myRoom Fan Coil Unit Controller

The Fan Coil Unit Controller interfaces with the myRoom Palladiom QS thermostat to control 2-pipe and 4-pipe fan coil units.
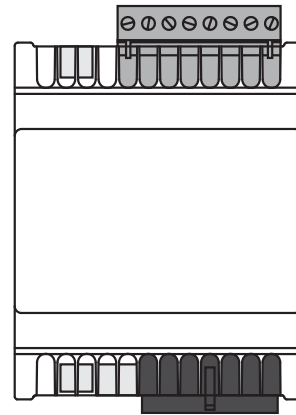
Model Numbers

SMC53-HOSP – Basic fan coil unit controller 24 V∼

SMC55-HOSP – Advanced fan coil unit controller 24 V∼

Features

- Use with the myRoom Palladiom QS thermostat.
- Control of 2-pipe and 4-pipe fan coil units.
  - On/Off valves
  - 0–10 V== valves (SMC55-HOSP only)
  - 3-speed fan control. Do not connect this controller directly to fan motors. Connect this controller's fan-speed outputs to a fan motor relay control board.
  - 0–10 V== fan control (SMC55-HOSP only)
  - Auto cool/heat changeover using supply water sensor (Semitec 103AT or equivalent)
- Return air temperature sensor input (Semitec 103AT or equivalent). Supports an optional wired return air temperature sensor to allow for flexibility regarding thermostat installation location. The wired return air temperature sensor is used instead of the internal thermostat sensor.

Job Name:	Model Numbers:
Job Number:	

Model Compliance

Use the table below to identify which model(s) supports the HVAC system features. **All models currently only support Fan Coil Units. Contact Lutron if using a different HVAC system.**

System Configuration	Valve/Element Control	Fan Control (Fan Type)	2-Pipe/Single Thermal Type (2-pipe mode)	Basic Configuration Number	Basic Configuration Supported Models	
					SMC53x	SMC55x
• 4-pipe • 2-pipe cooling with resistive heating element	Two On/Off relays[1]	H/M/L Relays	N/A	01	✓	✓
		0–10 V⎓ Signal	N/A	02		✓
	Two 0–10 V⎓ signals or one relay and one 0–10 V⎓[2]	H/M/L Relays	N/A	03		✓
		0–10 V⎓ Signal	N/A	04		✓
• 2-pipe heating only • 2-pipe cooling only • 2-pipe with a changeover sensor	One On/Off relay[1]	H/M/L Relays	Changeover Sensor	05	✓	✓
			Heating only	06	✓	✓
			Cooling only	07	✓	✓
		0–10 V⎓ Signal	Changeover Sensor	08		✓
			Heating only	09		✓
			Cooling only	10		✓
	One 0–10 V⎓ signal	H/M/L Relays	Changeover Sensor	11		✓
			Heating only	12		✓
			Cooling only	13		✓
		0–10 V⎓ Signal	Changeover Sensor	14		✓
			Heating only	15		✓
			Cooling only	16		✓

If the option is supported by all models, use the table below to choose the correct hardware model.

Model Hardware

Model Number	Operating Voltage	Output Relay Rating	On/Off Valve	3-speed Fan	0–10 V⎓ Valve	0–10 V⎓ Fan
SMC53-HOSP Relays only	12–24 V∼ or 24 V⎓	1 A at 24 V∼ max[3]	✓	✓[3]		
SMC55-HOSP Relays and 0–10 V⎓	12–24 V∼ or 24 V⎓	1 A at 24 V∼ max[3]	✓	✓[3]	✓[4]	✓[4]

If the required options are supported by both SMC53-HOSP and SMC55-HOSP, select SMC55-HOSP to allow for future system upgrades. If upgrades are unlikely, select SMC53-HOSP.

[1] For floating point valves, see App Note #630 (048630) on www.lutron.com.
[2] Simultaneous 0–10 V⎓ and relay controls available in SMC55-HOSP version 5010 or later and SMC5500050407 version 5008 or later.
[3] **Do not connect this controller directly to fan motors.** Connect this controller's fan-speed outputs to a fan motor relay control board.
[4] When using 0–10 V⎓ fan or valve control, a different power supply must be used to power the FCU controller and the 0–10 V⎓ fan/valve actuators. For more information, see Application Note #651 (048651) at www.lutron.com

Job Name:	Model Numbers:
Job Number:	

Specifications

Regulatory Approvals

- RoHS
- NOM
- UL® recognized to UL/CSA 60730*
- CE Certified to EN60730 incorporated control*

Input Characteristics

- Accuracy: NTC: 1% for temperatures -50 °C/+100 °C
- Resolution: 0.1 °C
- Analog Inputs: (2) NTC 10 k at 25 °C

Output Characteristics

- Digital Outputs: (5) SPST pilot duty relays rated for 1 A at 24 V∿ maximum. Do not connect this controller directly to fan motors. Connect the controller fan-speed outputs to a fan motor relay control board.
- Analog Outputs (SMC55x only): (3) 0–10 V⎓ When using 0–10 V⎓ fan or valve control, a different power supply must be used to power the FCU controller and the 0–10 V⎓ fan/valve actuators. For more information, see Application Note #651 (048651) at www.lutron.com

Operating Characteristics

- Maximum power consumption: 4 W/6 VA Consider additional power being drawn by the external relay circuits.
- Power supply (not isolated): 12–24 V∿ 50/60 Hz ±10% or 24 V⎓ ±10%, SELV If the same power supply module/transformer is also used for other devices and/or connected to Earth, there are important risks of malfunctions or damage to the device
- Over-voltage category: Class II device
- Nominal impulse voltage: 2500 V∿

Environment

- Ambient operating temperature: –4 °F to 131 °F (–20 °C to 55 °C)
- Storage temperature: –40 °F to 185 °F (–40 °C to 85 °C)
- 0% to 90% relative humidity, non-condensing
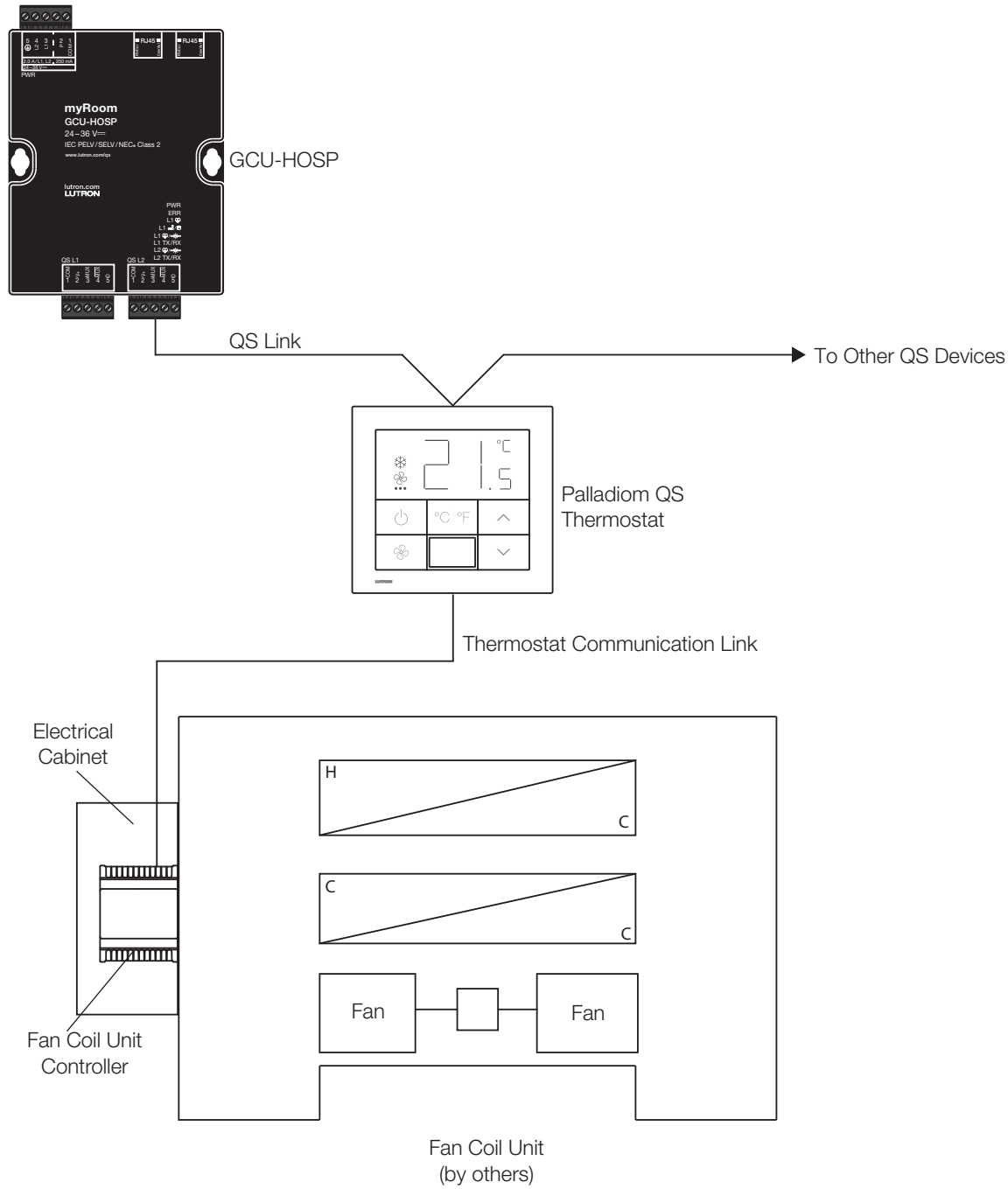- Indoor use only
- IP20 Rating

Important Notes

- Do not disassemble, repair, or modify this equipment
- Container: PC+ABS UL94 V-0 resin plastic casing.
- Pollution rating: Class 2
- PTI used materials for the insulation: PTI 250 V (device made with class IIIa material)
- Fire resistance: Class D
- Software: Class A device

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* This device is a component and is intended for use as part of complete equipment rather than for direct separate installation in the field.
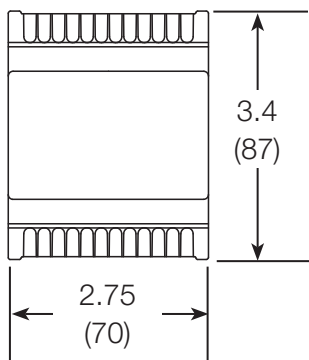
Job Name:	Model Numbers:
Job Number:	

System Diagram

GCU-HOSP

QS Link

To Other QS Devices

Palladiom QS
Thermostat

Thermostat Communication Link

Electrical
Cabinet

H

C

C

C

Fan

Fan

Fan Coil Unit
Controller

Fan Coil Unit
(by others)

Job Name:	**Model Numbers:**
Job Number:	

Dimensions

Measurements shown as: in (mm)

Front View

3.4
(87)

2.75
(70)

Side View

0.2
(5)

2.4
(62)
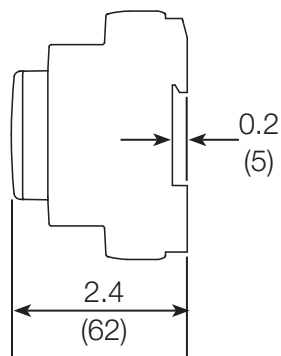
Mounting

The FCU controller is to be installed in an enclosure designed for the specific environmental conditions and to minimize the possibility of unintended contact with hazardous voltages. All pertinent state, regional and local safety regulations must be observed when installing and using this product. Use metal enclosures to improve the electromagnetic immunity of the controller system.
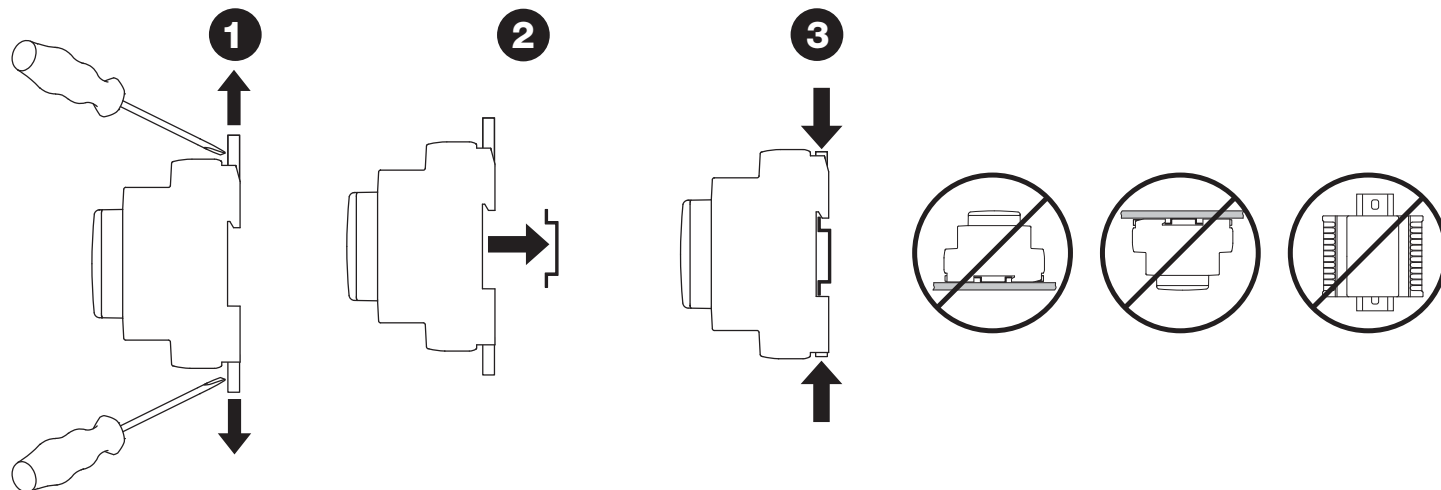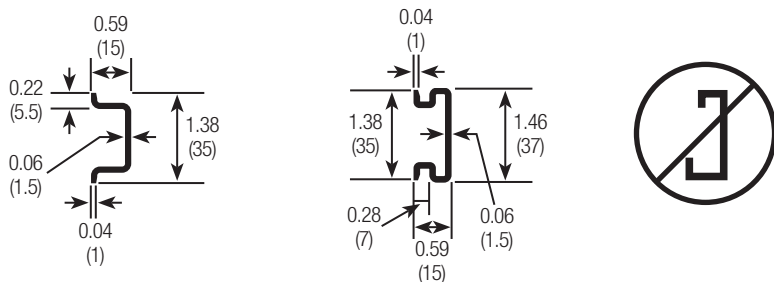
Job Name:	Model Numbers:
Job Number:	

Mounting (continued)
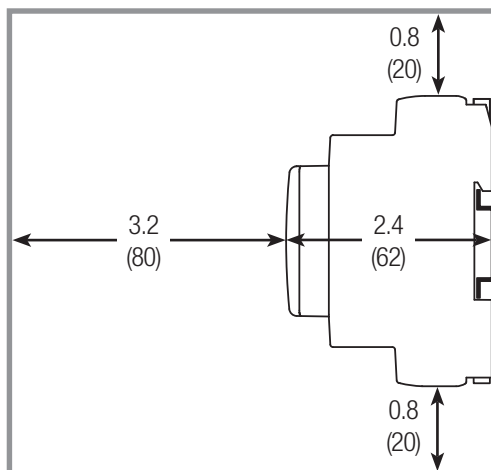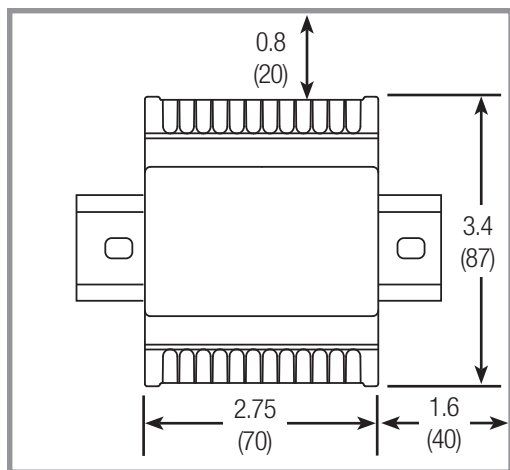
Acceptable DIN Rail Dimensions

Measurements shown as: in (mm)

Minimum Clearances

The HVAC Controller must be installed in an enclosure with at least the clearances shown below.
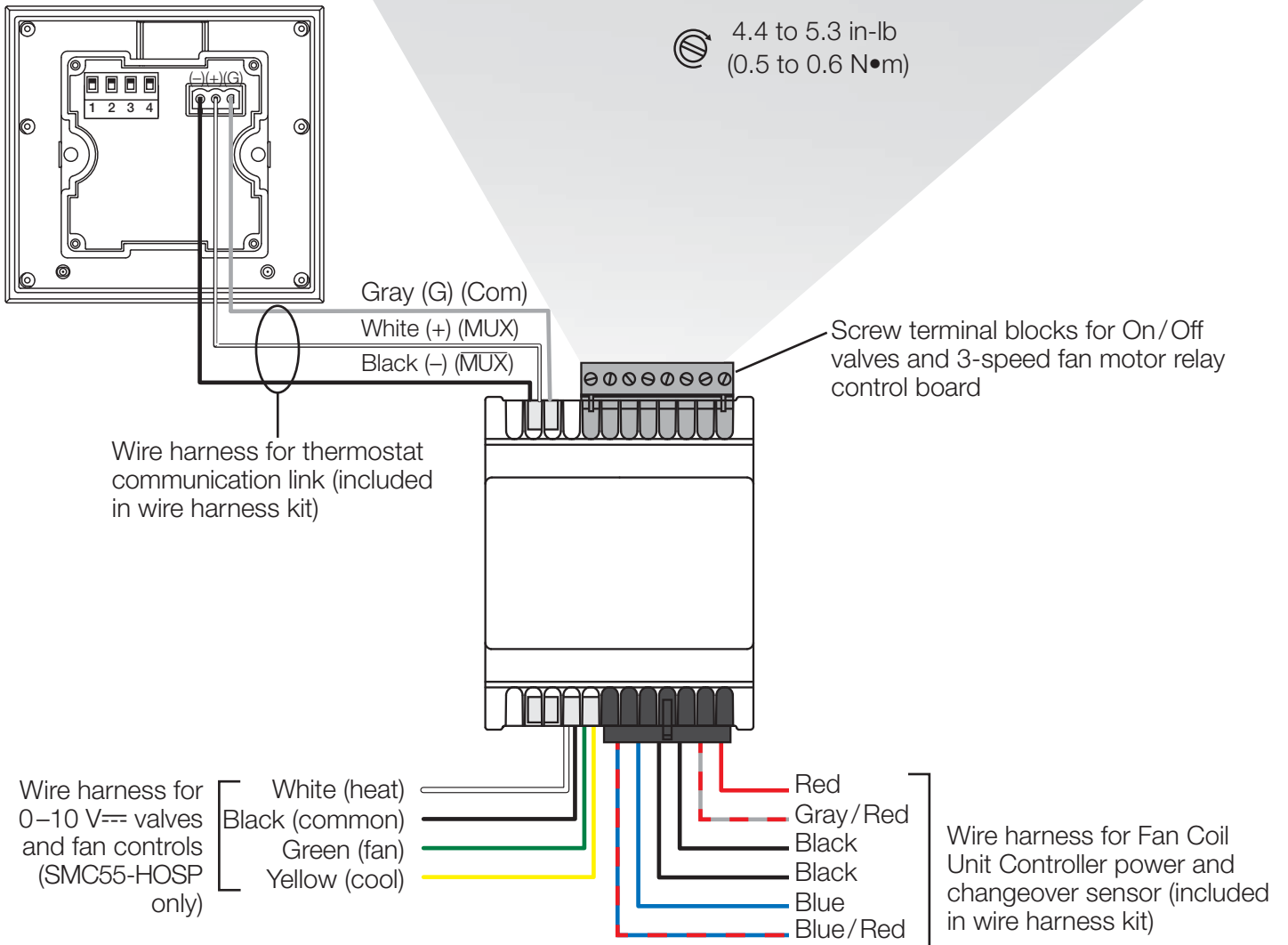
Measurements shown as: in (mm)

Job Name:	Model Numbers:
Job Number:	

Connections

Cable Type								
Wire Size	**AWG**	24 to 14		22 to 14		2 x 24 to 18	2 x 24 to 16	2 x 22 to 18	2 x 20 to 16
	mm²	0.2 to 2.5		0.25 to 2.5		2 x 0.2 to 1.0	2 x 0.2 to 1.5	2 x 0.25 to 1.0	2 x 0.5 to 1.5

4.4 to 5.3 in-lb
(0.5 to 0.6 N•m)

Gray (G) (Com)
White (+) (MUX)
Black (–) (MUX)

Screw terminal blocks for On / Off valves and 3-speed fan motor relay control board

Wire harness for thermostat communication link (included in wire harness kit)

Wire harness for 0–10 V⎓ valves and fan controls (SMC55-HOSP only)

White (heat)
Black (common)
Green (fan)
Yellow (cool)

Red
Gray / Red
Black
Black
Blue
Blue / Red

Wire harness for Fan Coil Unit Controller power and changeover sensor (included in wire harness kit)
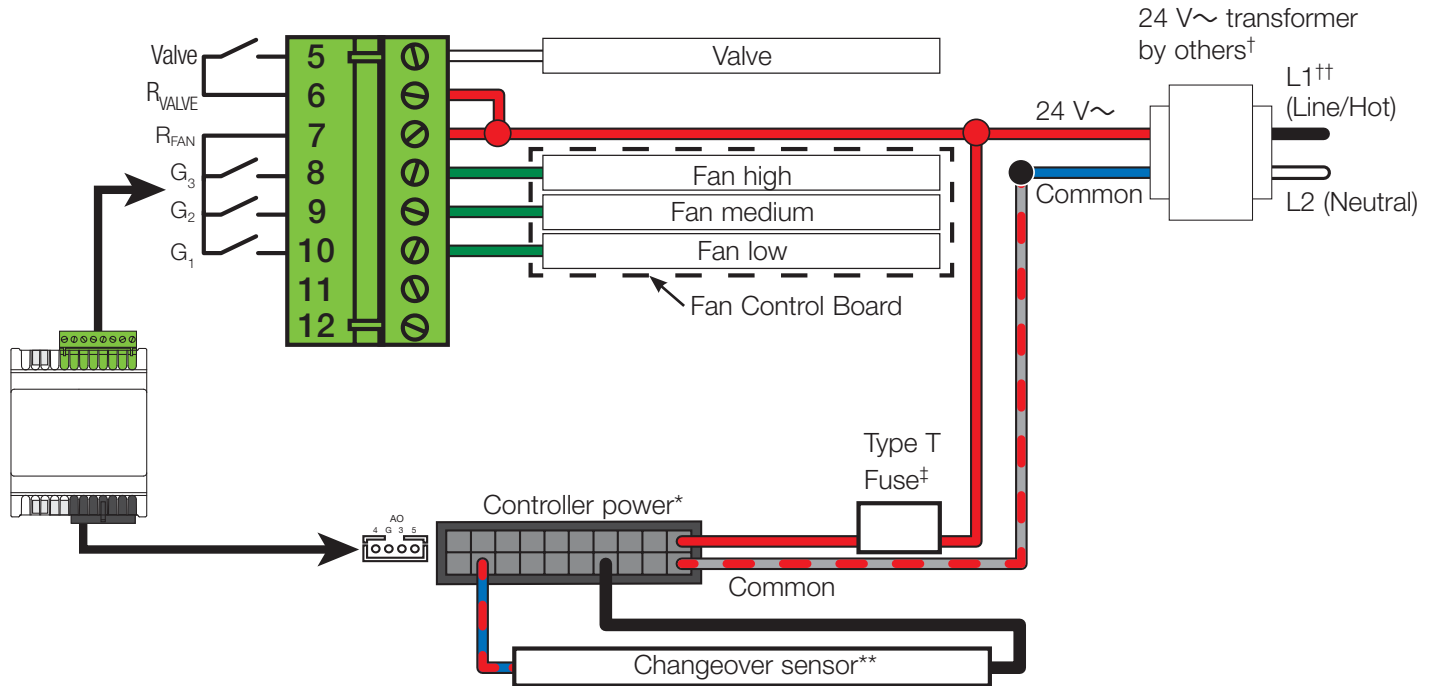
Note: Wire harnesses can be extended using 18 AWG or 22 AWG (1.0 mm² or 0.25 mm²) wire. Use twisted pair, shielded cables to extend analog I/O and thermostat communication links.

Wiring

Wire the controller according to the diagram below that corresponds to the system, valve, and fan type of the FCU. For more information on wiring using a control board or interposing relays, see Application Note #678 (048678) at www.lutron.com. To extend relay life, each inductive load, driven by the relay contacts, must include a suppression device such as a peak limiter, RC circuit, or fly-back diode.

Wiring Diagram 1 (SMC53-HOSP or SMC55-HOSP)
2-pipe System
On / Off Valve
3-speed Fan
Changeover Sensor

*   If the signal source from the HVAC system is not 24 V$\sim$, use a separate supply to power the HVAC controller.

** Sensor is optional. Semitec 103AT or equivalent – NTC 10 k at 25 °C.

†   A Class 2/LPS transformer should be used. The transformer should be rated to supply the power drawn by external circuits as well as the controller.

‡   Rated for 1.25 A.

†† L1 (Line/Hot) voltage of 120 – 240 V$\sim$ is acceptable.

Job Name:	Model Numbers:
Job Number:	

Wiring *(continued)*

Wiring Diagram 2 (SMC55-HOSP only)
2-pipe System
On / Off Valve
0–10 V⎓ Controlled Fan
Changeover Sensor

* If the signal source from the HVAC system is not 24 V∼, use a separate supply to power the HVAC controller.

** Sensor is optional. Semitec 103AT or equivalent – NTC 10 k at 25 °C.

*** When using 0–10 V⎓ fan or valve control, a different power supply must be used to power the FCU controller and the 0–10 V⎓ fan/valve actuators. For more information, see Application Note #651 (048651) at www.lutron.com

† A Class 2/LPS transformer should be used. The transformer should be rated to supply the power drawn by external circuits as well as the controller.

‡ Rated for 1.25 A.

†† L1 (Line/Hot) voltage of 120–240 V∼ is acceptable.

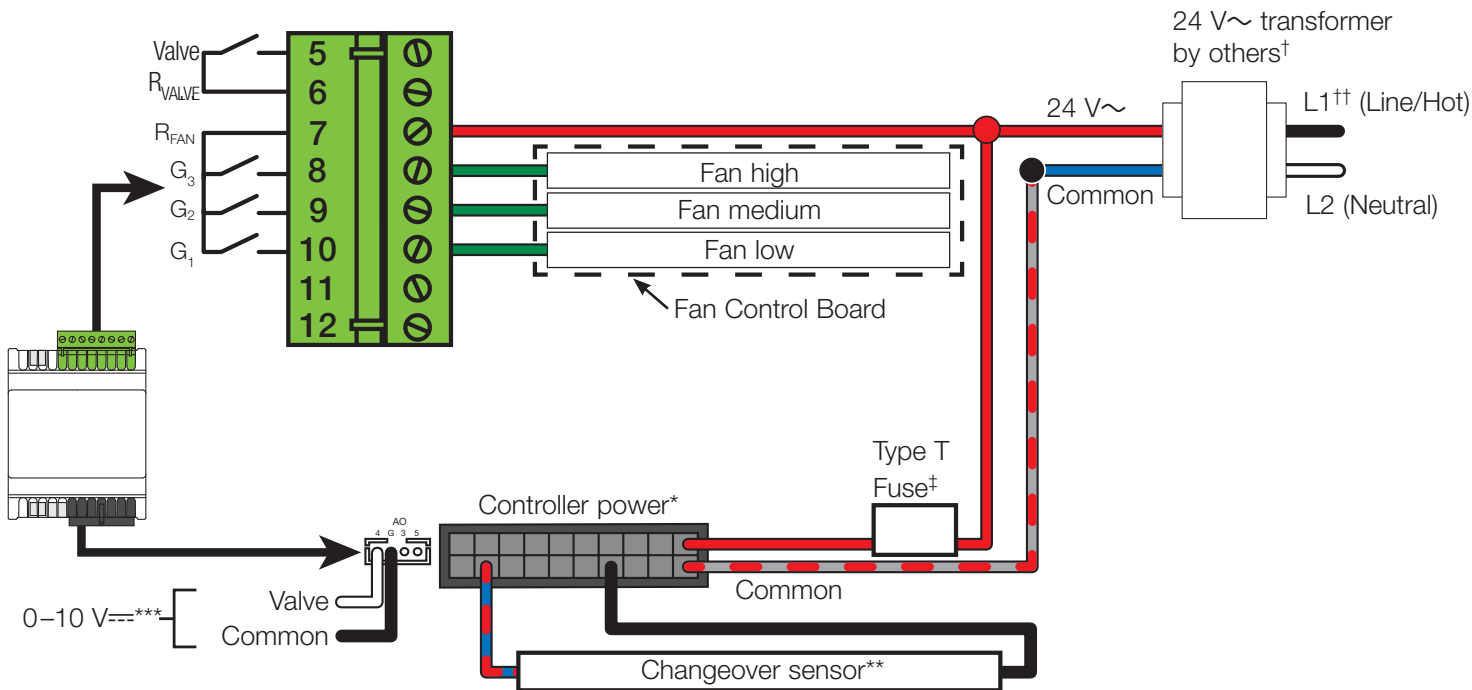| Job Name:	Model Numbers:
Job Number:	

Wiring *(continued)*

Wiring Diagram 3 (SMC55-HOSP only)
2-pipe System
0–10 V꞊꞊ Valve
3-speed Fan
Changeover Sensor

* If the signal source from the HVAC system is not 24 V∼, use a separate supply to power the HVAC controller.
** Sensor is optional. Semitec 103AT or equivalent – NTC 10 k at 25 °C.
*** When using 0–10 V꞊꞊ fan or valve control, a different power supply must be used to power the FCU controller and the 0–10 V꞊꞊ fan/valve actuators. For more information, see Application Note #651 (048651) at www.lutron.com
† A Class 2/LPS transformer should be used. The transformer should be rated to supply the power drawn by external circuits as well as the controller.
‡ Rated for 1.25 A.
†† L1 (Line/Hot) voltage of 120–240 V∼ is acceptable.

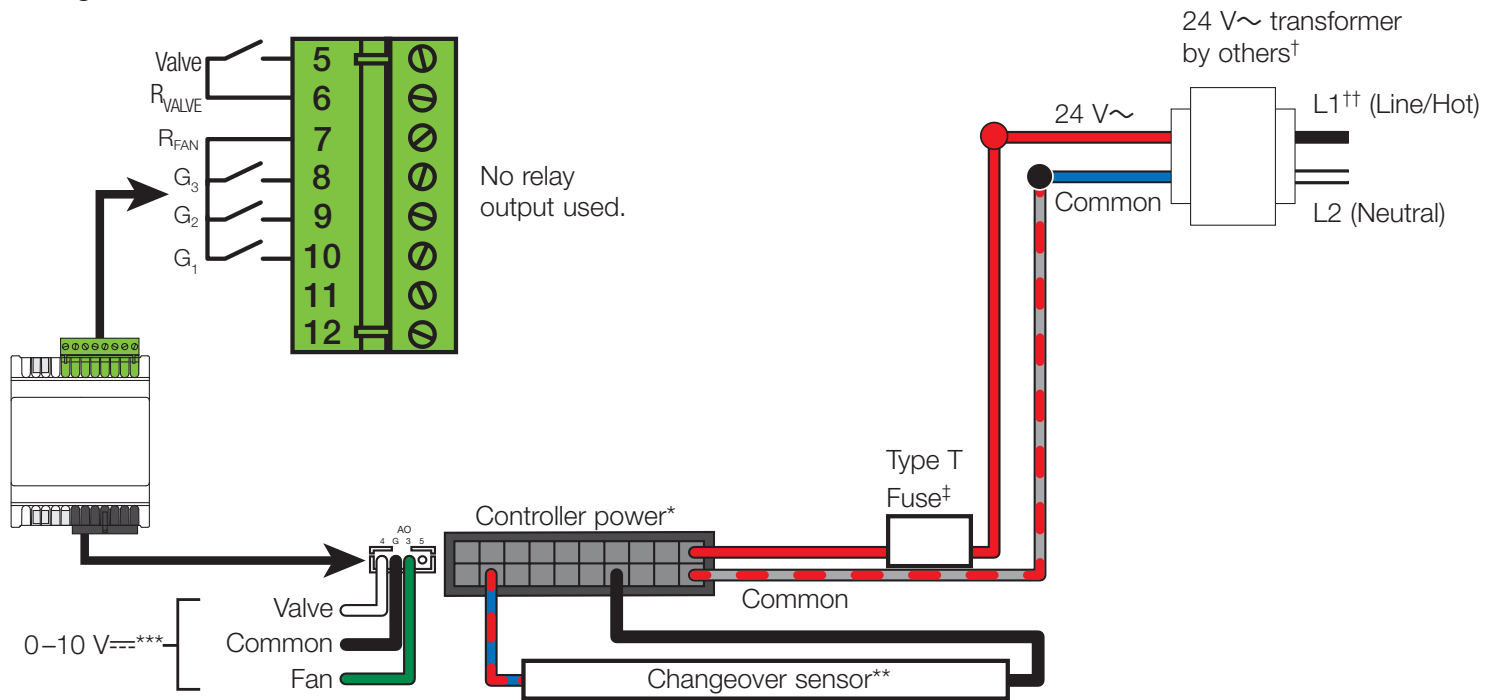| Job Name:	Model Numbers:
Job Number:	

Wiring *(continued)*

Wiring Diagram 4 (SMC55-HOSP only)
2-pipe System
0–10 V⎓ Valve
0–10 V⎓ Controlled Fan
Changeover Sensor

*   If the signal source from the HVAC system is not 24 V∿, use a separate supply to power the HVAC controller.

**   Sensor is optional. Semitec 103AT or equivalent – NTC 10 k at 25 °C.

*** When using 0–10 V⎓ fan or valve control, a different power supply must be used to power the FCU controller and the 0–10 V⎓ fan/valve actuators. For more information, see Application Note #651 (048651) at www.lutron.com

†   A Class 2/LPS transformer should be used. The transformer should be rated to supply the power drawn by external circuits as well as the controller.

‡   Rated for 1.25 A.

††   L1 (Line/Hot) voltage of 120–240 V∿ is acceptable.

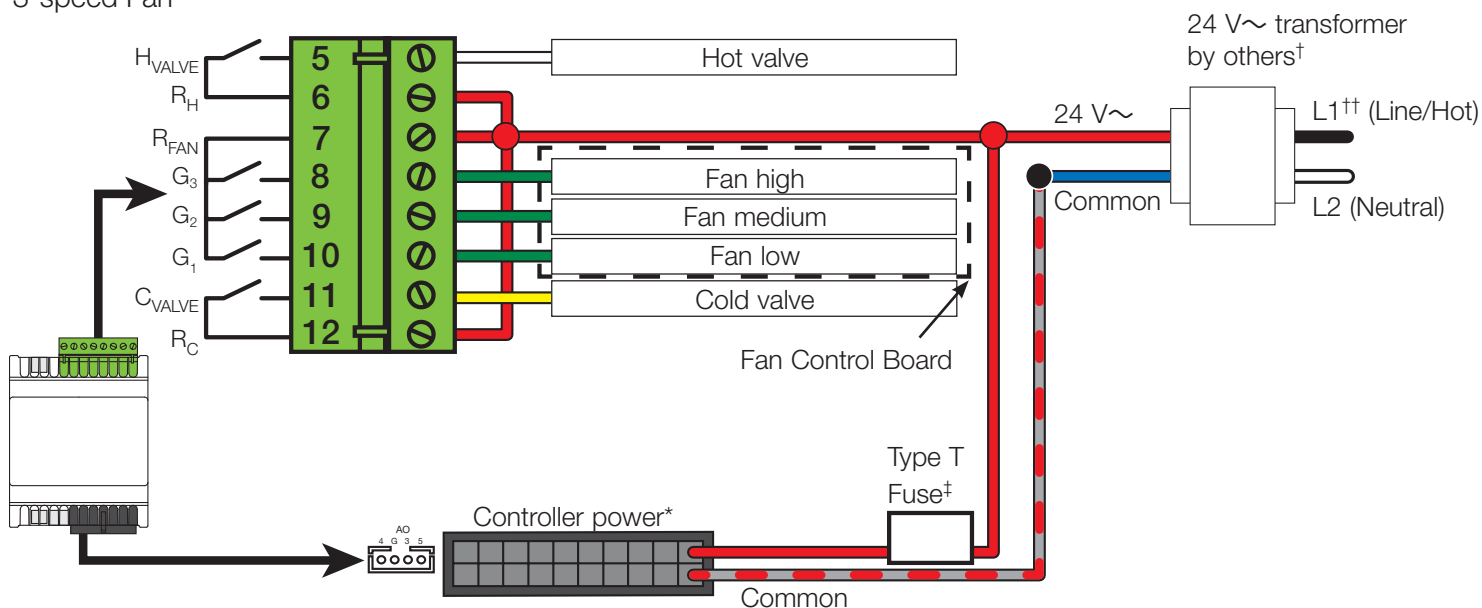| Job Name:	Model Numbers:
Job Number:	

Wiring (continued)

Wiring Diagram 5 (SMC53-HOSP or SMC55-HOSP)
4-pipe System
On / Off Valve
3-speed Fan

*   If the signal source from the HVAC system is not 24 V∼, use a separate supply to power the HVAC controller.

†   A Class 2/LPS transformer should be used. The transformer should be rated to supply the power drawn by external circuits as well as the controller.

‡   Rated for 1.25 A.

†† L1 (Line/Hot) voltage of 120 – 240 V∼ is acceptable.

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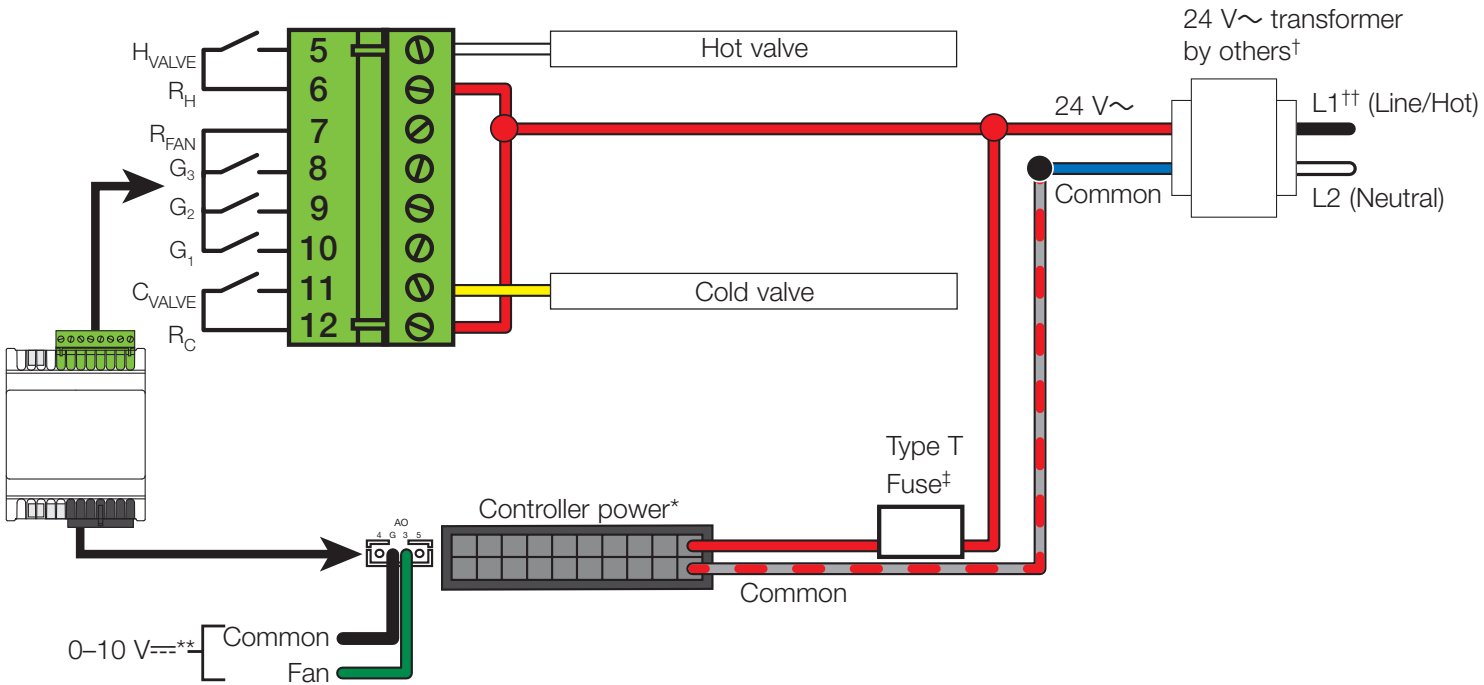| Job Name:	Model Numbers:
Job Number:	

Wiring (continued)

Wiring Diagram 6 (SMC55-HOSP only)
4-pipe System
On / Off Valves
0–10 V$=$ Controlled Fan

* If the signal source from the HVAC system is not 24 V$\sim$, use a separate supply to power the HVAC controller.

** When using 0–10 V$=$ fan or valve control, a different power supply must be used to power the FCU controller and the 0–10 V$=$ fan/valve actuators. For more information, see Application Note #651 (048651) at www.lutron.com

† A Class 2/LPS transformer should be used. The transformer should be rated to supply the power drawn by external circuits as well as the controller.

‡ Rated for 1.25 A.

†† L1 (Line/Hot) voltage of 120–240 V$\sim$ is acceptable.

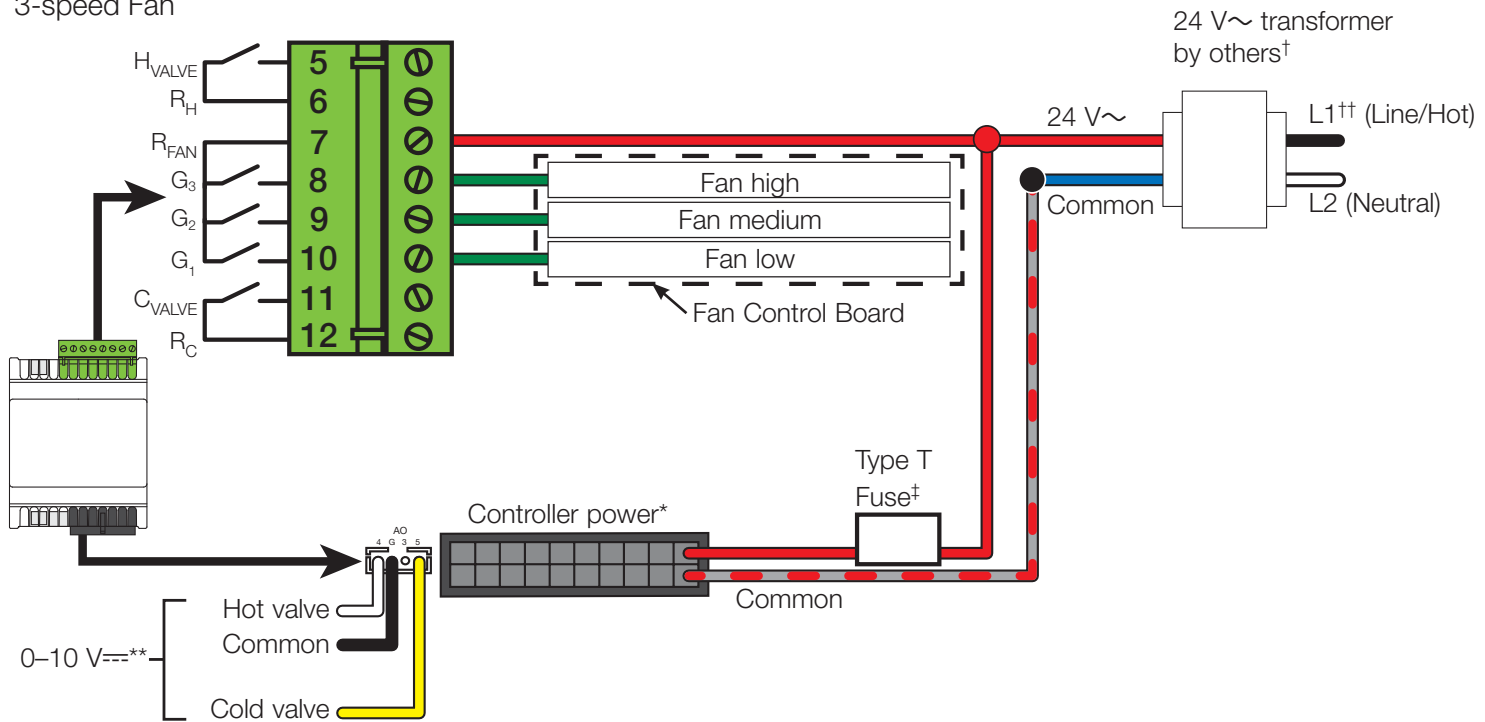| Job Name:	Model Numbers:
Job Number:	

Wiring *(continued)*

Wiring Diagram 7 (SMC55-HOSP only)
4-pipe System
0–10 V$=\!=$ Valves
3-speed Fan

*   If the signal source from the HVAC system is not 24 V$\sim$, use a separate supply to power the HVAC controller.

** When using 0–10 V$=\!=$ fan or valve control, a different power supply must be used to power the FCU controller and the 0–10 V$=\!=$ fan/valve actuators. For more information, see Application Note #651 (048651) at www.lutron.com

†   A Class 2/LPS transformer should be used. The transformer should be rated to supply the power drawn by external circuits as well as the controller.

‡   Rated for 1.25 A.

†† L1 (Line/Hot) voltage of 120–240 V$\sim$ is acceptable.

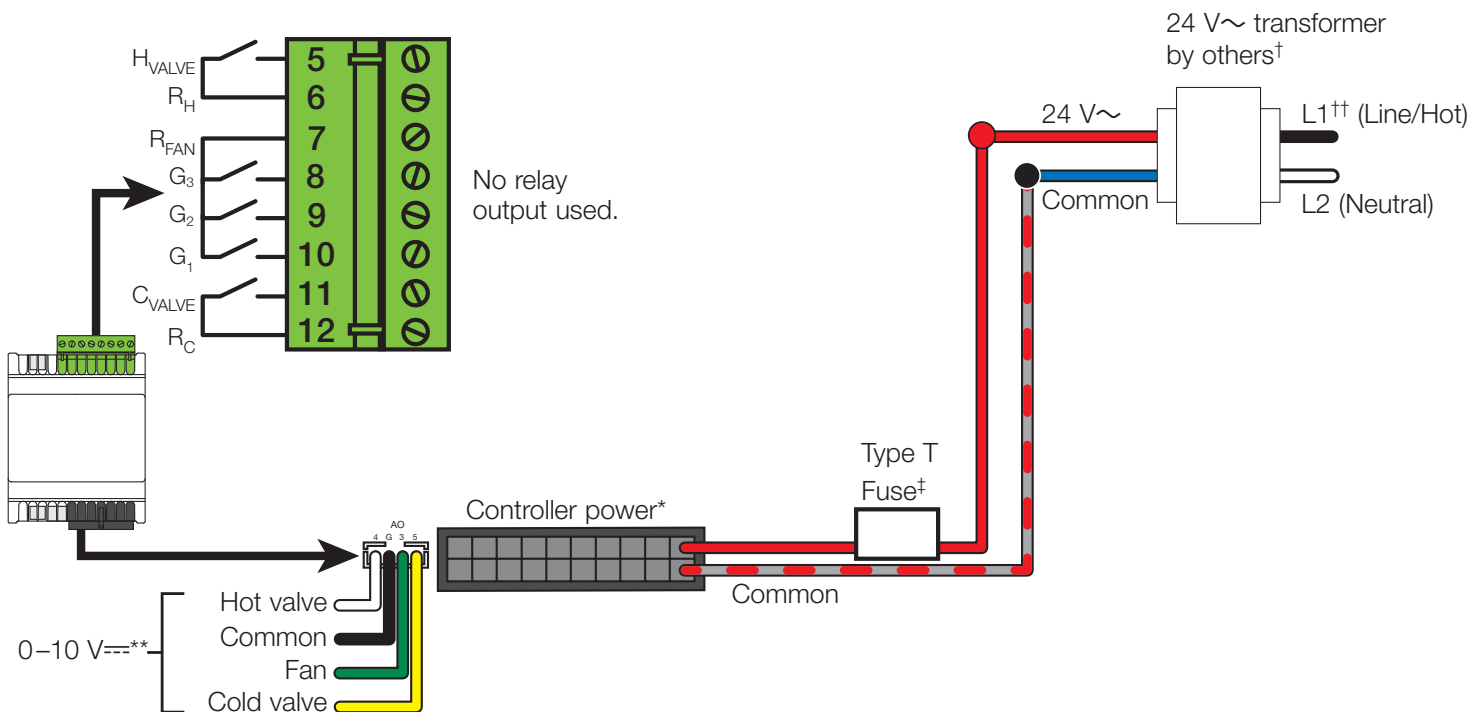| Job Name:	Model Numbers:
Job Number:	

Wiring *(continued)*

Wiring Diagram 8 (SMC55-HOSP only)
4-pipe System
0–10 V⎓ Valves
0–10 V⎓ Controlled Fan

*   If the signal source from the HVAC system is not 24 V∼, use a separate supply to power the HVAC controller.

** When using 0–10 V⎓ fan or valve control, a different power supply must be used to power the FCU controller and the 0–10 V⎓ fan/valve actuators. For more information, see Application Note #651 (048651) at www.lutron.com

†   A Class 2/LPS transformer should be used. The transformer should be rated to supply the power drawn by external circuits as well as the controller.

‡   Rated for 1.25 A.

†† L1 (Line/Hot) voltage of 120–240 V∼ is acceptable.

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Job Name:	Model Numbers:
Job Number:	