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CC200 PV - WEATHER COMPENSATION (CC200-SM-PV)
CC200 PV - ADVANCED (CC200-SM-PVA)

(REV 20.1.6+)

CRIOSU CONTROLS



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Introduction

Configuration 0-10v Proportional Valve (PV).

The system supports a total of 16 PV channels. The cc771 IO module supports 1 PV channel. The PV8 module supports 8 PV channels.

Module Requirements

Module Configuration

<input type="text" value="8 Zones"/>	<input type="checkbox"/> Digital Input Functions (CC200-SM-IF)
<input type="checkbox"/> Relay Config (CC200-SM-RC)	<input type="checkbox"/> Zone Differential (CC200-SM-DIFF)
<input type="checkbox"/> Relay Config Ext (CC200-SM-RCE)	<input type="checkbox"/> DHW Priority (CC200-SM-DHW-P)
<input type="checkbox"/> Relay Timers & Cycling (CC200-SM-RTC)	<input type="checkbox"/> Relative Humidity (CC200-SM-RH-DP)
<input checked="" type="checkbox"/> Cooling (CC200-SM-CL)	
<input checked="" type="checkbox"/> PV (CC200-SM-PV)	
<input checked="" type="checkbox"/> PV Adv (CC200-SM-PV_ADV)	
<input type="checkbox"/> VRF (CC200-SM-VRF)	
<input type="checkbox"/> Modbus Slave (CC200-SM-MBS)	
<input type="checkbox"/> Alarms (CC200-SM-ALM)	

Configuration Code: 142735516101216957340073



Help



Exit

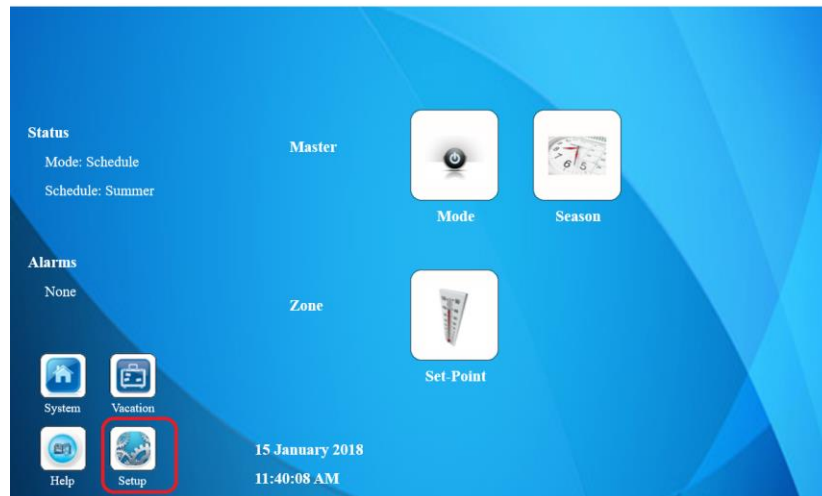
PV Advanced Features

The following feature are only accessible with the Advance PV Module

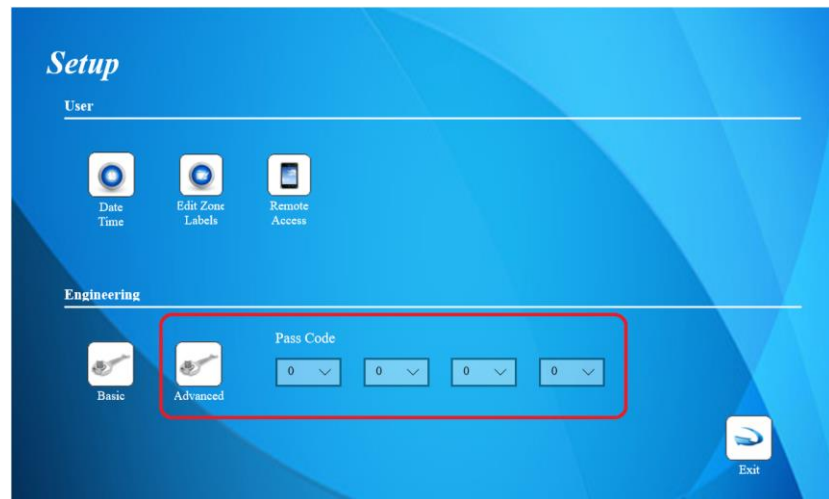
1. Flow Control
2. Reference Source Types:
 - a. Zone
 - b. IO/Port
 - c. Hottest Zone
 - d. Manual

Access PV Configuration

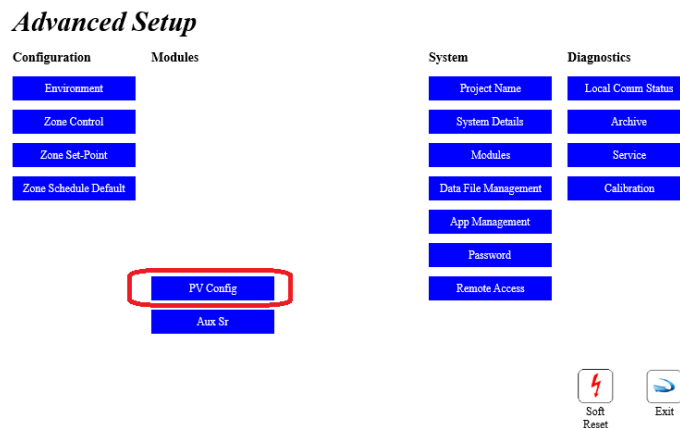
Step 1. Press “Setup” on the Home Screen



Step 2. Enter “Pass Code” and press “Advanced” on the Setup Screen



Step 3. Press “PV Config”



PV Configuration – Weather Compensation (CC200-SM-PV)

A Non-Feedback system uses a Reference Input to control a 0-10v Output.

Parameter settings are detailed in “Parameter Settings” Chapter.

PV Config


Status Initial Heatup

Output DAC: 0


Max	10	DAC Max	255
Min	0	DAC Min	0

Reference Aux SrErrNoFlowTemp

Min	Max	Source
24	29	Aux Sensor
		Idx
		Aux Sr #1
		Port
		Ch #1



Fan Coil Unit



Reference

PV Module Comms x
IO Module Comms x

Pv

1


Interval (sec)

20

Switch

No Switch

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

 Exit

Example – Basic Non-Feedback

Output DAC: 92 V: 3.61

Max	10	0	Cutoff High	8	0	DAC Max	255
Min	0	0	Cutoff Low	2	0	DAC Min	0

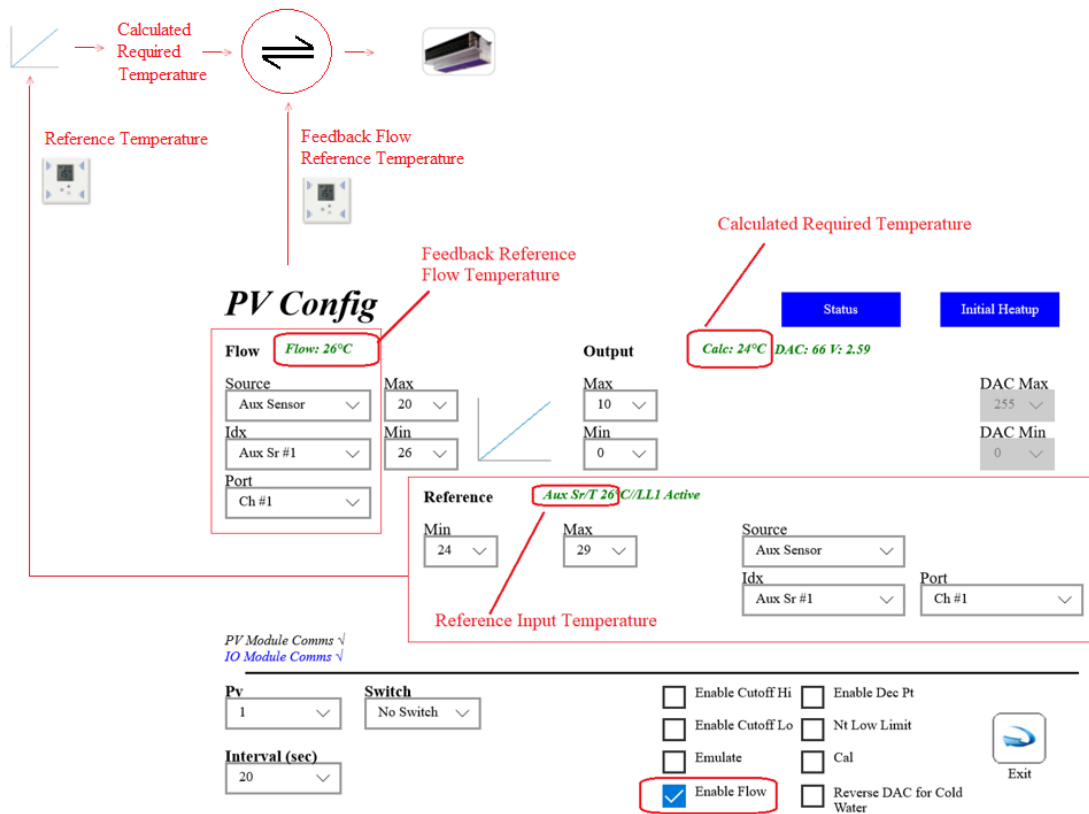
Reference Aux Sr/T 25°C/LL Active

Min	Max	Source
21	32	Aux Sensor
		Idx
		Aux Sr #1
		Port
		Ch #1

In this example an input T of 25°C (Aux Sensor #1 channel #1) will yield an output voltage of 3.6v (DAC 92)

PV Configuration - Advanced (CC200-SM-PV_ADV)

In the feedback system the 0-10v output is determined by comparing a calculated required output with a Flow Temperature.



The Output Voltage is reduced when the Flow Temperature is greater than the Calculated Temperature and increased when the Flow Temperature is less than the Calculated Temperature. The greater the difference the greater the change in the DAC.

Parameter settings are detailed in “Parameter Settings” Chapter.

Example - FCU with Max output of 7V

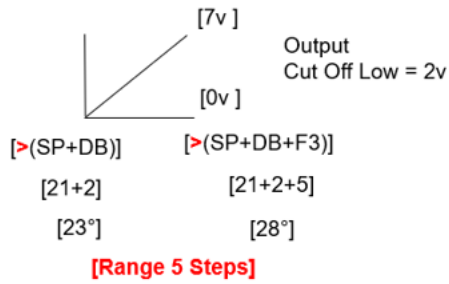
Step 2: Setup Cut Off Lo
Set Cut off to 2 (on All FCU)

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)

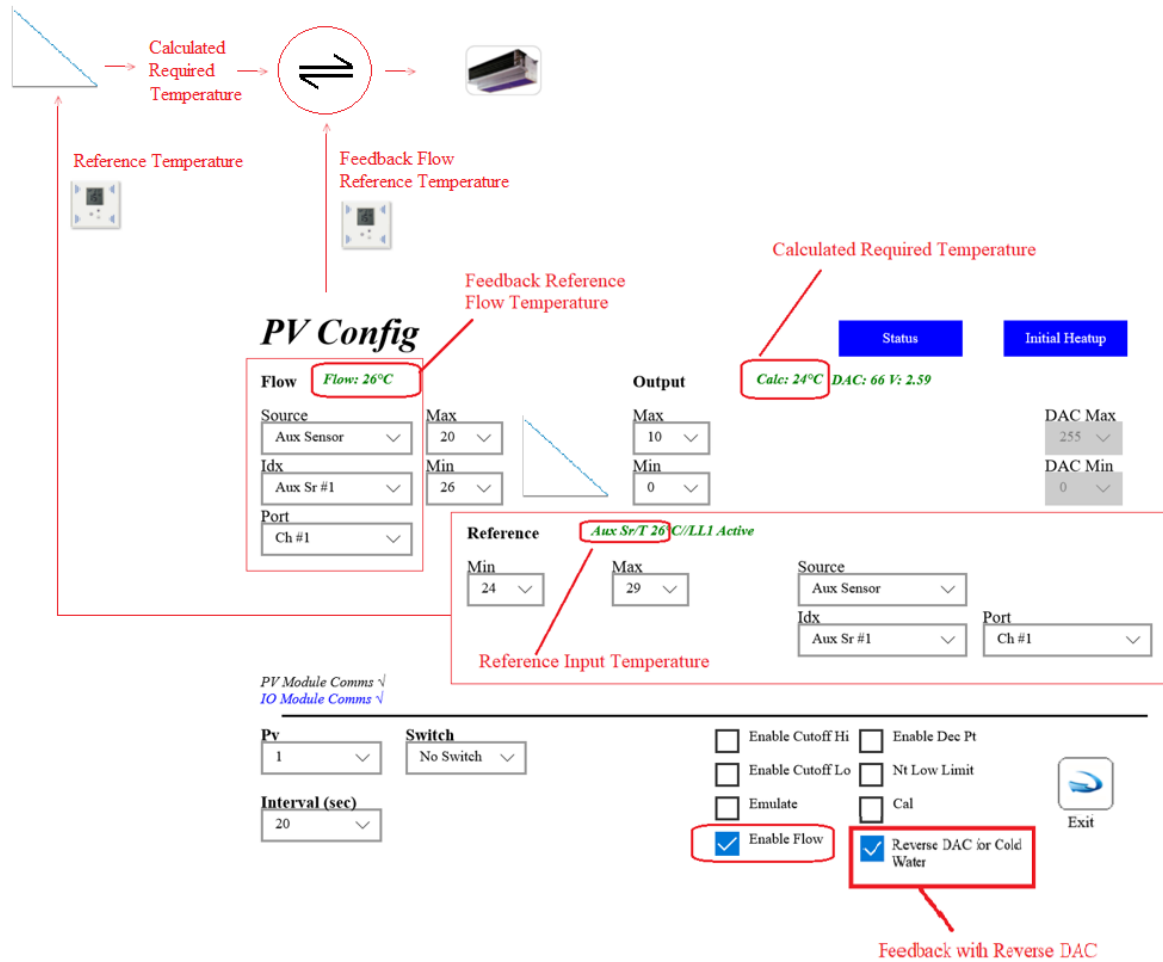
Step 1: Setup source
Source Individual Zone
Idx: Select reference Zone e.g. Kitchen
Range Between
[SP+DB] & [SP+DB+F3]
Note DB (Deadband) set to 2
(Set in Eng / Zone SP Tab)

0-10 o/p Operation



PV Configuration – Feedback System (Reverse DAC)

In the feedback system the 0-10v output is determined by comparing a Calculated Required Output with a Flow Temperature.



The Output Voltage is increased when the Flow Temperature is greater than the Calculated Temperature and decreased when the Flow Temperature is less than the Calculated Temperature. The greater the difference the greater the change in the DAC.

Parameter settings are detailed in “Parameter Settings” Chapter.

Example - Cooling via UFH Pipe work

PV Config

Load Line Angle
Status
Initial Heatup

Flow

Source: Aux Sensor (Max: 22)

Idx: Sr1 Flow_I (Min: 19)

Output Calc: 19°C Flow: 23°C DAC: 40

Max: 10

Min: 0

Real Time O/P

Reference Zone # 4 T : 31°C (LL2 Active)

Min: 27

Max: 30

Source: Hottest Zone (dt)

Type: SP+DB

Type: SP+DB+F3

DAC Max: 255

DAC Min: 0

Flow Sensor
Set To Aux
O/P Range 19°C-22°C
Load Line :
As per Image

Source : Hottest Zone
Range Sp+DB to
SP+DB+F3

PV Module Comms ✓
IO Module Comms ✓

Pv: PV #1

Interval (sec): 20

Switch: Cooling

Secondary

Enable Cutoff Hi

Enable Cutoff Lo

Emulate

Enable Dec Pt

Nt Low Limit

Cal

Enable Flow

Reverse DAC for Cold Water

Exit

Comment:
Locate the Aux sensor after Mixer

Select

- ✓ Enable Flow (Feedback)
- ✓ Reverse DAC for Cold Water Operation

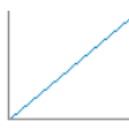
Parameter Settings

Reference Settings


Parameter	Description
Source, Idx	<p>Set the Reference input source:</p> <ol style="list-style-type: none"> Auxiliary Sensor (1 to 9) Zone (1 to 32) I/O, Port (IO 1 to 8 , Port 1 to 8. Only applies to the cc773 (R10i8) module). Hottest Zone (Automatically selects the hottest zone with cooling). Manual (The input is set in the Master Mode Screen when “Enable Floor Temperature Adjust” is enabled in the environment screen).
Max, Min	<p>The Max and Min limit boundaries for the Reference input.</p> <p>The Zone and Hottest Zone, Max and Min may be set as an absolute value or relative to the Zone Set-Point.</p> <div style="text-align: center;"> </div>

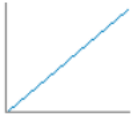


Output Settings

Output Calc: 26°C DAC: 204 V: 8



Max	<input type="text" value="10"/>	<input type="text" value="0"/>	Cutoff High	<input type="text" value="8"/>	<input type="text" value="0"/>	DAC Max	<input type="text" value="255"/>
Min	<input type="text" value="0"/>	<input type="text" value="0"/>	Cutoff Low	<input type="text" value="2"/>	<input type="text" value="0"/>	DAC Min	<input type="text" value="0"/>

Parameter	Description																																																
Max, Min (v)	Max and Min set the boundaries limits for the calculated output.																																																
Enable Dec Pt	<p>Check “Enable Dec Pt” add one decimal place.</p> <div style="border: 1px solid red; padding: 5px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Max</td> <td style="width: 15%;"><input type="text" value="10"/></td> <td style="width: 15%;"><input type="text" value="0"/></td> <td style="width: 20%;">DAC Max</td> <td style="width: 15%;"><input type="text" value="255"/></td> </tr> <tr> <td>Min</td> <td><input type="text" value="0"/></td> <td><input type="text" value="0"/></td> <td>DAC Min</td> <td><input type="text" value="0"/></td> </tr> </table> </div> <p> <input type="checkbox"/> Enable Cutoff Hi <input checked="" type="checkbox"/> Enable Dec Pt <input type="checkbox"/> Enable Cutoff Lo <input type="checkbox"/> Nt Low Limit <input type="checkbox"/> Emulate <input type="checkbox"/> Cal <input type="checkbox"/> Enable Flow <input type="checkbox"/> Reverse DAC for Cold Water </p>	Max	<input type="text" value="10"/>	<input type="text" value="0"/>	DAC Max	<input type="text" value="255"/>	Min	<input type="text" value="0"/>	<input type="text" value="0"/>	DAC Min	<input type="text" value="0"/>																																						
Max	<input type="text" value="10"/>	<input type="text" value="0"/>	DAC Max	<input type="text" value="255"/>																																													
Min	<input type="text" value="0"/>	<input type="text" value="0"/>	DAC Min	<input type="text" value="0"/>																																													
Enable Cutoff Hi, Enable Cutoff Low	<p>Cutoff High and Low is enabled by checking “Enable Cutoff Hi” and/or the “Enable Cutoff Lo”</p> <div style="margin-top: 20px;"> <p>PV Config</p> <div style="display: flex; justify-content: space-between; align-items: center;"> Status Initial Heatup </div> <div style="border: 1px solid red; padding: 5px; margin: 10px 0;"> <p>Output DAC: 145 V: 5.69</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Max</td> <td style="width: 15%;"><input type="text" value="10"/></td> <td style="width: 15%;">Cutoff High</td> <td style="width: 15%;"><input type="text" value="8"/></td> <td style="width: 15%;">DAC Max</td> <td style="width: 15%;"><input type="text" value="255"/></td> </tr> <tr> <td>Min</td> <td><input type="text" value="0"/></td> <td>Cutoff Low</td> <td><input type="text" value="2"/></td> <td>DAC Min</td> <td><input type="text" value="0"/></td> </tr> </table> </div> <p style="margin-top: 10px;">Reference Aux Sr/T 26°C/LL1 Active</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Min</td> <td style="width: 15%;"><input type="text" value="24"/></td> <td style="width: 15%;">Max</td> <td style="width: 15%;"><input type="text" value="29"/></td> <td style="width: 20%;">Source</td> <td style="width: 15%;">Aux Sensor</td> </tr> <tr> <td colspan="4"></td> <td>Idx</td> <td>Port</td> </tr> <tr> <td colspan="4"></td> <td>Aux Sr #1</td> <td>Ch #1</td> </tr> </table> <p style="font-size: small; margin-top: 10px;">PV Module Comms √ IO Module Comms √</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Pv</td> <td style="width: 15%;"><input type="text" value="1"/></td> <td style="width: 15%;">Switch</td> <td style="width: 15%;">No Switch</td> <td style="width: 15%;"><input checked="" type="checkbox"/> Enable Cutoff Hi</td> <td style="width: 15%;"><input type="checkbox"/> Enable Dec Pt</td> </tr> <tr> <td>Interval (sec)</td> <td><input type="text" value="20"/></td> <td><input checked="" type="checkbox"/> Enable Cutoff Lo</td> <td><input type="checkbox"/> Nt Low Limit</td> <td><input type="checkbox"/> Emulate</td> <td><input type="checkbox"/> Cal</td> </tr> <tr> <td colspan="4"></td> <td><input type="checkbox"/> Enable Flow</td> <td><input type="checkbox"/> Reverse DAC for Cold Water</td> </tr> </table> <div style="text-align: right; margin-top: 10px;">  </div> </div> <p>For example, if Cutoff Hi is set to 8v and the calculated output is 9v then the output will be clamped to 8v Max.</p>	Max	<input type="text" value="10"/>	Cutoff High	<input type="text" value="8"/>	DAC Max	<input type="text" value="255"/>	Min	<input type="text" value="0"/>	Cutoff Low	<input type="text" value="2"/>	DAC Min	<input type="text" value="0"/>	Min	<input type="text" value="24"/>	Max	<input type="text" value="29"/>	Source	Aux Sensor					Idx	Port					Aux Sr #1	Ch #1	Pv	<input type="text" value="1"/>	Switch	No Switch	<input checked="" type="checkbox"/> Enable Cutoff Hi	<input type="checkbox"/> Enable Dec Pt	Interval (sec)	<input type="text" value="20"/>	<input checked="" type="checkbox"/> Enable Cutoff Lo	<input type="checkbox"/> Nt Low Limit	<input type="checkbox"/> Emulate	<input type="checkbox"/> Cal					<input type="checkbox"/> Enable Flow	<input type="checkbox"/> Reverse DAC for Cold Water
Max	<input type="text" value="10"/>	Cutoff High	<input type="text" value="8"/>	DAC Max	<input type="text" value="255"/>																																												
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Min	<input type="text" value="24"/>	Max	<input type="text" value="29"/>	Source	Aux Sensor																																												
				Idx	Port																																												
				Aux Sr #1	Ch #1																																												
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				<input type="checkbox"/> Enable Flow	<input type="checkbox"/> Reverse DAC for Cold Water																																												

<p>Load Line</p> 	<p>The characteristic of the load line as set by the Max & Min of the Reference and Output.</p> <p>Tapping the load line will change its direction from  to  and vice versa.</p>
--	--

Flow Settings

Flow *Flow: 23°C*

Source: Max:

Idx: Min:

Port:

Parameter	Description
Source, Idx	Set the Flow Source: <ol style="list-style-type: none"> a. Auxiliary Sensor (1 to 9) b. I/O, Port (IO 1 to 8 , Port 1 to 8. Only applies to the cc773 (R10i8) module).
Max, Min	The Max and Min limit boundaries for the Flow source.

PV Interval

The PV Interval sets the time between PV calculations.

Night Time Output Low Limit

The Night Time Low Limit override the 0-10V and forces the output to the Night Time Limit value (2.0v in the above example) at set time and for a set duration.

PV Config

The screenshot shows the 'PV Config' interface with several sections:

- Buttons:** 'Status' and 'Initial Heatup' (both blue).
- Output:** DAC: 132 V: 5.18. Includes 'Max' (10, 0) and 'NtLow' (2, 0) dropdowns. The 'NtLow' dropdowns are highlighted with a red box.
- Reference:** Aux Sr/T 26°C/LLI Active. Includes 'Min' (24) and 'Max' (29) dropdowns.
- Source:** Aux Sensor dropdown.
- Idx:** Aux Sr #1 dropdown.
- Port:** Ch #1 dropdown.
- Comms:** PV Module Comms and IO Module Comms (both with dropdown arrows).
- Switch:** Pv (1) and Switch (No Switch) dropdowns.
- Interval (sec):** 20 dropdown.
- Checkboxes:** Enable Cutoff Hi, Enable Cutoff Lo, Emulate, Enable Flow, Enable Dec Pt (checked), Nt Low Limit (checked and highlighted with a red box), Cal, Reverse DAC for Cold Water.
- Buttons:** Exit (blue icon).

The time and duration are programmed in the Master Mode Screen.

The screenshot shows the 'Master Mode' screen with the following elements:

- Navigation:** A blue arrow icon on the left.
- Options:** Four heating zone modes with icons and descriptions:
 - Schedule Heating and DHW:** Each Heating Zone follows its schedule. DHW follows its own schedule. The default mode of operation. Use for normal schedule operation.
 - All Heating Zones Off:** All heating zones are constant off. DHW follows its own schedule. Use during Summer time to Disable heating but continue DHW schedule.
 - All Heating, DHW and Schedule Zones Off:** All heating zones are constant off. DHW is constant off. Use while on vacation.
 - All Heating Zones On:** All heating zones are constant on. DHW follows its own schedule.
- Night Cooling Limiter:** A section at the bottom with a red border containing:
 - Start Time: 23:00
 - Duration: 5Hrs, 0Min
- Buttons:** Help (red icon) and Exit (blue icon).


Each zone must be individually enabled in the Zone Advance Screen.



This function is Enabled with the Cooling Module and must also be Enabled in the Environment Screen.

Environment

Heating	SP (°C) Max, Min	30	16	Cooling(°C)	4	<input checked="" type="checkbox"/> Night Cooling Limiter	
	UFH SB (°C) Max/Min	8	3		Frost Protection	12	<input type="checkbox"/> Enable Floor Temp Adjust
	Probe SP(°C) Max/Min	99	5				
DHW	SP (°C) Max, Min	70	5	Legionella (70°C)	Saturday	4am	
	Hys (°C)	4				1 Hour	
Sensor Offline	Zone	<input type="radio"/> Force Off	<input checked="" type="radio"/> Follow Req State	DHW Zones	<input type="radio"/> Force Off	<input checked="" type="radio"/> Follow Req State	
	Schedule	Type	<input checked="" type="radio"/> 7 Day		<input type="radio"/> 5/2 Day	<input type="radio"/> 24 Hour	<input type="checkbox"/> Single Set-Point
Network	Max Zones	3	Max IO Modules	1	Max PV Modules	1	
					Max Aux Sensors	1	
UI	Home Screen	Windows	<input type="checkbox"/> Lock	Sub Screens	Windows	<input type="checkbox"/> Follow	

 Exit

Switch

There are two PV Load Line Configurations associated with each PV output: a Primary and a Secondary. “Switch” condition is active then control of the output switches from the Primary to the Secondary Load Line configuration. For instance, if Switch is set to Cooling then control of the output switches from the Primary to the Secondary Load Line Configuration when cooling is active.

PV Config Status Initial Heatup

Output DAC: 0 V: 0

Max: 10
Min: 0

DAC Max: 255
DAC Min: 0

Reference Aux Sr/T 24°C/LLI Active

Min: 24 Max: 29

Source: Aux Sensor
Idx: Aux Sr #1 Port: Ch #1

PV Module Comms ∨
IO Module Comms ∨

Pv: 1 Interval (sec): 20

Switch (highlighted in red):
 No Switch
 Cooling
 Zone
 Relay
 Input

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

Exit

When switch is active (not set to “No Switch”) then the Active Load Line will be displayed in red.

PV Config **Primary** Status Initial Heatup

Output DAC: 0 V: 0

Max: 10
Min: 0

DAC Max: 255
DAC Min: 0

Reference Aux Sr/T 24°C/LLI Active

Min: 24 Max: 29

Source: Aux Sensor
Idx: Aux Sr #1 Port: Ch #1

PV Module Comms ∨
IO Module Comms ∨

Pv: 1 Interval (sec): 20

Switch: Cooling
Load Line: Primary (highlighted in red)

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

Exit

Use the “Load Line” to program the Primary and Secondary Load Lines.

PV Config Primary

Status Initial Heating

Output DAC: 0 V: 0

Max 2
Min 0

Reference Aux Sr/T 19°C/LLI Active

Min 0 Max 2

Source Aux Sensor

Idx Aux Sr #1 Port Ch #2

DAC Max 51
DAC Min 0

PV Module Comms
Comms - IO Unassigned

Pv 2 Switch Zone Zn # 1

Interval (sec) 20 **Load Line Primary**

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

Exit

Example - Switch on Cooling (Primary: Zone & Secondary: Hottest Zone)

Load Line A (Primary)

Load Line B (Secondary)

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

NOTE: If Hottest zone is used then NT limiter will only be applied if NT Limiter is enabled in the hottest zone (this effectively means that ALL zones must enable NT limiter).

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

Emulation

A PV Configuration may be tested by checking the “Emulate” checkbox”. Emulation slider bars will be displayed for the Reference and Feedback Flow Temperatures.

The screenshot displays the 'PV Config' interface with several key elements highlighted by red boxes:

- Flow Section:** Shows 'Emul Flow: 22' with a red box around the value. Below it are dropdown menus for 'Source' (Aux Sensor), 'Idx' (Aux Sr #1), and 'Port' (Ch #1). To the right are 'Max' (23) and 'Min' (20) value boxes.
- Output Section:** Shows 'DAC: 0 V: 0' and 'DAC Max' (255) and 'DAC Min' (0) value boxes.
- Reference Section:** Shows 'Emul Ref: 25' with a red box around the value. Below it are 'Min' (24) and 'Max' (29) value boxes.
- Emulation Controls:** A large horizontal slider bar is highlighted with a red box. Below it, the 'Emulate' checkbox is checked and highlighted with a red box. Other checkboxes include 'Enable Flow', 'Enable Cutoff Hi', 'Enable Cutoff Lo', 'Enable Dec Pt', 'Nt Low Limit', 'Calibrate', and 'Reverse DAC for Cold Water'.
- Other Elements:** 'Status' and 'Initial Heatup' buttons are at the top right. 'PV Module Comms' and 'IO Module Comms' are at the bottom left. 'Pv' (1) and 'Switch' (No Switch) are at the bottom left. 'Interval (sec)' (20) is at the bottom left. An 'Exit' button with a circular arrow icon is at the bottom right.

Calibration

The Max & Min Output voltage for each 0-10v output can be calibrated to suit the attached Mixer or Fan Coil unit (FCU). The following calibration procedure is used to calibrate against a FCU. This ensures the minimum and maximum voltage output levels correspond with requirements.

The screenshot shows the 'PV Config' interface with the following settings:

- Output:** DAC: 0, Max: 10, Min: 0
- Reference:** Emul In: 23, Min: 25, Max: 28
- Source:** Zone, Idx: Zn 1 - Kitchen
- Type:** SP+DB, SP+DB+F3
- Switch:** No Switch
- Interval (sec):** 20
- Emulate:**
- Cal:**
- Other options:** Enable Cutoff Hi, Enable Dec Pt, Enable Cutoff Lo, Nt Low Limit, Enable Flow, Reverse DAC for Cold Water (all unchecked).

Step	Description
1	Select the required PV (Proportional Valve) channel (1-16).
2	With the FCU attached to the required 0-10v output, place a DVM (Digital Volt Meter) on the output and set the range to DC volts.
3	Check the “Cal” and “Emulate” functions on the screen. The DAC Min & DAC Max can now be adjusted .
4	Calibrate the Min output voltage: <ol style="list-style-type: none"> Set Cut Off Low to 2 v (Dac=51) Use the Emulate slider bar to move the output to its 1st increment setting The system will detect the min is 2v and try to output 2v Now calibrate the min to 2v
5	Calibrate the Max output voltage: <ol style="list-style-type: none"> Use the Emulate slider bar to move the output to its maximum setting Now calibrate the Max output voltage
6	Uncheck the “Cal” and “Emulate” functions when calibration is complete.

Initial Heat Up Sequence

The UFH Initial Heat Up Sequence is used to heat the screed gradually over time.

This operation shall be carried out at least 21 days after the laying of 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.

The Initial Heat Up Sequence is applied to the primary curve (loadline) only.

Up to 40 initialization Heat Up Sequences can be managed simultaneously.

The screenshot shows the 'PV Config' interface with the following elements:

- Buttons:** 'Status' and 'Initial Heatup' (highlighted with a red box).
- Output:** A graph showing a linear ramp. Below it, 'DAC: 0' is displayed. 'Max' is set to 10 and 'Min' is set to 0.
- Reference:** 'Aux Sr/T 18°C/LL1 Active'. 'Min' is set to 0 and 'Max' is set to 0.
- Source:** 'Aux Sensor' and 'Idx' is set to 'Sr1 Ext_Sensor'.
- Module Comms:** 'PV Module Comms' and 'IO Module Comms' are both set to 1.
- Switch:** Set to 'No Switch'.
- Interval (sec):** Set to 20.
- Checkboxes:**
 - Enable Cutoff Hi
 - Enable Cutoff Lo
 - Emulate
 - Enable Flow
 - Enable Dec Pt
 - Nt Low Limit
 - Cal
 - Reverse DAC for Cold Water
- Exit:** A button with a blue arrow icon.

Press “Initial Heat Up” to enter setup.

PV Initial Heatup

This operation shall be carried out at least 21 days after the laying of 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

Attach a 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).

Initialize



Setup

Steps	Description
1	Attach a Digital Sensor & Probe to the Flow Pipe.
2	Set the Digital Sensor up as an Aux Sensor. (ST - Stat Type =1, SR Sequence No. 1)
3	On Primary Load Line: Select "Enable Flow". This sensor will be used as feedback, to ensure the desired Flow Temp is assigned.
4	Attach Mixer to the 0-10v port on the relevant I/O module.
5	Confirm the Heat Up sequence settings: <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Initial Days</p> <input type="text" value="3"/> </div> <div style="text-align: center;"> <p>At Temperature (°C)</p> <input type="text" value="20"/> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;"> <p>Final Days</p> <input type="text" value="4"/> </div> <div style="text-align: center;"> <p>At Temperature (°C)</p> <input type="text" value="25"/> </div> </div> <div style="display: flex; justify-content: center; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;"> <p>Total Days</p> <input type="text" value="21"/> </div> </div>
5	Press the "Initialize" Button.

Status

The current status will be displayed once the Heat Up sequence has been initialized.

Temperature will increase gradually after the initial heatup period of 3 days at 20°C to the Maximum Temperature of 60°C and will remain on for an additional 4 days.

Heatup initialized: 27/7/2016
Days Running: 1

Current T: 23°C
Target T: 0°C




PV Status

PV Config

Status
Initial Heatup

Output *DAC: 0*



Max

Min

DAC Max

DAC Min

Reference *Aux Sr/T 18°C//LL1 Active*

Min

Max

Source

Idx


PV Module Comms ✓
IO Module Comms ✓

Pv

Interval (sec)

Switch

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



Pressing the “**Status**” button will display the status for all 16 PV channels.

Pv	DAC	Tmr (secs)	Comms IO	PV
1	0	13	IO #1 ✓	PV #1 ✓ PV #2 x
2	0	14		
3	0	15		
4	0	16		
5	0	17		
6	0	18		
7	0	19		
8	0	20		
9	0	1		
10	0	2		
11	0	3		
12	0	4		
13	0	5		
14	0	6		
15	0	7		
16	0	8		

Key:

PV: PV channels

DAC: Raw DAC Output

Tmr (Sec): Countdown to the next DAC update

Comms: Communications Status for IO cc771 and PV8 Modules.

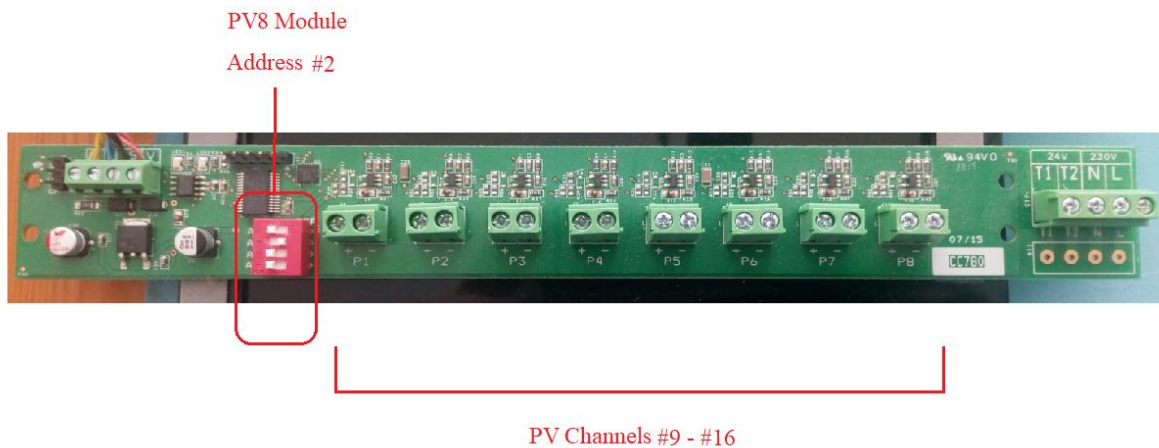
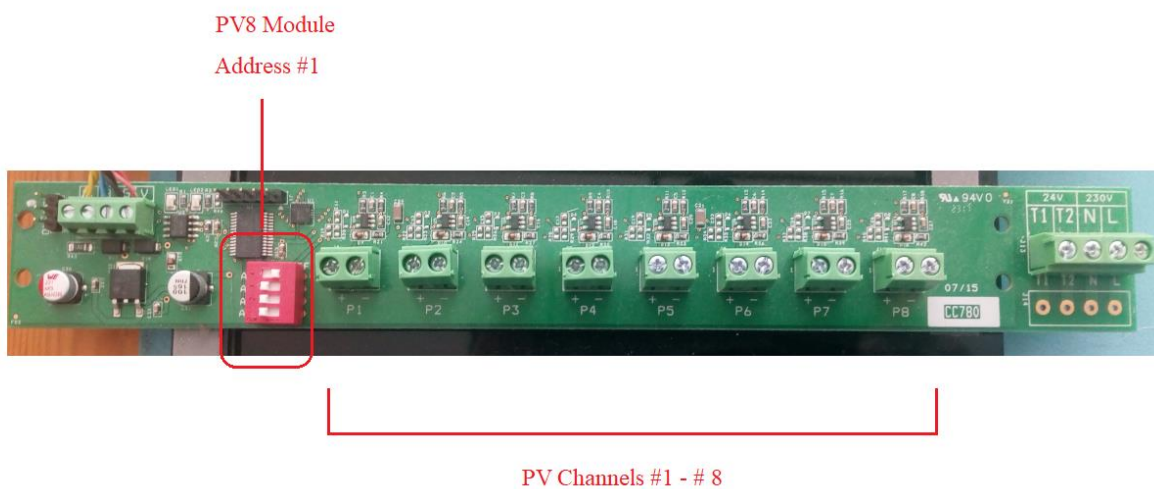
Addressing

Addressing cc771(R16)

The cc771 (R16) has a single PV channel. The address of the module also sets the address PV channel. For instance, The PV channel for cc771 Module #1 is #1. The PV channel for cc771 Module #2 is #2.

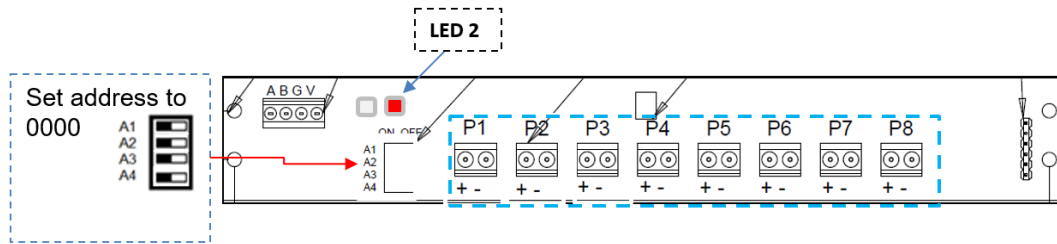
Addressing PV8

The PV8 Module has 8 PV channels. PV channels 1-8 are on the PV8 module with address #1. PV channels 9-16 are on the PV8 module with address #2.



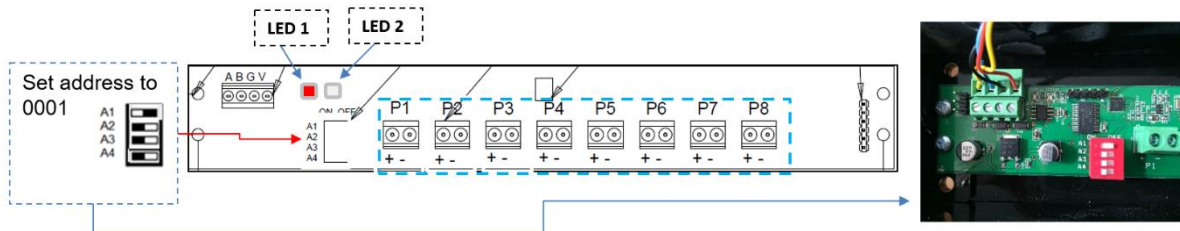
Diagnostic

PV 0-10v Channel Output Test Procedure



Step	Description	Result
1	Set address to 0000	
2	Power on the board with no A & B attached. LED 2 will remain ON in Red (No Comms)	PV output voltage on all ports will be 10v
3	Move A3 address switch to right (on position)	PV output voltage on all ports will be approx. 4v
4	Move A3 address switch to left (off position)	
5	Move A4 address switch to right	PV output voltage on all ports will be approx. 8v

PV8 Module Communication Test Procedure



Step	Description	Result
1	Set address to 0001 (A1 On)	
2	Power on the boards with A & B attached to the cc200 HV3 (the system must be setup with a single PV module)	<p>Led 2 will remain ON in Red until communication is received and then switch OFF.</p> <p>Led 1 will start flashing during communication:</p> <p style="text-align: right;">ON = Receiving Off = Transmitting</p>

