# Application Note #717 LUTRON Window/Door and Condensation Overflow Sensors in myRoom Systems to Turn Off a Fan Coil Unit

This application note explains how to lock the myRoom Palladiom thermostat into OFF mode with a wired condensate overflow or window/door contact sensor (i.e., "CCO Sensor").

### **Important Note**

Lutron's myRoom system is not responsible for turning off the HVAC equipment if an overflow occurs. The Lutron system will only provide alerts to the myRoom Vue software and lock out the Palladiom thermostat into OFF mode. The overflow sensor should have a direct way to turn off the HVAC equipment.

# **Applications**

Both applications below are described further in this document.

- 1. Connecting to an FCU controller: Connect the Contact Closure Output (CCO) sensor to the FCU controller's Contact Closure Input (CCI) (See Required Software). Applicable for both myRoom Prime and Plus systems. Note: The window/door sensor is only able to be connected to the SMC in myRoom Prime systems. Connect the window/door sensor to a QSE-IO in myRoom Plus systems.
- 2. Connecting to a QSE-IO: This is applicable for when the FCU controller is not part of the system or not as accessible as a QSE-IO. Applicable to myRoom Plus systems only.

### Sequence of Operations

- 1. When the CCO sensor opens, the FCU turns off (done directly by the sensor).
- 2. After a pre-configured delay (to prevent false-trips), the Palladiom thermostat locks to OFF mode.
  - a. The fan may operate at a pre-configured speed.
  - b. The myRoom Palladiom thermostat locks out any button presses and system commands.
  - i. The Main Palladiom thermostat's backlights flash with each button press to indicate the thermostat is locked.
  - d. Button presses made on any companion myRoom thermostats will be ignored and changed back on the thermostat.
- 3. An alert displays in myRoom Vue in the Alerts section.
- a. No configuration is required to display the alerts in myRoom Vue.
  - b. An example of the alert in myRoom Vue:

or 1 ROOM 101 Su	ited Foy   Alerts		Lights	Shades	HVAC
Alerts 🔮 Room Oc Alert Types (2)	cupled, Rented	View Hottory ① Expand all   Collapse all File 15, 2022 of Life FM			он 76°
Tip	This alert can be raised by either of these scenarios: 1. The condensation overflow sensor was tripped, causing the HVAC system to turr 2. The system has detected that the room has dropped below the set threshold (by temperature (typically 55 \$\Vert12.8 \cdot C).	i off and the thermostat to be locked in off mode. pically 45 °F/7.2 °C) and is heating the room until it reaches a safe	On	Open	Humidity 5%
Device name Device type Device model	Thermostat 1 Palladiom Thermostat MWP-T-OHW-XXA		Alerts	Energy	Room Status
Device not responding	g 	Peb 15, 2022 01:48 PM	ROOM 101 Sured F., - Feb 15, 2022 01:49 PM Device not responding ROOM 101 Sured F., - Feb 15, 2022 01:48 PM	Current Energy Savings	

- 4. The FCU's ability to heat or cool remains disabled, and the Palladiom thermostat will remain locked until the CCO sensor closes.
- 5. After the CCO sensor closes, the Palladiom thermostat unlocks into normal mode after a preconfigured delay to prevent false-trips.
- 6. The alert in myRoom Vue clears when the Palladiom thermostat unlocks.

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### **Required Software**

Thermostat compatible versions:

- Gen 1 myRoom Palladiom thermostat: Version 4.012 or newer. Alerts will not appear in myRoom Vue with this Palladiom thermostat version.
- Gen 2 myRoom Palladiom thermostat: Version 5.014 or newer.

FCU controller compatible versions:

- SMC53-HOSP: V1012 or later.
- SMC55-HOSP: V5011 or later.
- SMC53-MYRM & SMC55-MYRM: All versions.

If a software upgrade is required, please contact Lutron Customer Support.

# Connecting the CCO sensor to the FCU Controller's CCI

### **CCO Sensor Installation**

Connect CCO sensor to the FCU controller, as described below:

Step 1: Acquire a wired magnetic CCO sensor (type SPST or SPDT).

Step 2: If using a window/door CCO sensor, install the sensor to the window or door per the manufacturer's instructions.

Step 3: Connect either lead of CCO sensor to the white wire on the FCU controller harness as shown in the first image below.

Step 4: Connect the other lead to either of the 2 black wires on the FCU controller harness.

If multiple CCO sensors are used, wire the leads in series, so that any break in the line breaks the entire circuit as shown in the second image below.



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## Connecting the CCO sensor to the FCU Controller's CCI (continued)

### Configuring the FCU Contact Closure Input (CCI)

Follow the "Thermostat and FCU controller Configuration Instructions" at www.lutron.com to set the following parameters. Refer to the Advanced Configuration Parameters.

1. Set advanced config parameter 64 (CCI type) to either 1 (Normally open) or 2 (Normally closed).

a. By default, it is set to 0 (disabled).

2. (Optional) Set advanced config parameter 65 (Open delay) in seconds to desired value. This value specifies the required time in seconds after which the HVAC turns off when the window or door is opened.

a. By default, it is set to 10 seconds.

3. (Optional) Set advanced config parameter 66 (Closed delay) in seconds to desired value. This value specifies the required time in seconds after which the HVAC turns on when the window or door is closed.

a. By default, it is set to 1 second.

- 4. (Optional) Set advanced config parameter 67 (Open fan mode) to desired value. This value specifies the fan mode or speed for the FCU's fan after the time mentioned in advanced config 65 is elapsed.
  - a. By default, it is set to 0 (OFF)

If the above values aren't available on thermostat or the CCI isn't working as expected, please check if the firmware requirement mentioned above is met by looking at the label on the top-right corner of FCU controller as shown in image below.



# Connecting the CCO sensor to the FCU Controller's CCI (continued)

### Testing

Once the FCU CCI is wired and configured, it is recommended to test the setup.

Action	Expected result	Pass/Fail
Close the door or window to which the CCI sensors are attached and wait for the time specified in advanced config parameter 66.	No observable result.	
On the myRoom Palladiom thermostat press the fan button to toggle the fan speed.	On the palladiom thermostat screen, we can observe that the fan speed icon cycles from low speed, medium speed, to high speed. <b>Note:</b> Certain speeds may not be supported by the equipment and the equipment may remain in the supported fan speed.	
On the myRoom Palladiom thermostat press the Power button to turn on the FCU.	Depending on the room temperature and the set point, the FCU will start to either cool or heat.	
Open the door or window to which the CCI sensors are attached and wait for the time specified in advanced config parameter 65.	The FCU operation will switch to off from its previous state and fan speed will get switched to the speed specified in advanced config parameter 67.	
On the myRoom Palladiom thermostat press the fan button to toggle the fan speed.	The Palladiom thermostat display flashes and doesn't allow the fan speed to be changed.	
On the myRoom Palladiom thermostat press the Power button to turn on the FCU.	The Palladiom thermostat display flashes and doesn't allow the Op Mode to be changed.	

### Troubleshooting

- If the Palladiom thermostat display flashes and doesn't allow changes, or if the HVAC doesn't turn on while the door is closed, ensure the correct CCI sensor type is programmed in advanced config parameter 64.
- If the HVAC does not turn off when the door is opened, ensure the correct CCI sensor type is programmed in advanced config parameter 64.

# Connecting the CCO to a QSE-IO Control Interface's CCI

### Operation

When the door or window contact sensor wired to the CCI of the QSE-IO is opened, the HVAC equipment connected to the myRoom Palladiom thermostat will turn off and the thermostat will lock. The HVAC will remain off and the Palladiom thermostat will remain locked until the door/window contact sensor has been closed.



### Window/Door Contact Sensor Installation

The window or door contact sensor must be connected to a QSE-IO CCI to use this feature. Follow the steps below.

- Acquire a wired magnetic contact sensor (type SPST or SPDT).
- Install the sensor to the window or door per the manufacturer's instructions.
- Connect either lead of contact sensor to the COM of the QSE-IO as shown in the figure below.
- Connect the other end to any of the available CCI inputs as shown in the image below. The selected input will have to be configured correctly to control the HVAC and lock/unlock the thermostat based on the CCI input.

If multiple door or window sensors are used, wire the leads in series, so that any break in the line breaks the entire circuit as shown in the second image below.



### Configuring the contact closure inputs of QSE-IO using myRoom GUI

Confirm the thermostat is assigned to the correct zone. Perform the following steps and then transfer the database to the GCU-HOSP.

- In tab Design -> Controls tab, add the master "thermostat 1" to area "Floor1"
- In tab Design -> Equipment tab, add a "Guestroom Control Unit" and "Digital IO/ QSE-IO" to area "Floor1"
- In tab Design -> Link assignment tab, assign both the thermostat and the QSE-IO to the GCU processor link
- In tab Design -> Subsystem, add the Floor1 GCU1 to the subsystem
- · Activate the processor, devices and other devices added to the system
- In tab Program -> Devices, switch to HVAC zones as shown in Figure 1 below

lesign	program devices	✓ activate   transfer   diagnostics
Device Lo	ocation:	Input Number: 1 Name Input 1 program Normal
Floor 1	NO 001	Button Type: Dual Action  LED Logic: Pathway  Close  Open  Use shared scene
#	Function: Custom (Scenes 1-4 +	Assignable Items   Show All   Lighting - Areas   in Current Area   Expand all   Collapse all   Lighting - Areas   Ploor 1   Ploor 2   Devices
1	Input 1	Timeclocks     Timeclocks
2	Input 2	its: occupancy seconds
3	Input 3	
4	Input 4	
5	Input 5	

#### Figure 1

- Select Input "n" where n is the CCI to which the door/window sensor is wired.
- In the Close tab, select the desired settings to apply when the door/window is Closed as shown in Figure 2. For the purpose of this app note, it is desired to leave the thermostat in Auto mode of operation when the door is closed.



#### Figure 2

### Configuring the contact closure inputs of QSE-IO using myRoom GUI (continued)

• In the Open tab, select the desired settings to apply when the door/window is Opened as shown in Figure 3. For the purpose of this app note, it is desired to leave the thermostat in Off mode of operation when the door is open.

Close	Open									
Assignable Items Show All 📲 HVAC Zones 🔽 in Current Area										
Expand all Co	llapse all									
Floor 1	Floor 1 😺 1 of 1 Active Zones 72°F									
T F	loor 1 HVAC Zone 001 🕼 72 , Unaffected, Off, Unaffected									
	Temperature Setpoint									
	Target 72 °F									
	Drift ?									
	Schedules									
	Unaffected									
	Hold     Run									
	Operating Mode (?)									
	O Unaffected Off									
	Auto									
	Fan Speed (?)									
	Unaffected      Auto									
	High Medium									
	LOW									

#### Figure 3

If it is desired to lock out the thermostat when the door/window is opened, so the guest/user isn't allowed to change the settings, follow the below steps.

• Select Devices as shown in Figure 4.

rev	Control on	Close Open Use shared scene Share this scene
		Assignable Items Show All 🛽 Devices 🗨
	Function: Custom (Scenes 1.4 +	Expand all Collapse all
	Caston (seenes 1 1 m	HVAC Zones
#	Name	Floor 1 0 of 2 Acti Devices
1	Input 1	Thermostat 1 (Pall I Timeclocks
		IO 001 (IO)
2	Input 2	
3	Input 3	
4	Input 4	
5	Input 5	

Figure 4

### Configuring the contact closure inputs of QSE-IO using myRoom GUI (continued)

• Set the thermostat to be Unlocked when the door/window is Closed as shown in Figure 5.



#### Figure 5

• Set the thermostat to be Locked when the door/window is Opened as shown in Figure 6.



#### Figure 6

• Transfer the database and perform complete system testing as explained on the next page.

### Testing

Once the FCU CCI is wired and configured, it is recommended to test the setup.

Action	Expected result	Pass/Fail
Close the door or window to which the CCI sensors are attached and wait for the time specified in advanced config parameter 66.	No observable result.	
On the myRoom Palladiom thermostat press the fan button to toggle the fan speed.	On the palladiom thermostat screen, we can observe that the fan speed icon cycles from low speed, medium speed, to high speed. <b>Note:</b> Certain speeds may not be supported by the equipment and the equipment may remain in the supported fan speed.	
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On the myRoom Palladiom thermostat press the fan button to toggle the fan speed.	The Palladiom thermostat display flashes and doesn't allow the fan speed to be changed.	
On the myRoom Palladiom thermostat press the Power button to turn on the FCU.	The Palladiom thermostat display flashes and doesn't allow the Op Mode to be changed.	

### Troubleshooting

- If the Palladiom thermostat display flashes and doesn't allow changes, or if the HVAC doesn't turn on while the door is closed, ensure the correct CCI sensor type is programmed in "Closure Type" as shown in Figure 7 below.
- If the HVAC does not turn off when the door is opened, ensure the correct CCI sensor type is programmed in "Closure Type" as shown in Figure 7 below.

Lutton Type:       Dual Action       LED Logic:       Pathway       ?       Closure Type       Normally Open         Close       Open       Normally Closed         Use shared scene       Share this scene         Assignable Items       Show All       Devices       In       Current Area         Expand all       Collapse all         Floor 1       1 of 2 Active Devices       Unlocked         Image: Thermostat 1 (Palladiom Thermostat)       Image: Unlocked									_
Close Open Normally Open Normally Closed Use shared scene Share this scene Assignable Items   Show All   Devices in Current Area Expand all Collapse all Floor 1   1 of 2 Active Devices Unlocked Thermostat 1 (Palladiom Thermostat)  Unlocked To 001 (IO)	Button Type:	Dual Action	LED Logic:	Pathway		~ ?	Closure Type	Normally Open	•
Close     Open     Normally Closed       Use shared scene     Share this scene       Assignable Items     Show All     Devices       in     Current Area       Expand all     Collapse all       Floor 1     1 of 2 Active Devices       Unlocked       Thermostat 1 (Palladiom Thermostat)     Unlocked								Normally Open	
Use shared scene Share this scene Assignable Items Show All Devices In Current Area Expand all Collapse all Floor 1 III 1 of 2 Active Devices Unlocked III Thermostat 1 (Palladiom Thermostat) Unlocked IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Close	Open						Normally Closed	
Floor 1  I of 2 Active Devices Unlocked  Thermostat 1 (Palladiom Thermostat)  Unlocked  I 0 001 (10)	Use shared scene Share this scene Assignable Items Show All Devices in Current Area								
Thermostat 1 (Palladiom Thermostat)      Inlocked     IO 001 (IO)	- Floor	1 🔳 1 of 2 Activ	e Devices	Unlocked					
<b>I</b> IO 001 (IO)	Thermostat 1 (Palladiom Thermostat) I Unlocked								
	X	IO 001 (IO)							

#### Figure 7

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