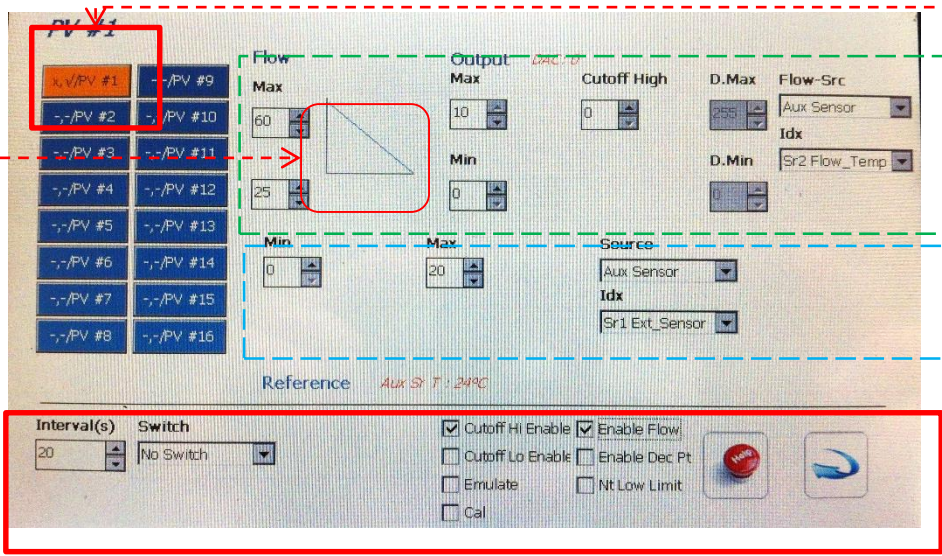


3. Enter code 3105 & Press Continue

2. Engineering Menu – PV (Proportional Valve) (0-10v Modulation)



3.1 Proportional Valve (0-10v Port) – Basic



Note Grey Out Fields
Not Adjustable

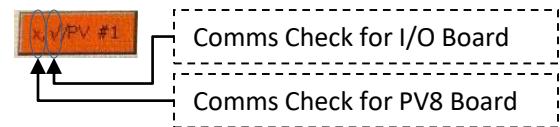
Basic
Only applies to PV output #1

Load Line B
Not applicable

Load Line A
Comment Only App Weather Compensation

Load Line Direction

The load line can be change from incline to decline by simply clicking on the load line image



1/0 #1 PV
Overview
Each R16 I/O (Logic Box) has a 0-10v modulation port.
Each 0-10v port can be configured for 1 x Weather Compensation

Load Line A		
Comment Only App Weather Compensation		
Flow Temp	Source	Aux Sensor
	Idx	Flow Sensor
	Min Flow	0-99
	Max Flow	0-99
	Cut Off	0-99
☐ Flow Temp: Enable or disable feed back from flow sensor		
Reference	Source	Aux Sensor
	Idx	External Sensor
	Min	0-99
	Max	0-99

Intervals Adjust to set the response time of the 01-0v port (Sec)
Min & Default setting 20 sec for each step

Switch Not available on Basic

CutOff Hi Enable Limit 0-10v output to a set Hi level e.g. 8v
Must be left check for cut off to operate

CutOff Lo Enable Limit 0-10v output to a set Lo level e.g. 2v
Must be left check for cut off to operate

Emulate: Enables the system to be tested before shipping

Cal: Enables 0-10v D(Desired) Max, D Min to be calibrate
Check box to edit cal,
Cal will be in effect irrespective of check box
Max o/p voltage is 10v

Enable Flow: Enables close loop feed back from a flow sensors

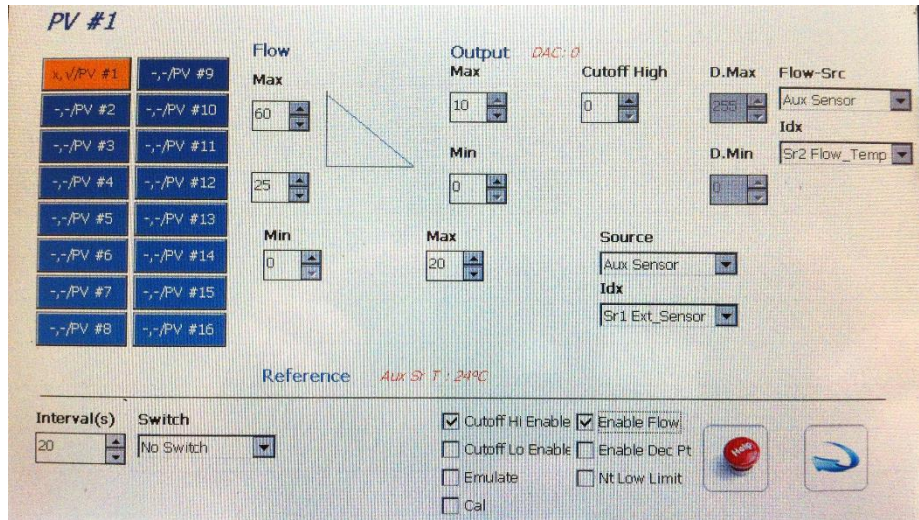
NT Low Limit Night Time Low Limit Not available on Basic

Additional Comments:

Error If problem encounter – Error note displayed

DAC (Digital Analogue Converter) Only for engineer reference:
Valve opens 0-10v in 255 digital steps

3.2 Proportional Valve (0-10v Port) – Basic - (Example Weather Compensation)

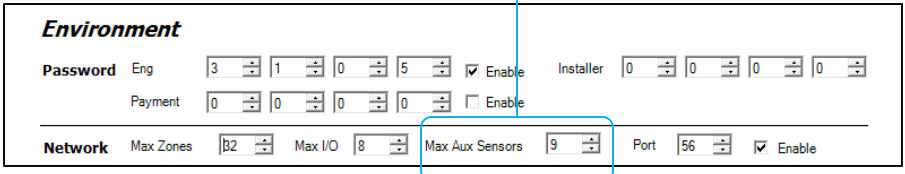


Operation:

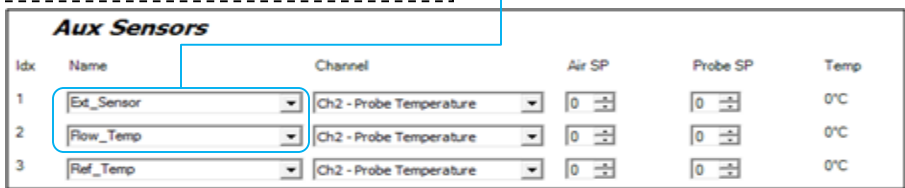
The system will now monitor the outside temperature and based on your load line setting, it will calculate a desired Flow Temperature (DF) . The system will now check the actual flow temp (FT) Depending on whether the DF is greater or less then the FT, the proportional valve (PV) output (0-10v) will either step open or close. Depending on (ΔT) the difference between DF and FT, the 0-10v output the modulate in at a faster or slower rate.
[$\Delta T > 3^{\circ}\text{C}$ Step = .8v] [$3^{\circ} > \Delta T > 2^{\circ}\text{C}$ Step = .4v] [$2^{\circ} > \Delta T > .5^{\circ}\text{C}$ Step = .2v]

- Sample Setup: Weather Compensation
- Step 1: Decide which I/O (Relay Board) will be managing the mixer (I/O#1-8)
- Step 2: Load Line A ,(Basic)
(Advanced System) load line B can be used if you are switching to e.g. cooling via the same mixer.
- Step 3: **External Temp** Set up your reference
Note you will need to assign items in **Environment Tab & Aux Tab**
- | | |
|--------|-----------------|
| Source | Aux Sensor |
| Idx | External Sensor |
| Min | 0 (Range 0-99) |
| Max | 20 (Range 0-99) |
- Sept 4 **Flow Temp**: Enable feed back from flow sensor
- Step 5: Set up your required flow temperatures
- | | |
|----------|-----------------|
| Source | Aux Sensor |
| Idx | Flow Sensor |
| Min Flow | 25 (Range 0-99) |
| Max Flow | 55 (Range 0-99) |
| Cut Off | 50 (Range 0-99) |

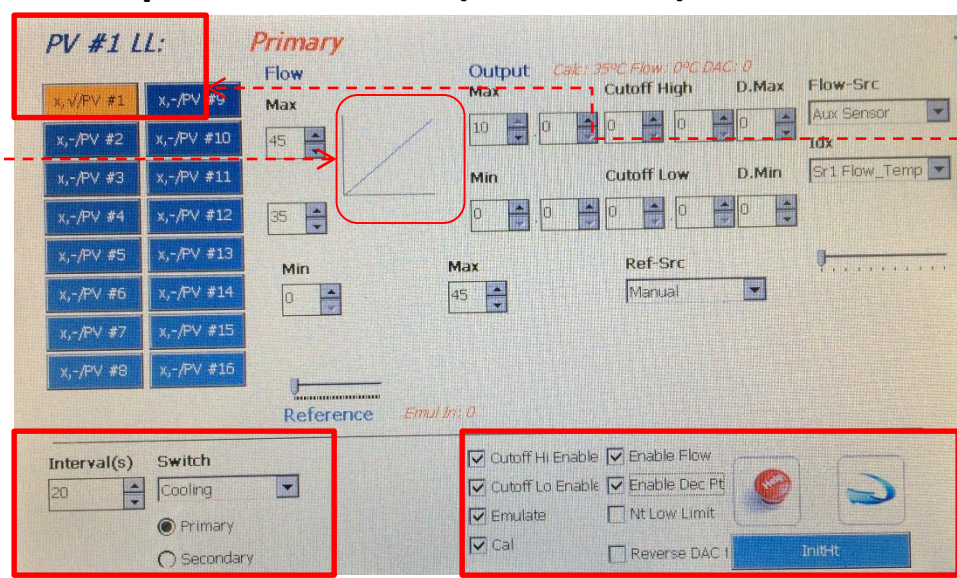
Environment Tab
Set the Max Aux Sensor to 2



Aux Tab
Set Idx 1 – External Sensor
Set Idx 1 – External Sensor



3.3 Proportional Valve (0-10v Port)- Advanced Overview



Load Line Direction

The load line can be change from incline to decline by simply clicking on the load line image

Slope

Adjusting Max Output or Cut Off High will affect the slope
i.e by using a Cut Off the o/p will be higher across the input range

Additional Comments:

Error	If problem encounter – Error note displayed
DAC	(Digital Analogue Converter) Only for engineer reference: Valve opens 0-10v in 255 digital steps
Pri/Sec	Primary & Secondary Load lines, alternate via switch

Intervals

Adjust to set the response time of the 01-0v port (Sec)
Min & Default setting 20 sec for each step

Switch

Activation to switch between Load Line A & Load Line B
Idx – Switch trigger
Options: No Switch / Cooling (As per Image)
Zone Relay Input

1/0 #1 LL (Load Line)

Overview

Each i/o (Logic Box) has a 0-10v modulation port.
Each 0-10v port can be configured for different application such as;

- Weather Compensation
- Cooling flow temperature modulation [Referencing the Return Temp]
- Cooling flow temperature modulation [Referencing the Zone]
- Cooling flow temperature modulation [Referencing the Hottest Zone]

CutOff Hi Enable Limit 0-10v output to a set Hi level e.g. 8v

Must be left check for cut off to operate

CutOff Lo Enable Limit 0-10v output to a set Lo level e.g. 2v

Must be left check for cut off to operate

Emulate:

Enables the system to be tested before shipping
Note Fast DAC Response for test
Note Physical 0-10v output not update in this mode

Cal:

Enables 0-10v D(Desired) Max, D Min to be calibrate
Check box to edit cal,
Cal will be in effect irrespective of check box
Emulation must be switch OFF during cal.
Use sensor to adjust SP to move the DAC output

Enable Flow:

Enables close loop feed back from a flow sensors

Enable Dec Pt:

This enable decimal point values

NT Low Limit

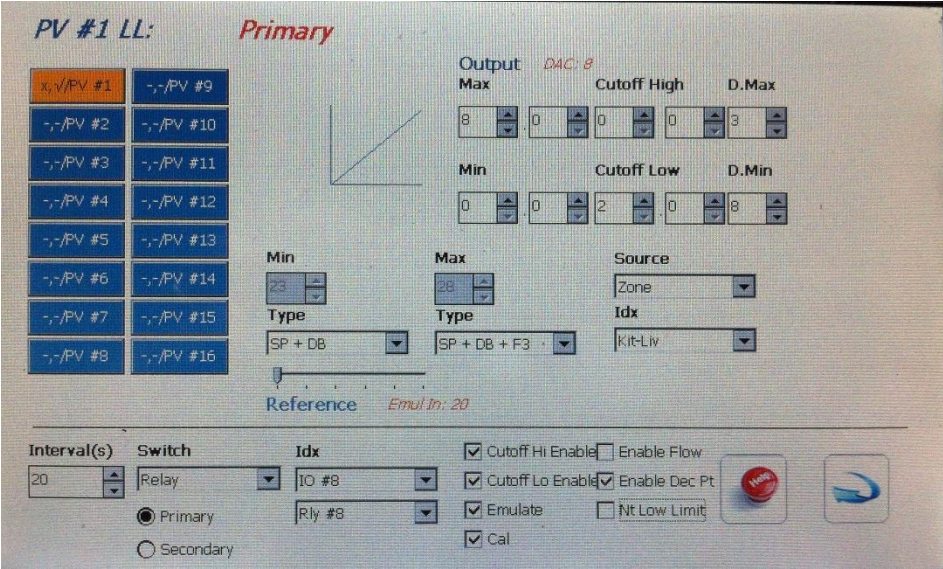
Night Time Low Limit (Display at Output Low)
This value (e.g. 2v) will override the 0-10V at set times
(Note Night Time Sch Cl – Enabled in Environment)
(Enable by end user in Advance Zone settings)
(NT Check Box & Value Hidden - Check NT to see value)

Reverse DAC:

Use only for cooling via Underfloor Pipework
Typically the 2nd Load Line is use for 0-10 control on FCU (Fan Coil Unit) cooling.
However the cooling can be via the uf pipe work.
For cooling via uf pipe, the DAC needs to be in reverse.
Reference is Flow Temp

If Actual flow is **above** Calculated Flow, Mix Opens allows more **cold** water
If Actual flow is **below** Calculated Flow, Mix Closes allows less **cold** water
(Without Reverse DAC, the mixer operate normally (for **Hot** Water)
(i.e if AF>CF =Close Mixer to reduce the **HOT** water flow)
(i.e.if AF<CF= Open Mixer to Increase the **HOT** water flow)

3.4 Proportional Valve (0-10v Port)- Advanced Example – Cooling via FCU (LL1)



Load Line A		
Comment	Typical App Cooling Modulation Ref Individual Zones	
Reference	Source	Zone
	Idx	Kitchen
	Min	SP+DB
	Max	SP+DB+F3
☐ Flow Temp:	Enable or disable feed back from flow sensor Normally disable for e.g. FCU	

Load Line B		
Comment	Typical App Cooling Modulation Ref Hottest Zones	
Reference	Source	Hottest Zone (dt)
	Idx	(n/a)
	Min	SP+DB
	Max	SP+DB+F3
☐ Flow Temp:	Enable or disable feed back from flow sensor Normally disable for e.g. FCU	

Hottest Zone (dt)
The system is intelligent, it first finds the hottest zone and uses it Delta Temp (dt) difference between it's Room Temp & Room SP+DB, to decide mix o/p

3.5 Proportional Valve (0-10v Port)- Advanced Example – Heating via UFH Pipe work (LL1)

PV #1 LL:

Primary

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

Flow
Max

45

35

Min

0

Output
Max

10

Min

0

Max

p

Calc: 0°C Flow: 0°C DAC: 0

D.Max

255

D.Min

0

Flow-Src

Aux Sensor

Idx

Sr1 Flow_Temp

Flow
Sensor
Required

Source Manual
(Adjusted by End User at
Mode Screen)

Source

Manual

O/P Flow Range 35°C to 45°C

Reference Manual: 0

Interval(s)

20

Switch

Cooling

Primary

Secondary

☐ Cutoff Hi Enable	☒ Enable Flow
☐ Cutoff Lo Enable	☐ Enable Dec Pt
☐ Emulate	☐ Nt Low Limit
☐ Cal	☐ Reverse DAC for Cold Water

Select
✓ Enable Flow

Switch to Secondary Load Line:
Cooling

0-10v: Heating Setup (Load Line 1)

3.6 Proportional Valve (0-10v Port)- Voltage Steps

Results: In steps of .8, .4, .2 +/- volts or Full Open/Closed								
IF DT>5	IF PT> MPT	IF Dt>3	IF 3>Dt>2	IF 2>Dt>.5	IF -.5<Dt>.5	IF2 <Dt<-.5	IF- 3 <Dt<-2	IF Dt<-3
-	CLOSE FULL	-	-	-	-	-	-	-
-	CLOSE FULL	-	-	-	-	-	-	-
-	-	-.8 VOLTS	-	-	-	-	-	-
-	-	-.8 VOLTS	-	-	-	-	-	-
-	-	-.8 VOLTS	-	-	-	-	-	-
-	-	-	-.4 VOLTS	-	-	-	-	-
-	-	-	-.4 VOLTS	-	-	-	-	-
-	-	-	-	-.2 VOLTS	-	-	-	-
-	-	-	-	-.2 VOLTS	-	-	-	-
-	-	-	-	-	NO ACTION	-	-	-
-	-	-	-	-	-	+.2 VOLTS	-	-
-	-	-	-	-	-	+.2 VOLTS	-	-
-	-	-	-	-	-	-	+.4 VOLTS	-
-	-	-	-	-	-	-	+.4 VOLTS	-
-	-	-	-	-	-	-	-	+.8 VOLTS
-	-	-	-	-	-	-	-	+.8 VOLTS
-	-	-	-	-	-	-	-	+.8 VOLTS
OPEN FULL	-	-	-	-	-	-	-	-
OPEN FULL	-	-	-	-	-	-	-	-

Closed Loop Control

4. Aux Sensors

Aux Sensors

Idx	Name	Channel	Set Point #1	Set Point #2	Temp
1	Ch_Sensor	Ch2 - Probe Temperature	0 -5	0 -5	0°C
2	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C
3	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C
4	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C
5	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C
6	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C
7	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C
8	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C
9	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C
10	Flow_Temp	Ch2 - Probe Temperature	0 -5	0 -5	0°C

Overview:
The Aux sensors are typically used in conjunction with the 0-10v Proportional Valve (PV)

Typical Application
External Weather Compensation
Cooling flow temperature modulation
Differential temperate control

Aux Sensors		
Idx	Identification Number	
Name	External	(External Sensor)
	Flow	(Flow Sensor)
	Ref	(Reference Sensor)
	Temperature	(General – Temperature Sensor)
Channel	Ch2 – Probe Temp (Default Reference)	
	Ch1 – Air Temp	
Set Point #1 /2	Set Point temp for Ch1 (Air) & Ch2 (Probe)	
Temp	Actual measured temp	

5. Schedule Cooling Max

End User

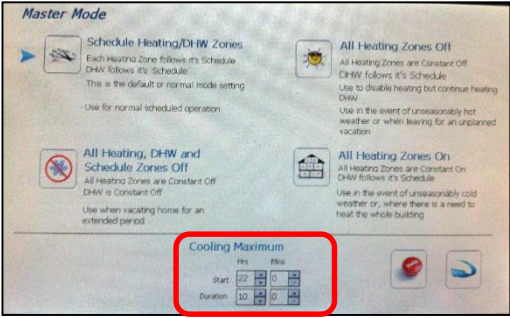
- **Start Time**
- **Duration in Hr.**

a) **Master Mode: Set Cooling Max**

Cooling Maximum is applied during the period defined by the Start time and Duration.

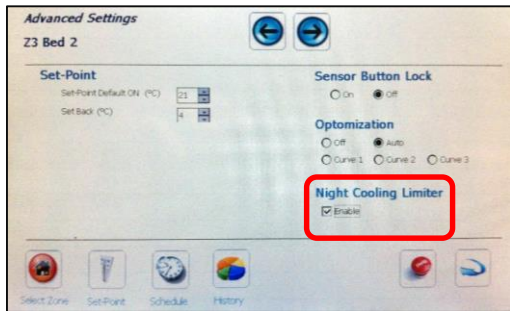
Note: Only active when it goes through a transition period

Default Time 23 Hr Duration 5 Hr

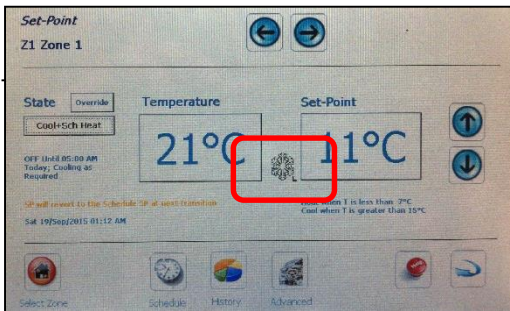


b) **Individual Zone Advance settings**

- **Enable Night Time Max Cooling**

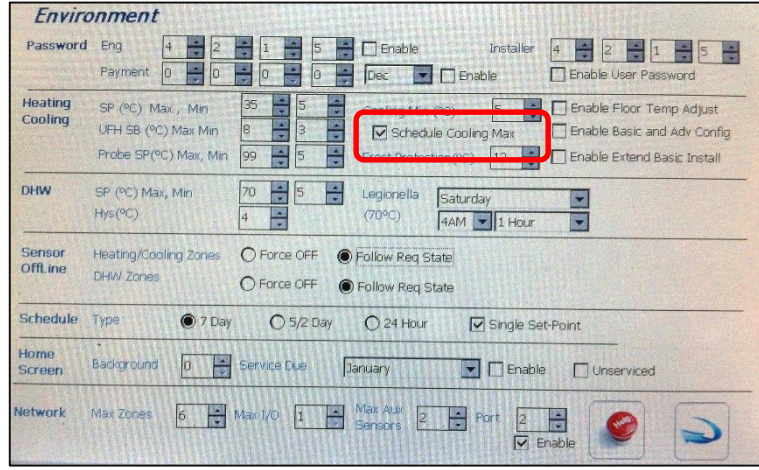


c) When active: "L" (Limiter) displayed beside Cooling symbol

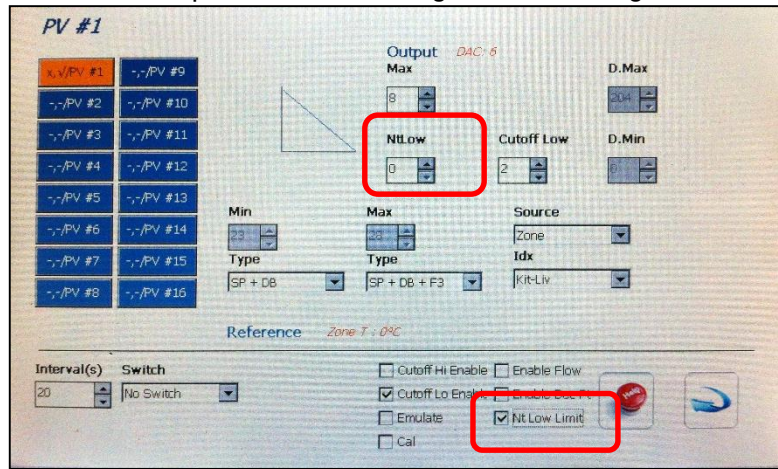


Engineering Enable

1. Night Time Cooling Maximum available with PV Advance Module
2. Cooling Maximum must be enabled. (Set in Environment Tab in Eng Mode)



3. The 0-10v output is held at the Night Time Cooling Max value set in the PV screen



- Note:
- a) If set to 0 , the NT Cooling Max will be 0v (no cooling)
 - b) Check box is only use to display the value
 - c) NT Cooling is enable or Disable by the end user in Zone Advance Settings

6.1 FCU assist ufh ref Diff

LL1 setup as Cooling (as usual)

PV #1 LL: *Primary*

x./PV #1

x./PV #9

x./PV #2

x./PV #10

x./PV #3

x./PV #11

x./PV #4

x./PV #12

x./PV #5

x./PV #13

x./PV #6

x./PV #14

x./PV #7

x./PV #15

x./PV #8

x./PV #16

Min

23

Type

SP + DB

Max

26

Type

SP + DB + F3

Ref-Src

Zone

Idx

Kit/Liv/Din

Interval(s)

20

Switch

Relay

Primary

Secondary

Idx

IO #1

Rly #12

☐ Enable Cutoff Hi

☒ Enable Cutoff Lo

☐ Emulate

☐ Cal

☐ Nt Low Limit

☐ Enable Flow

☒ Enable Dec Pt

☐ Enable RH Override

☐ Enable Dew Pt Override

☐ Reverse DAC for Cold Water

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Switch

Switch from LL1 : Cooling to LL2: FCU assist ufh with Heating

Output Max

DAC: 0 - Primary

8

7

Min

0

0

Cutoff

2

0

D.Min

0

D.Max

221

InitHt

Overview:

- Z1 Living
- FCU #1
- PV#1
- Load Line 1
- Cooling

Output Max

As specified by FCU Manufacture

Enable Cut off Lo

To allow exeat settings

Enable Dec Pt

To allow exeat settings

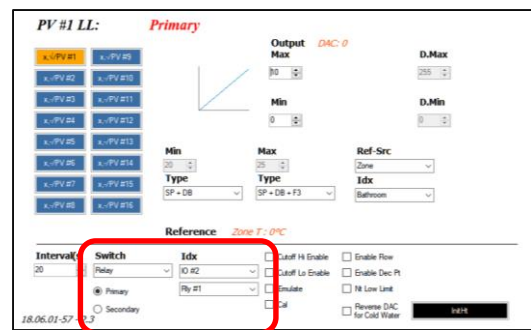
Nt Low Limit

Limit FCU o/p During Night Time

Check Box to View setting

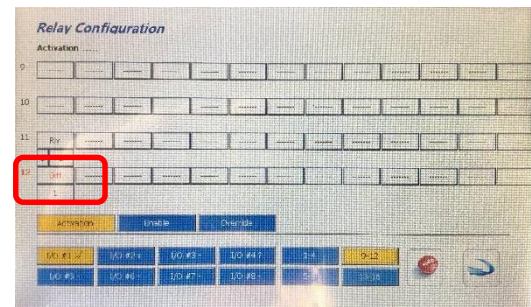
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Intelligent Control Systems

6.2 FCU assist ufh ref Diff

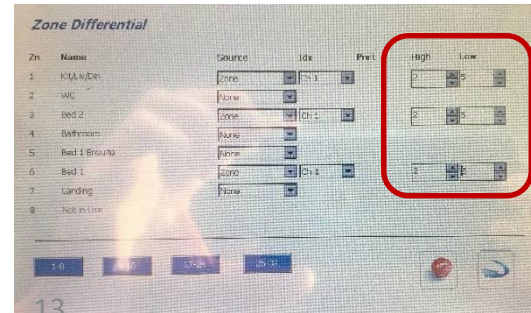


Load Line 1 (LL1)

Setup as normal to manage FCU Cooling
Switch to LL2 if Relay Active (e.g. R2:1)



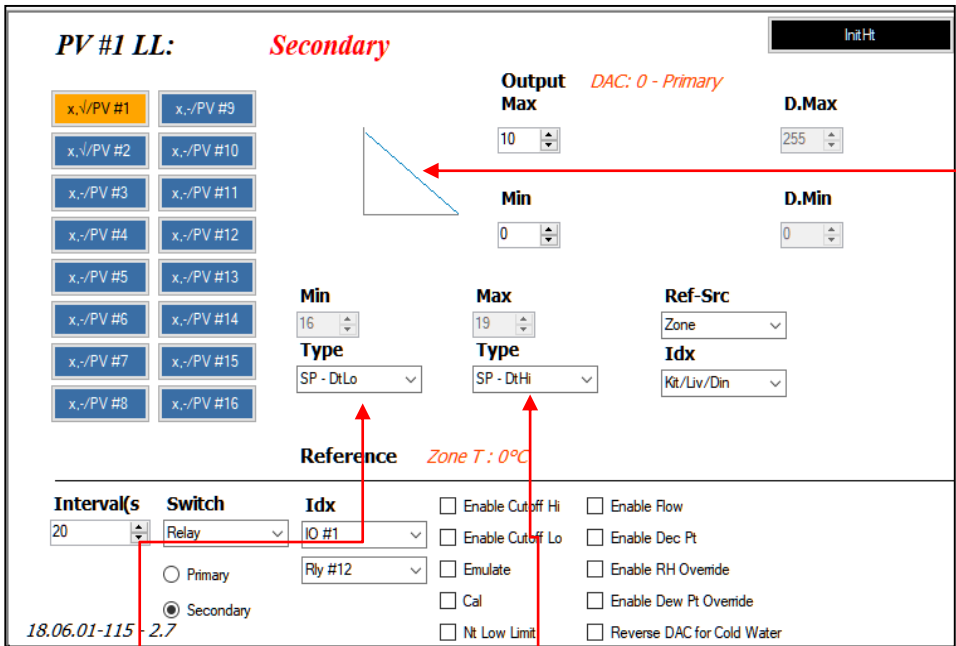
Relay 12: Activate by Diff of relevant zone 1
Zone Diff only operates during Sch ON Time



Differential set up in Zone Differential Module

Overview:

The FCU can be configure to use 2the 2nd load line to generate heat to assist the ufh , if the air them is below the SP-ΔT (DtLo)



Min Limit
SP-DtLo

Max Limit
SP-DtHi

Note: If Δt of 2 Required with 3 steps
In the Differential Setup page
Set DtHi to 2
Set DtLo to 5

Note: Relay 12: Activate by Diff of relevant zone 1
Zone Diff only operates during **Sch ON Times**

6.3 FCU assist ufh ref Diff
Diff Setup

Zone Differential

Zn	Name	Source	Idx	Port	Hi/Ed	Lo/St
1	Kit/Liv/Din	Zone	Ch 1		2	5
2	WC	None				
3	Bed 2	Zone	Ch 1		2	5
4	Bathroom	None				
5	Bed 1 Ensuite	None				
6	Bed 1	Zone	Ch 1		2	5
7	Landing	None				
8	Not in Use					

1-8

9-16

17-24

25-32

Hold

Zone Differential Setup

Hi/ Ed (High/ End)

Value : 2

*This valve must be the Smaller value –
End reference point for the 0-10v control*

Lo/St (Low / Start)

Value : 5

*This valve must be the Larger value –
Start reference point for the 0-10v control*

DHW Differential Setup

Hi = Larger value e.g.5

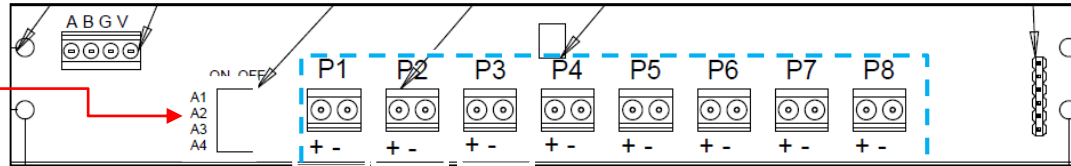
Lo = Lower Value e.g. 2

Addressing Operation

Comments :

PV8 Board Address no. 1..... manages PV outputs 1-8

Add 1 – PV 1-8



o/p 1-8

o/p Mirror any exiting R16



R16 -I/O#1



R16 -I/O#2



R16 -I/O#3

Comments :

If there are R16 and PV8 boards in a system, the 0-10v output signal will be mirrored by both
i.e. PV8 o/p #1 = R16 Address #1 , PV8 o/p #2 = R16 Address #2

Comments :

PV8 Board Address no. 2..... manages PV outputs 9-16

Comments :

PV8 Board Address no. 3..... manages PV outputs 9-16

Comments :

PV8 Board Address no. 4..... manages PV outputs 9-16

o/p 9-16



A1	
A2	
A3	
A4	

o/p 17-24



A1	☐
A2	☐
A3	☒
A4	☐

o/p 25-32



A1	
A2	
A3	
A4	

8: PV8 0-10v

Diagnostics- Hardware Test

Comments : Hardware Test

- Set address to 0000
- Power on the boards with no A & B attached
- Led 2 will remain ON in Red (No Comms)
- Now move A3 address switch to right -
- Now move A3 address switch to left (off position)
- Now move A4 address switch to right -
- This will prove the hardware 0-10v o/p are working

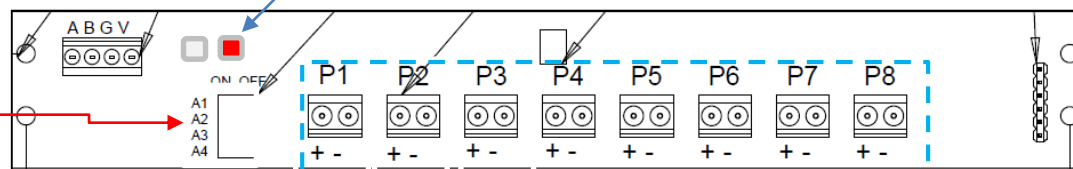
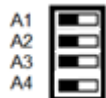
O/P voltage on all ports will be 10v

O/P voltage on all ports will be approx. 4v

O/P voltage on all ports will be approx. 8v

LED 2

Set address to
0000



Comments : Comms

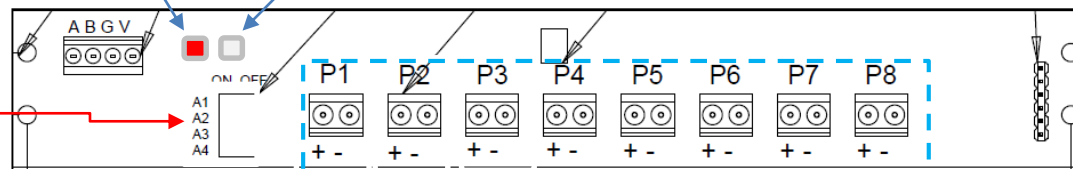
Set address to 0001 (A1 On)

- Power on the boards with A & B attached
- Led 2 will remain ON in Red until communication is received and then switches off.
- Led 1 will start flashing during communication: ON= Reiving Comms , Off=Transmitting Comms

LED 1

LED 2

Set address to
0001



8.1 : PV8 0-10v New layout with PV8 X 4 & Comms Notations

PV #1

PV #5

PV #2

PV #6

PV #3

PV #7

PV #4

PV #8

✓, ✓ /Mod #1

x, x /Mod #3

✓, x /Mod #2

x, x /Mod #4

Init-It

Output

Max

10

Min

0

DAC: 0 - Primary

D.Max

255

D.Min

0

Min

22

Type

SP + DB

Max

25

Type

SP + DB + F3

Ref-Src

Zone

Idx

Kit/Liv/Din

Reference

Zone T : 21°C

Interval(s)

20

Switch

No Switch

☐ Enable Cutoff Hi

☐ Enable Flow

☐ Enable Cutoff Lc

☐ Enable Dec Pt

☐ Emulate

☐ Enable RH Override

☐ Cal

☐ Enable Dew Pt Override

☐ Nt Low Limit

☐ Reverse DAC for Cold Water

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✓, x /Mod #2

Comms Check for I/O Board

Comms Check for PV8 Board

9: PV8 0-10v

Calibration

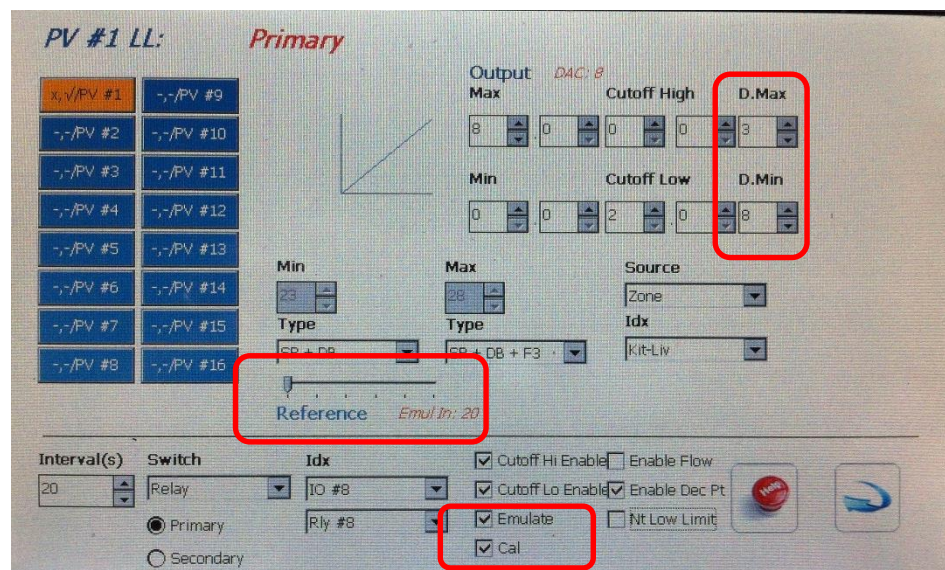
Description

For each 0-10v output, the Max & Min output voltage can be calibrated to suite the attached FCU(s) .

Outlined below is the TICS calibration to suit the FCU(s) resistance via touch screen GUI (Graphical User Interface)

This ensures the minimum and maximum voltage output levels correspond with requirements.

Access the require PV (Proportional Valve)



Steps:

1. Access PV (Proportional Valve) GUI via Engineer Password access.
 2. Select the require PV (Proportional Valve) (1-16 Available)
 3. With the FCU attached to the required 01-0v output , place a DVM (Digital Volt Meter) on the output and set the range to DC volts
 4. Check the "Cal" and "Emulate" functions on the screen
- The D. Min & D. Max can now be adjusted
5. Now calibrate the Min output voltage
 - a. Set Cut Off Low to 2 v (Dac=51)
 - b. Use the Emulate slider bar to move the output to its 1st increment setting
 - c. The system will see the min is 2v and try to o/p 2v
 - d. Now calibrate the mi to 2v
 6. Use the Emulate slider bar to move the output to its maximum setting
 7. Now calibrate the Max output voltage
 8. Once you are satisfied with the output voltage , uncheck the "Cal" and "Emulate" functions on the screen

Example: GMF-P2

FCU 1: 0-10v O/P Setup Kitchen / Living / Dining

Max o/p= 7V

PV #1

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

Output Max

7

DAC: 0

D.Max

178

NtLow

2

Cutoff Low

2

D.Min

0

Min

25

Type

SP + DB

Max

28

Type

SP + DB + F3

Source

Zone

Idx

Kit/Liv/Din

Reference Zone T : 0°C

Interval(s)

20

Switch

No Switch

☐ Cutoff Hi Enable

☐ Enable Flow

☒ Cutoff Lo Enable

☐ Enable Dec Pt

☐ Emulate

☒ Nt Low Limit

Help

- Step 2: Setup Cut Off Lo

Set Cut off to 2 (on All FCU)
- Step 3: Setup Nt Lo Limit

Set NT Cut off to 2 (on All FCU)

User has the ability to enable or disable
- Step 4: Setup Output Max

Set Output Max FCU)

Step 1: Setup source

Source Individual Zone

Idx: Select reference Zone e.g. Kitchen

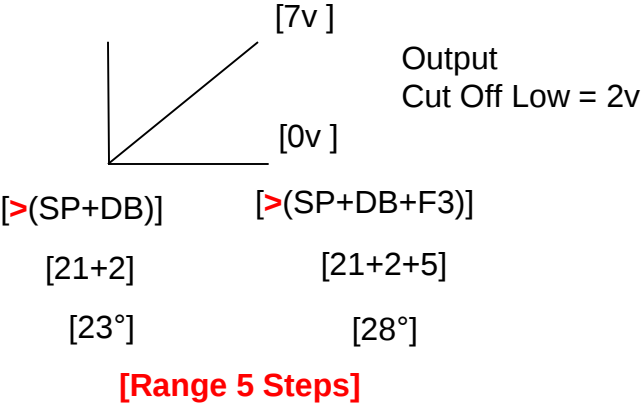
Range Between

[SP+DB] & [SP+DB+F3]

Note DB (Deadband) set to 2

(Set in Eng / Zone SP Tab)

0-10 o/p Operation



Example: Cambridge University - Charles Darwin- Cooling Via UF Pipework

PV #1 LL:

x./PV #1

x./PV #2

x./PV #3

x./PV #4

x./PV #5

x./PV #6

x./PV #7

x./PV #8

x./PV #9

x./PV #10

x./PV #11

x./PV #12

x./PV #13

x./PV #14

x./PV #15

x./PV #16

Secondary

Flow

Max

22

19

Min

25

Type

SP + DB

Output

Max

10

Min

0

Max

27

Type

SP + DB + F3

Source

Hottest Zone (dt)

Reference

Zone # 1 T : ErrCoolingNotEnabled

Interval(s)

20

Switch

Cooling

Primary

Secondary

Cutoff Hi Enable

Cutoff Lo Enable

Emulate

Cal

Enable Flow

Enable Dec Pt

Nt Low Limit

Reverse DAC for Cold Water

O/P Range

19°C-22°C

Calc: 0°C Flow: 0°C DAC: 0

D.Max

255

D.Min

0

Flow-Src

Aux Sensor

Idx

Sr1 Flow_Temp

Select

Enable Flow (Feedback)

Reverse DAC for Cold Water Operation

Example of Operation

Step 1: System identifies the Hottest Zone

Zone 3 (Hottest Zone) has the following Settings
SP = 20
DB = 4
F3 = 3

Step 2: System calculates the Desired Flow using Load Line

Ref Range [SP+DB=24] to [SP+DB+F3=27]
Room Temp = 27
Flow Temp range is 19C-22C
System calculate it needs a Desired Flow (DF)Temp of 19C

Step 3: System uses the Aux Flow Sensor as Feedback

Calculate Desired Flow Temp 19C
Actual Flow (FT) Temp 21C
System will starts opening 1-10 to send more cold water to pipework

Step 4: 0-10V Modulations

Depending on whether the DF is greater or less then the FT, the proportional valve (PV) output (0-10v) will either step open or close. Depending on (ΔT) the difference between DF and FT, the 0-10v output the modulate in at a faster or slower rate.
[$\Delta T > 3^{\circ}C$ Step = .8v] [$3^{\circ} > \Delta T > 2^{\circ}C$ Step = .4v] [$2^{\circ} > \Delta T > .5^{\circ}C$ Step = .2v]

 **ComeraghControls**
Intelligent Control Systems

UFH Initial Heat Up Sequence

Overview:

The UFH Initial Heat Up Sequence is used to slowly heat the scree over time

This operation will be carried out over 21 days after laying the cement screed or in accordance with the screed manufactures instructions, but at least 7 days in the case of anhydrite screed (BS EN 1264 4 2001)

Initial Heating applied to the primary curve (load Line) only

PV #1

Flow	Output	Max	Min	Ref-Src	Idx
x-iPV #1	x-iPV #3	22	10	Aux Sensor	
x-iPV #2	x-iPV #10				
x-iPV #3	x-iPV #11				
x-iPV #4	x-iPV #12				
x-iPV #5	x-iPV #13				
x-iPV #6	x-iPV #14				
x-iPV #7	x-iPV #15				
x-iPV #8	x-iPV #16				

Interval(s) Switch ☐ Cutoff Hi Enable ☐ Enable Flow ☐ Cutoff Lo Enable ☐ Enable Dec Pt ☐ Emulate ☐ No Low Limit ☐ Reverse DAC for Cold Water

Rev 2.1/2.1

Set-Up

Attached an Digital Sensor & Probe to the Flow Pipe

Set this Sensor up as an Aux Sensor. (ST - Stat Type =1, SR Sequence No. 1)

On Primary Load Line: Select "Enable Flow"

(This sensor will be use as feedback, to ensure the desired Flow Temp is assigned)

Attached Mix to the 0-10v port on the relevant I/O#

Now Press the INIT Button

Default Settings

Initial Days at Temperature

Final Days at Temperature

Total Day

Press the Initialize button to begin

Operation

One operational the system will track and display the following

- Start Date
- Days Running
- Current Temp
- Target Temp

Different Floor Types

Multiple different Init can be manage (Up to 16)

Separate Mixer and I/O required for each Init

PV - Initial Heat Up

This operation shall be carried out at least 21 days after the laying of the cement screed or in accordance with the manufacturer's instructions but at least 7 days in the case of anhydrite screeds (Bs en 1264 4 2001). Initial Heating applies to the Primary curve only.

Initial Days at Temperature (°C)

Final Days at Temperature (°C)

Total Days

Temperature will increase gradually after the initial heatup period of 3 days at 20°C to the Maximum Temperature of 25°C and will remain on for an additional 4 days.

Invalid Sensor Index.

Heatup initialized: 27/1/1
Days Running: 0
Current T: 0°C
Target T: 20°C

Revision Notes

Rev	(Date)	Changes
18.6.01.-126	(15-1-21)	Cooling F1,F2,F3 Triggered when temp is ">" (as before), but also now includes "=" FCU will active if the room temp is $> / = SP + DB + F1$ This ensure the User Visual indicator F1, F2 F3 , matches exactly FCU speed (DAC o/p) Setting Change DB=1, F1=1,F2=2,F3=3 (Previously DB=2, F1=0,F2=1,F3=3)
18.6.01.-134	(12-3-21)	Qty PV8 increased from 2 to 4