



AUGUST 23, 2023

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CC200 ADV RELAY CONFIGURATION (CC CC200-SM-RC)
RELAY CONFIG EXT (CC200-SM-RCE)

(REV 20.1.64+)

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Introduction

Configuration of relay outputs for complex heating & cooling systems.

Module Requirements

Module Configuration

8 Zones

Relay Config (CC200-SM-RC)

Relay Config Ext (CC200-SM-RCE)

Cooling (CC200-SM-CL)

PV (CC200-SM-PV)

PV Adv (CC200-SM-PV_ADV)

VRF (CC200-SM-VRF)

Modbus Slave (CC200-SM-MBS)

Alarms (CC200-SM-ALM)

Digital Input Functions (CC200-SM-IF)

Zone Differential (CC200-SM-DIFF)

DHW Priority (CC200-SM-DHW-P)

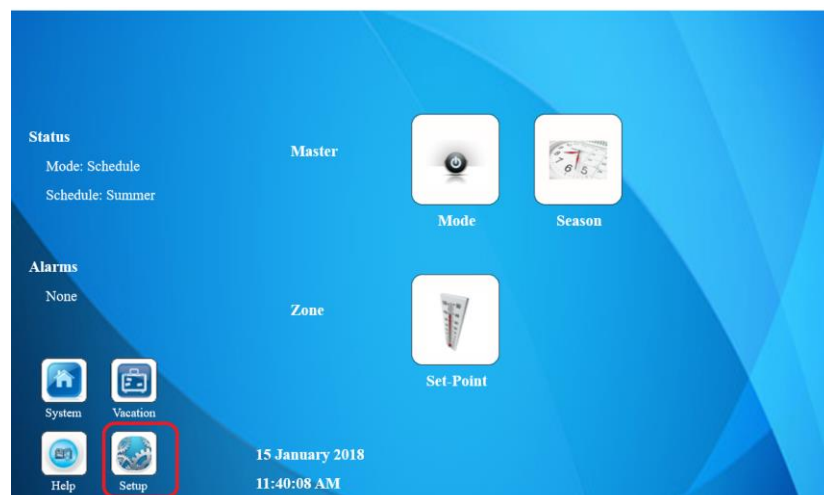
Relative Humidity (CC200-SM-RH-DP)

Configuration Code: 152170716101216957410067



Access Advanced Relay Configuration

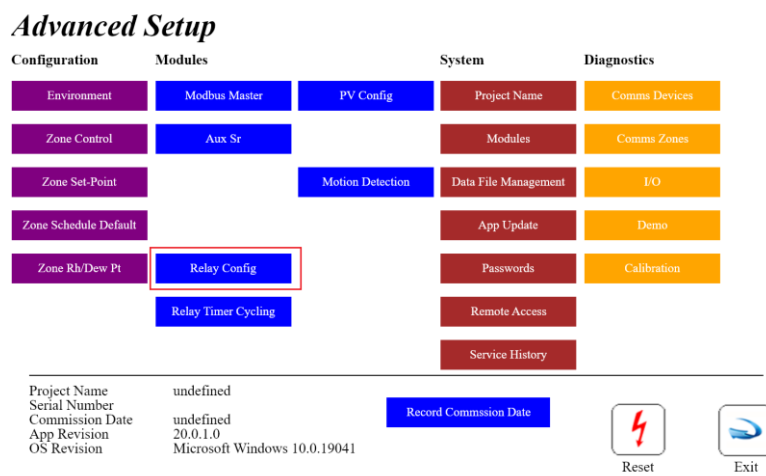
Step 1. Press “Setup” on the Home Screen



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



Step 3. Press “Relay Configuration”



Relay Control Points

Relay Config Virtual

Column 1 is assigned in 'I/O Setup'

Control Point

1	Undef	Undef	Undef
2	Undef	Zone	Undef
		Ht	
		Zn #4	
3	Undef	Undef	Undef

Control Points are used to set the ON/OFF state of a relay output. There are thirteen Activation controls, one Enable Control and two Override controls.

Relay Config Virtual

Column 1 is assigned in 'I/O Setup'

Activate_1_7 Activate_8_13 Enable Override

1	Undef	Undef	Undef	Undef	Undef	Undef	Undef
2	Undef	Zone	Undef	Undef	Undef	Undef	Undef
		Ht					
		Zn #4					
3	Undef	Undef	Undef	Undef	Undef	Undef	Undef

I/O #1	I/O #2	I/O #3	I/O #4	Rlys #1-3	Rlys #4-6	Rlys #7-9
I/O #5	I/O #6	I/O #7	I/O #8	Rlys #10-12	Rlys #13-15	Rlys #16

Exit

Any Active Activation control will turn the relay ON.

The Enable Control may be used to act as an enable for the Activation controls. If used, the Activation controls will only control the relay when the Enable Control point is Active.

An Override control may be used to turn OFF a relay output regardless of the state of the Enable or Activation controls.

Control Point Types

There are several types of Control points. These consist of: Zone, System, Relay, Input, Aux Sr and Alarm.

Control Point Types

Relay Config Virtual


Activate 1_7 Activate 8_13 Enable Override

Column 1 is assigned in 'I/O Setup'

1	Undef	Undef	Undef	Undef	Undef	Undef	Undef
2	Undef	Zone	Undef	Undef	Undef	Undef	Undef
		Ht					
		Zn #4					
3	Undef	Undef	Undef	Undef	Undef	Undef	Undef

I/O #1 I/O #2 I/O #3 I/O #4 Rlys #1-3 Rlys #4-6 Rlys #7-9

I/O #5 I/O #6 I/O #7 I/O #8 Rlys #10-12 Rlys #13-15 Rlys #16

 Exit

Control Point Description

Type	Description														
Zone	<table border="1"> <tr> <td>Zone</td> <td></td> </tr> <tr> <td>Ht</td> <td>Zone Type Control</td> </tr> <tr> <td>Zn #1</td> <td>Zone Index (1-32)</td> </tr> </table> <table border="1"> <thead> <tr> <th>Control</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td>Ht</td> <td>Active when zone is calling for heat.</td> </tr> <tr> <td>Cl</td> <td>Active when zone is calling for cooling.</td> </tr> <tr> <td>F1</td> <td>Active when zone cooling is at or exceeds Fan 1 threshold. ($T \geq SP + DB + F1$) T: Zone Temperature SP: Zone Setpoint</td> </tr> </tbody> </table>	Zone		Ht	Zone Type Control	Zn #1	Zone Index (1-32)	Control	Operation	Ht	Active when zone is calling for heat.	Cl	Active when zone is calling for cooling.	F1	Active when zone cooling is at or exceeds Fan 1 threshold. ($T \geq SP + DB + F1$) T: Zone Temperature SP: Zone Setpoint
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Control	Operation														
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F1	Active when zone cooling is at or exceeds Fan 1 threshold. ($T \geq SP + DB + F1$) T: Zone Temperature SP: Zone Setpoint														

		DB: Zone DeadBand F1: Zone F1
F2	Active when zone cooling is at or exceeds Fan 2 threshold. ($T \geq SP+DB+F2$) T: Zone Temperature SP: Zone Setpoint DB: Zone DeadBand F2: Zone F2	
F3	Active when zone cooling is at or exceeds Fan 3 threshold. ($T \geq SP+DB+F3$) T: Zone Temperature SP: Zone Setpoint DB: Zone DeadBand F2: Zone F3	
HC	Active when zone heating or cooling. Not active when in dead band. Note: Heating & cooling from a single water source e.g. HP . If a zone cooling, any HC zone heating will close.	
Sch	Active when SCHED zone is ON Note: These is NO temperature control.	
RH		
Ch1	Active when a Zone Channel 1 (Air Temp) is less than the Set-point. The Zone Schedule is ignored. ($TCh1 < SP$) TCh1: Zone CH1 Temperature SP: Zone Setpoint	
Ch2	Active when a Zone Channel 2 (Probe Temp) is less than the Set-point. The Zone Schedule is ignored. ($TCh2 < SP$) TCh1: Zone CH1 Temperature SP: Zone Setpoint	

	z:Diff	See <i>Manual-Eng-ZoneDifferential.pdf</i>										
System	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <div style="background-color: #cccccc; padding: 2px; display: flex; justify-content: space-between; align-items: center;"> System ▼ </div> <hr/> <div style="padding: 2px; display: flex; justify-content: space-between; align-items: center;"> UfhHt ▼ System Type Flags </div> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">UfhHt</td> <td style="padding: 5px;"> <p>Active when any UFH or UPROBE zone calling in the system. <i>(IsSysUfbHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p> </td> </tr> <tr> <td style="padding: 5px;">RadHt</td> <td style="padding: 5px;"> <p>Active when any Rad (radiator) zone calling in the system. <i>(IsSysRADHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p> </td> </tr> <tr> <td style="padding: 5px;">DhwHt</td> <td style="padding: 5px;"> <p>Active when any DHW zone is calling for Heat in the system. <i>(IsSysRADHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p> </td> </tr> <tr> <td style="padding: 5px;">Boiler</td> <td style="padding: 5px;"> <p>Active when any DHW <i>(IsSysDHWHeating)</i></p> <p style="text-align: center;">OR</p> <p>Active if any UFH or UPROBE or RAD or PROBE zone is calling for heat in the system <i>(IsSysHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p> </td> </tr> <tr> <td style="padding: 5px;">P_MF</td> <td style="padding: 5px;"> <p>Active when any UFH or UPROBE zone calling in the on the associated IO Module. <i>(IsSysUfbHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p> </td> </tr> </table>		UfhHt	<p>Active when any UFH or UPROBE zone calling in the system. <i>(IsSysUfbHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p>	RadHt	<p>Active when any Rad (radiator) zone calling in the system. <i>(IsSysRADHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p>	DhwHt	<p>Active when any DHW zone is calling for Heat in the system. <i>(IsSysRADHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p>	Boiler	<p>Active when any DHW <i>(IsSysDHWHeating)</i></p> <p style="text-align: center;">OR</p> <p>Active if any UFH or UPROBE or RAD or PROBE zone is calling for heat in the system <i>(IsSysHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p>	P_MF	<p>Active when any UFH or UPROBE zone calling in the on the associated IO Module. <i>(IsSysUfbHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p>
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	<p>SysHt</p> <p>SysCl</p> <p>SysClR</p> <p>SysEHt</p> <p>ClovOH</p>	<p>Active when any UFH or UPROBE or RAD or PROBE zone is calling for heat in the system <i>(IsSysHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p> <p>Active when any Zone is calling for Cooling in the system. <i>(IsSysCooling)</i></p> <p>Active when any Zone is calling for Cooling in the system but overridden when the relative humidity any zone is any zone exceeds the relative humidity set-point threshold.</p> <p>Active when any E-ufh (Electric UFH) zone is calling in the system. <i>(IsSysEUFHHeating)</i></p> <p>Override if any relay is configured with SyCIOH flag is Active. <i>(IsSysCoolingOverrideHeating)</i></p> <p>Active when any Zone is calling for Cooling in the system. <i>(IsSysCooling)</i></p> <p>Note: When this Flag is used it will set the IsSysCoolingOverrideHeating flag whix is used as an cooling override for system flags:</p> <p>UfhHt, RadHt, DhwHt, EUfhHt , SysHt and MF</p>
Relay	<p>Relay</p> <p>I/O #1</p> <p>Rly #1</p>	<p>I/O Module (1-8)</p> <p>Relay Output (1-16)</p>
Input	<p>Input</p> <p>I/O #1</p> <p>Inp #1</p>	<p>I/O Module (1-8)</p> <p>Digital Input (1-8)</p>

Aux Sr	<div style="border: 1px solid black; padding: 2px;"> <div style="background-color: #cccccc; padding: 2px;">AuxSr ▼</div> <hr/> <div style="padding: 2px;">Sr #1 ▼</div> <hr/> <div style="padding: 2px;">T>C1S1 ▼</div> </div>	<p>Aux Sensor (1-8)</p> <p>Aux Sensor Type</p>
Alarm		

Relay Config Control Point Extensions for I/O Setup [Relay Config (CC200-SM-RC)]

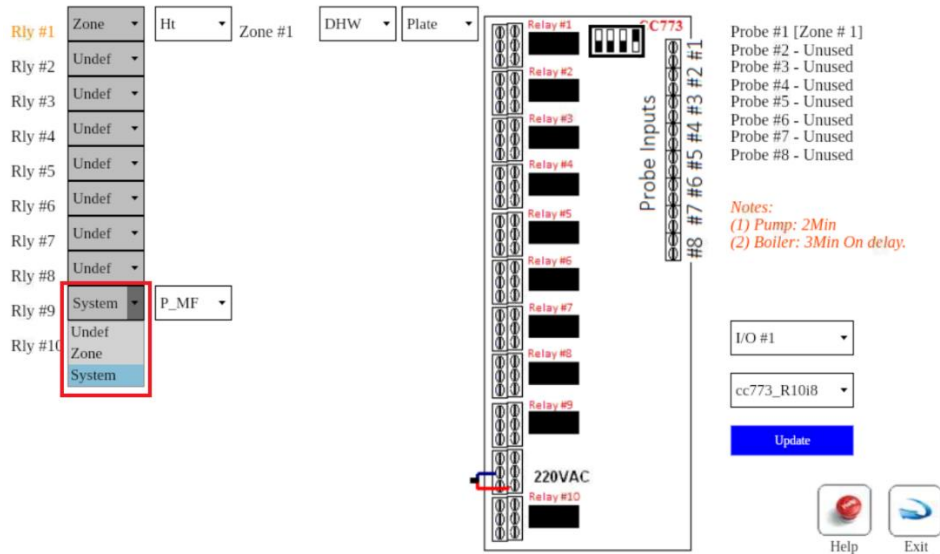
The Relay Control Point Types for the I/O Setup is limited to “Zone” for Relays 1-8

Rly #1: Zone (highlighted), Ht, Zone #1, DHW, Plate
 Rly #2: Undefined
 Rly #3: Undefined
 Rly #4: Undefined
 Rly #5: Undefined
 Rly #6: Undefined
 Rly #7: Undefined
 Rly #8: Undefined
 Rly #9: System, P_MF
 Rly #10: Undefined

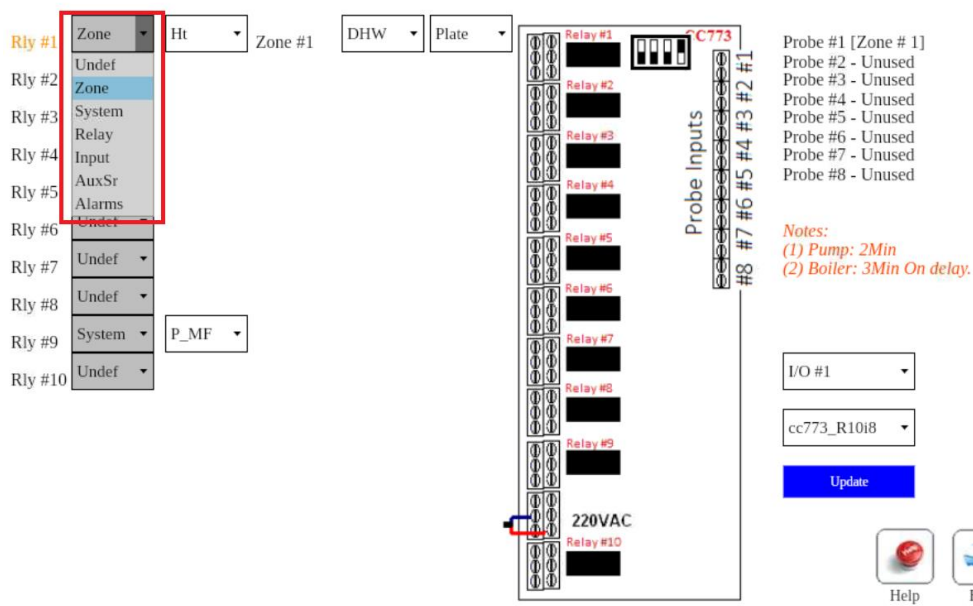
Probe Inputs: C773
 I/O #1: cc773_R10i8
 Update
 Help, Exit

Notes:
 (1) Pump: 2Min
 (2) Boiler: 3Min On delay.

and limited to “Zone, Setup ” for Relays 9,10.



The “Relay Config Control Point Extensions for I/O Setup” module (“Relay Config Ext CC200-SM-RCE”) enables all control point types for all relays.



Relay ON/Off, Cycling and Flush Timer Control

ON/Off, Cycling and Flush Timer Control is associated with each relay output. In order of priority the Flush timer control is assigned the highest priority followed by the Cycle timer control and finally the ON/Off Timer Control

Relay Timers/Cycling

Rly	Timer.....		Cycling.....			Flush.....			
	On (mins)	Off (mins)	Enable	Interval (hrs)	Duration (mins)	Enable	Start (hr)	Start (min)	Duration (mins)
1	0	0	<input type="checkbox"/>	335	2	<input type="checkbox"/>	12am	0	0
2	0	0	<input type="checkbox"/>	335	2	<input type="checkbox"/>	12am	0	0
3	0	0	<input type="checkbox"/>	335	2	<input type="checkbox"/>	12am	0	0
4	0	0	<input type="checkbox"/>	335	2	<input type="checkbox"/>	12am	0	0

IO #1	IO #2	IO #3	IO #4	Rlys #1-4	Rlys #5-8	 
IO #5	IO #6	IO #7	IO #8	Rlys #9-12	Rlys #13-18	

Help Exit

On/Off Timer Control

The ON Timer delays the Relay ON activation for the programmed number of minutes.

The OFF Timer delays the Relay OFF activation for the programmed number of minutes.

In the following example, Relay #1 will be turned ON one minute after its activation and turned OFF two minutes after its deactivation.

Rly	Timer.....	
	On (mins)	Off (mins)
1	1	2
2	0	0
3	0	0
4	0	0

Cycle Timer Control

The output is turned ON for a programmed duration (mins) when a relay has not been activated ON for a programmed interval (hours).

Cycle timer control must be enabled.

In the following example, Cycle Timer is enabled. The relay output will turn ON for 2 minutes is there is no relay activation for 335 hours.

Cycling.....		
Enable	Interval (hrs)	Duration (mins)
<input checked="" type="checkbox"/>	335	2

Flush Timer Control

The Flush timer Control will turn a Relay Output ON every day at a programmed time and for a programmed duration.

Flush timer control must be enabled.

In the following example, the Flush timer is scheduled to come ON at 4.30am and remain ON for 1 minute.

Flush.....			
Enable	Start (hr)	Start (min)	Duration (mins)
<input checked="" type="checkbox"/>	4am	30	1

I/O Diagnostics

I/O diagnostics may be accessed by pressing the “I/O o/p & Timers” button.

Advanced Setup

Configuration	Modules	System	Diagnostics
Environment	Modbus Master	PV Config	Project Name
Zone Control	Aux Sr		Comms Devices
Zone Set-Point		Motion Detection	Comms Zones
Zone Schedule Default		Data File Management	I/O o/p & Timers
Zone Rh/Dew Pt	Relay Config	App Update	Demo
	Relay Timer Cycling	Passwords	Calibration
		Remote Access	
		Service History	

Project Name: undefined
 Serial Number: undefined
 Commission Date: 20.0.1.0
 App Revision: 20.0.1.0
 OS Revision: Microsoft Windows 10.0.19041

The default state (Nothing checked) show the current state of the On/Off , Cycle and Flush timer controls. Probe inputs (R10i8 only) and Digital inputs are also displayed.

The following page displays the Times for I/O for I/O Module #1 (highlighted in orange)

I/O cc773_R10i8

Relay Output		Probe Input	Digital Input
Idx	Idx	Idx	Idx
1	[2]0/[3]0 / C:[335,2]268,0 / F:[4:30am,3]0	9	[0]0/[0]0
2	[0]0/[0]0	10	[0]0/[0]0
3	[0]0/[0]0	11	
4	[0]0/[0]0	12	
5	[0]0/[0]0	13	
6	[0]0/[0]0	14	
7	[0]0/[0]0	15	
8	[0]0/[0]0	16	

ON/OFF Timer: [TmrON]timer/[TmrOFF]timer / C:[Interval,Duration]interval, duration / F:[Start Hr:Min, Duration]duration [Programmed Values]runtime values

Relay Control Direct Including Timers

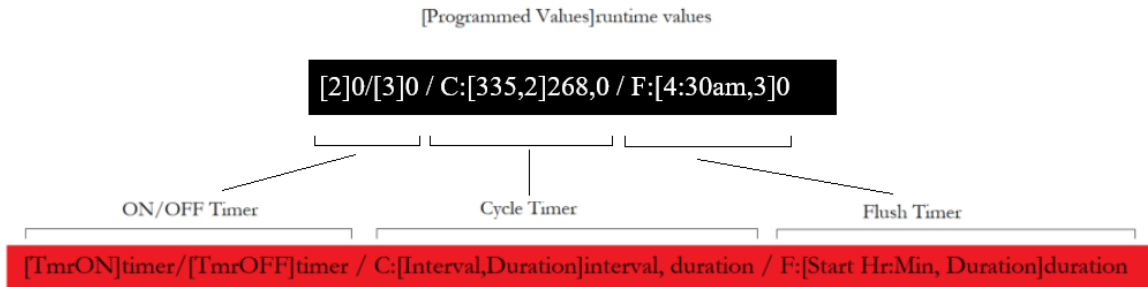
Relay Control Direct Excluding Timers

Black background for relay outputs indicates an OFF state and red background indicates ON state.

Black background for digital inputs indicates an closed/OFF state and red background indicates Open/ON state.

The relay output button shows On/Off , Cycle and Flush timer control configuration between “[and “]” followed by the current timer state.

Cycle and Flush relay timers are only displayed if enabled



The color of the relay index displays the actual state of the relay. The back

Relay Output

Idx

1 [1]48:[1]0

The requested relay state is ON (RED). The ON timer is configured to come on in 1 minute. There is 48 seconds remaining before the relay output will be turned ON.

The relay output is OFF ("1" is black)

Checking “Relay Control Direct Including Timers” allows control of the requested output state. In normal operation the requested output state is controlled by the relay configuration. In other words, the button allows emulation of the configuration.

Checking “Relay Control Direct Excluding Timers” allows control of the relay outputs. Relay output configuration and timer controls are overridden.