

PresSura™ Room Pressure Controller

Model RPC30 (-LON)



Installation Instructions

WARNING

The Model RPC30 (-LON) Room Pressure Controller must be wired to 24 VAC only. Wiring the unit to 110 VAC will cause serious damage to the unit and void the warranty.

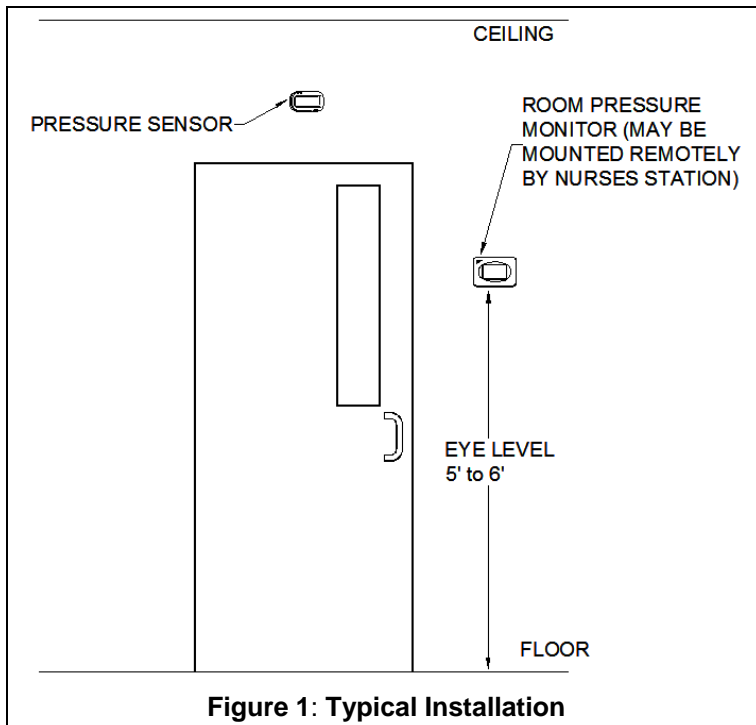
The pressure sensor must be mounted through the wall between the controlled space (isolation room) and referenced space (ante room / hallway).

Go to www.tsi.com to download the Operation and Service Manual for the Model RPC30.

These installation instructions guide the installer through the installation of the TSI® Model RPC30 (-LON) PresSura™ Room Pressure Controller. Please read these instructions thoroughly before beginning installation.



This product is classified by UL as to fire resistive properties only. See UL File R15545.



Component List

Part Number	Qty	Description
800243	1	Pressure sensor with cable
	<i>or</i>	
801913	1	Transducer Pick-ups
800983/800984	1	RPC30 / RPC30-LON Room Pressure Controller

Pressure Sensor Installation

WARNING

800243 pressure sensor must be mounted through the wall between the controlled space (isolation room) and referenced space (hallway), exactly as shown in Figure 1 and Figure 3.

- Determine pressure sensor location (Figure 1, Figure 3 and Figure 4). Pressure sensor typically mounts in the reference space, and the dummy housing mounts in the isolation room.

NOTICE

Pressure sensor is not symmetrical. If sensor is to be centered over hallway door, measure one inch to the left of center for 2¼" hole. Dummy sensor will be 2" off center on other side of wall.

- The pressure sensor must be orientated on the wall as shown in Figure 2. Looking at the mounted sensor, sensor hole is on the left (2¼") and wire hole is on the right.
- Drill a 2¼" hole through each side of the wall to accept the sensor tube.
- Drill a 7/8" hole on the side of the wall that the pressure sensor will be mounted. This hole is for the six-conductor sensor cable. Refer to Figure 2 for a hole mounting pattern.
- Slide sensor cover to right and remove screw that holds the sensor base to the pressure sensor (Figure 2). Remove pressure sensor and store in a safe place.
- From the side of the wall the sensor will be mounted, slide the sensor tube through the wall. Mark the tube where it is flush with wall. Remove sensor tube and cut tube 1/8 inch shorter than flush marking.

NOTICE

If 12" sensor tube needs to be extended, use same size or larger diameter tube. Drill out 1/2" sensor hole in dummy case to match ID of tube extension.

- From the side of the wall the sensor will be mounted, slide the sensor tube through the wall. Slide the dummy base over the end of the tube. Screw the pressure sensor base and dummy base to the wall (Figure 3 and Figure 4).

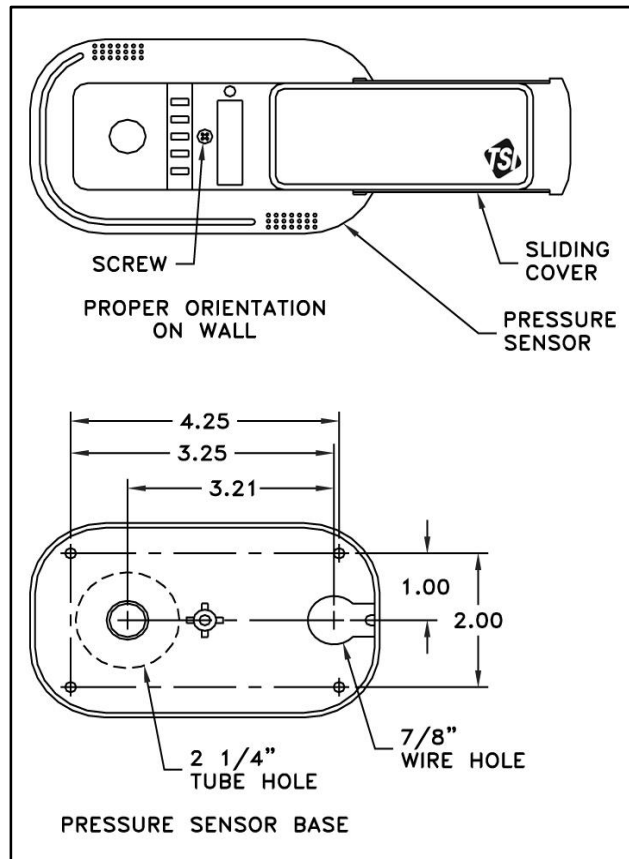


Figure 2: Pressure Sensor Orientation and Mounting Template

- Wire the pressure sensor per Figure 8 to Figure 28. Run sensor cable to the room pressure controller 6" x 4" electrical rough-in box.
- Insert fire protection sealant (provided) into 7/8" wire hole to seal.
- Install and screw the pressure sensor and dummy cover onto the bases. Slide covers to the left to hide the sensor. Finished installation should look as shown in Figure 4.

WARNING

DO NOT touch the sensor element in the pressure sensor. **DO NOT** run wires through the air passage. Doing so will damage the sensing element.

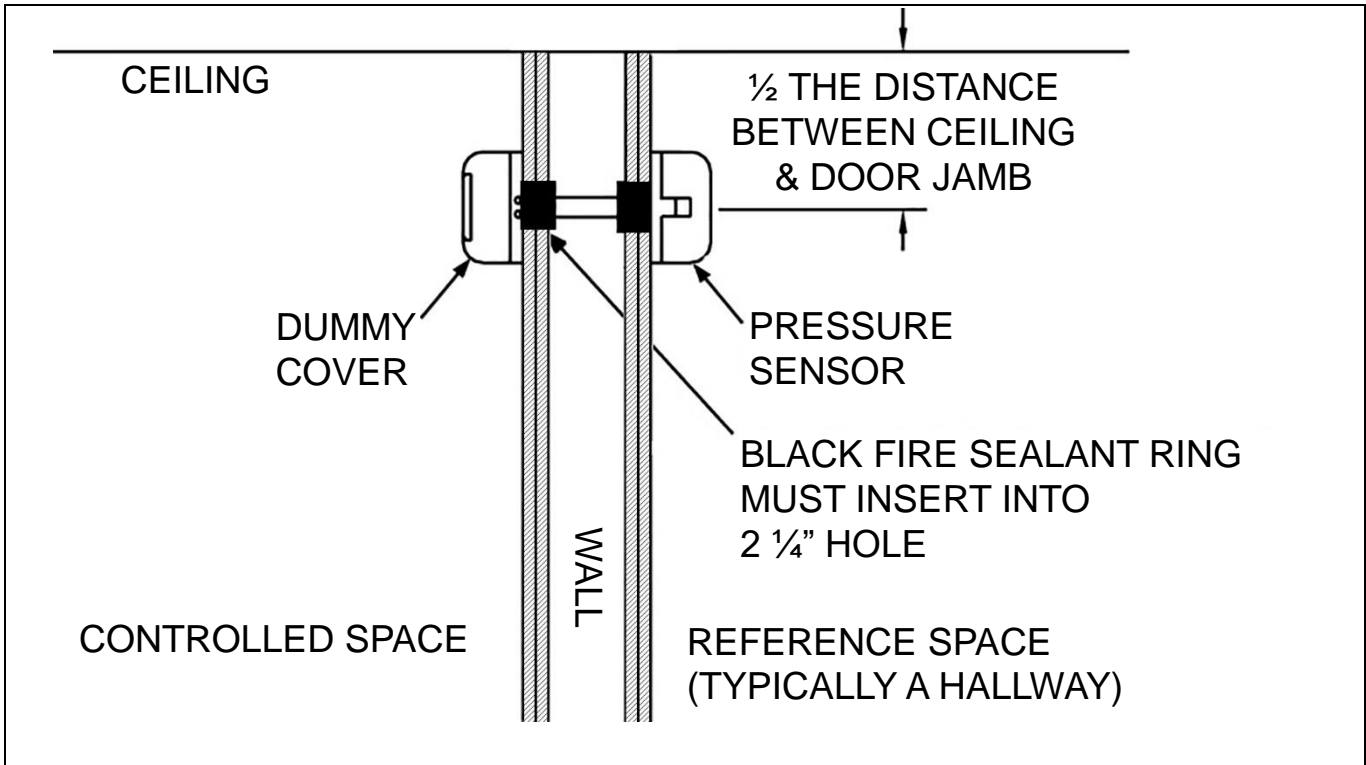


Figure 3: Cutaway View of Mounted Pressure Sensor

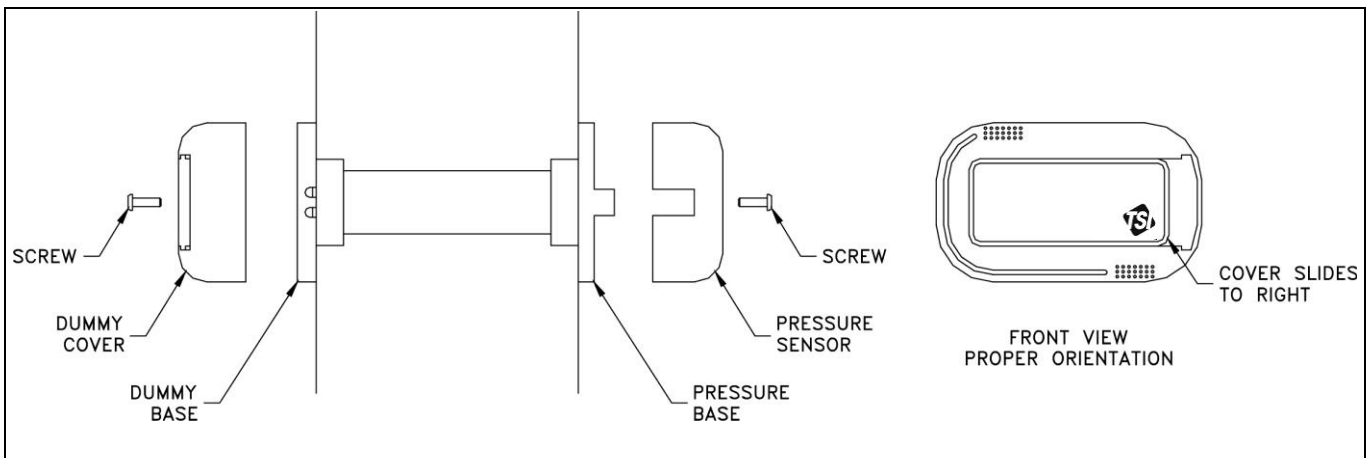


Figure 4: Pressure Sensor Mounting

Pressure Transducer Installation

WARNING

801913 pressure plates must be mounted in the wall between the controlled space (clean room) and referenced space (hallway), exactly as shown in Figure 5 and Figure 6. This installation is not representative of the through penetrating product tested under UL.

- Install pressure transducer in desired location (typically above ceiling). The transducer must be mounted on a wall in the correct position per Figure 5 (screws not provided). **DO NOT** mount pressure transducer to duct or other vibrating surface.
- Wire the pressure transducer per Figure 10 or Figure 11. Run sensor cable to the Clean Room Pressure Controller 6" x 4" electrical rough-in box.
- Determine pressure sensor location (Figure 1, Figure 5 and Figure 6). Pressure sensor typically mounts in the reference space, and the plate mounts in the clean room.
- Drill a 2¼-inch hole through each side of the wall to accept the sensor tube.
- Run pneumatic tubing from transducer to sensor locations. For a positively pressurized space, the high port should be connected to the controlled space and the low port to the reference space. Similarly, for a negatively pressurized space, the low port should be connected to the controlled space and the high to the reference space.
- Connect the pneumatic tubing to the nipple on the back side of the pressure plate.
- Insert the pressure plate into the hole in the wall. Screw the pressure plate to the wall. The finished assembly should look like Figure 5.

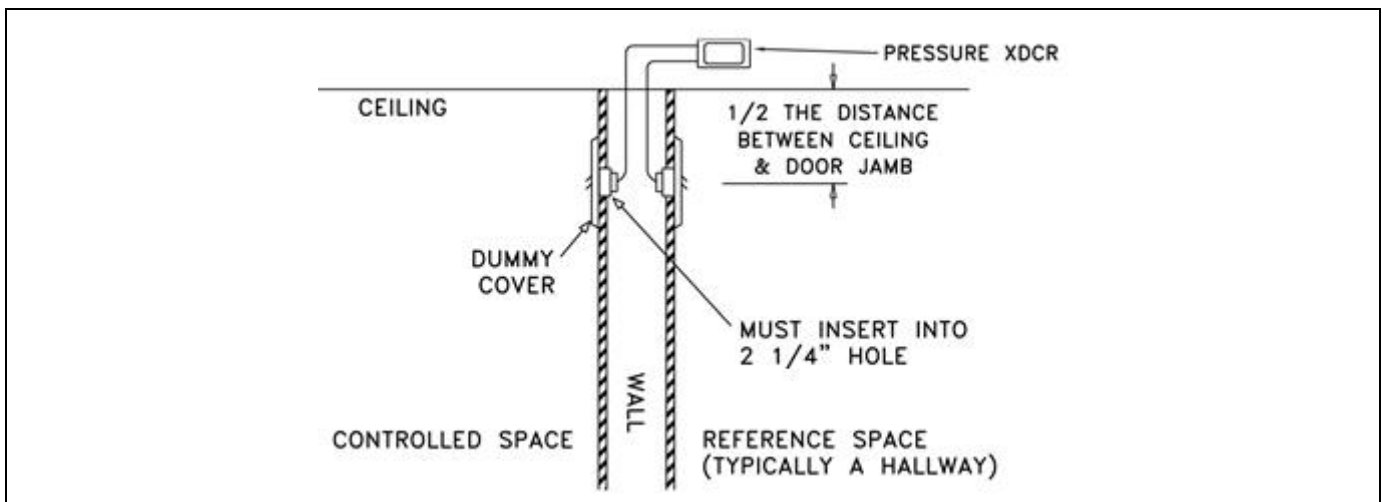


Figure 5: Cutaway View of Mounted Pressure Transducer Assembly

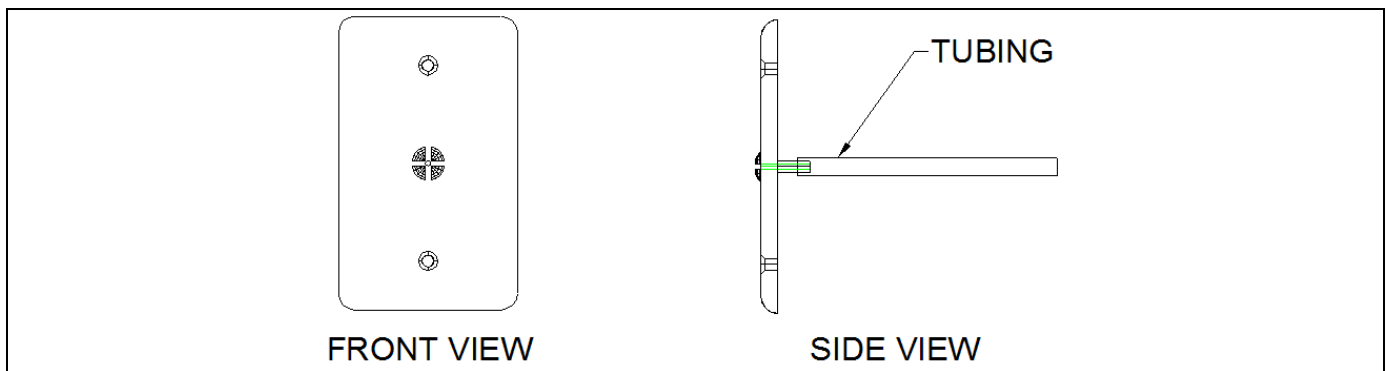


Figure 6: Pressure Transducer Mounting Plate

Pressure Controller Installation

Pressure Controller Rough-in

- Select the mounting location of the pressure controller. The construction plans normally show the mounting location. If no location is specified, then the unit is typically installed as shown in Figure 1. Alternate mounting locations are nurses' station, other staff areas, etc.
- Install a standard triple gang electrical box (6" × 4"). The electrical box must be installed level and flush with the wall surface.
- Use appropriate firestop material, per local codes, if electrical box is to be installed in a fire barrier.
- Screw PresSura™ DIM to electrical box (Figure 7).

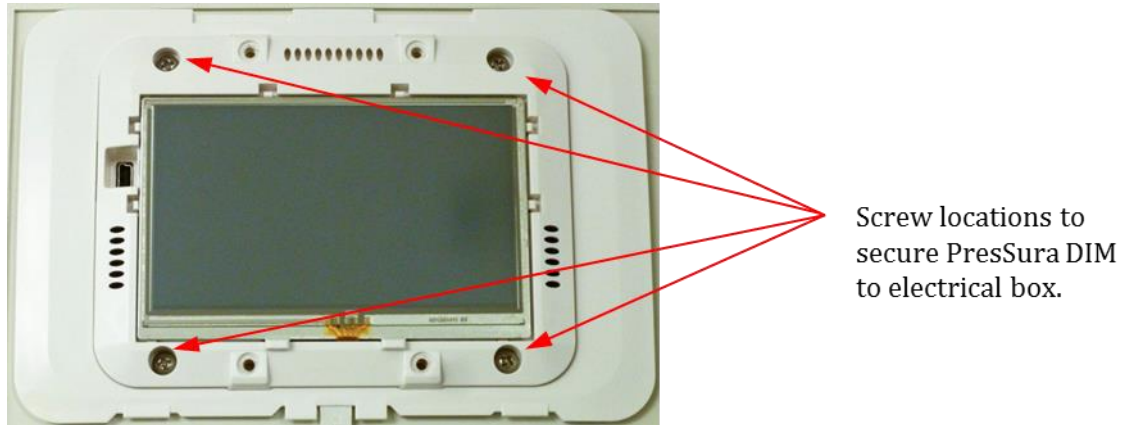


Figure 7: Pressure Controller Mounting

Pressure Controller Wiring

WARNING

DO NOT connect more than 24 VAC to any terminal.

DO NOT apply voltage to the RS-485 output, BACnet™ output, analog output, or control output. Severe damage may occur to the unit if voltage is applied.

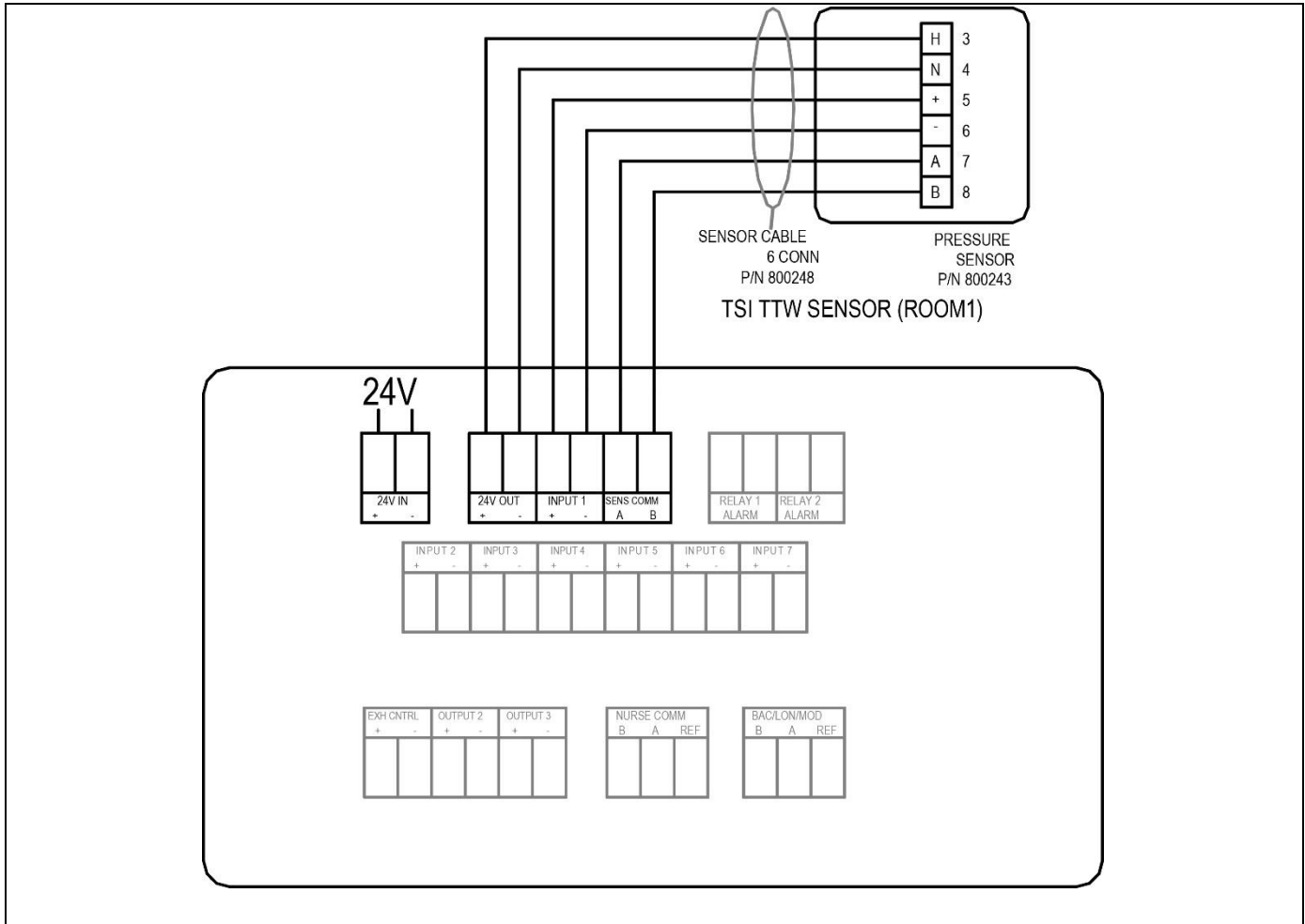
Wiring Recommendations

- TSI® recommends stranded wire.
- Comply with local and national electrical codes.
- Follow good wiring practices:
 - **DO NOT** run control wiring in the same conduit or wireway as power wiring.
 - Control cables should cross power cables at a 90-degree angle.
 - Use a consistent color code to maintain polarity.
 - Control signals require "home run" wiring / star configuration. **DO NOT** daisy-chain control wires or use a series configuration.
 - Use daisy-chain configuration for connecting the nurses' station to monitors and controllers.
- Remove the connectors from the back of the pressure controller.
- Refer to the wiring diagrams, Figure 8 to Figure 28 for proper wiring installation.
- If additional options need to be wired, refer to building prints for proper wiring diagram.
- Plug the connectors back into the pressure controller.
- Carefully push the wires into the electrical box and mount the pressure controller. Install four screws to hold pressure controller firmly to base. Install cover and slide left to hide display.
- Press cover plate onto PresSura™ Controller.

Power Requirements

Digital Interface Module (DIM) Each
 24VAC, 50/60 Hz, 3VA

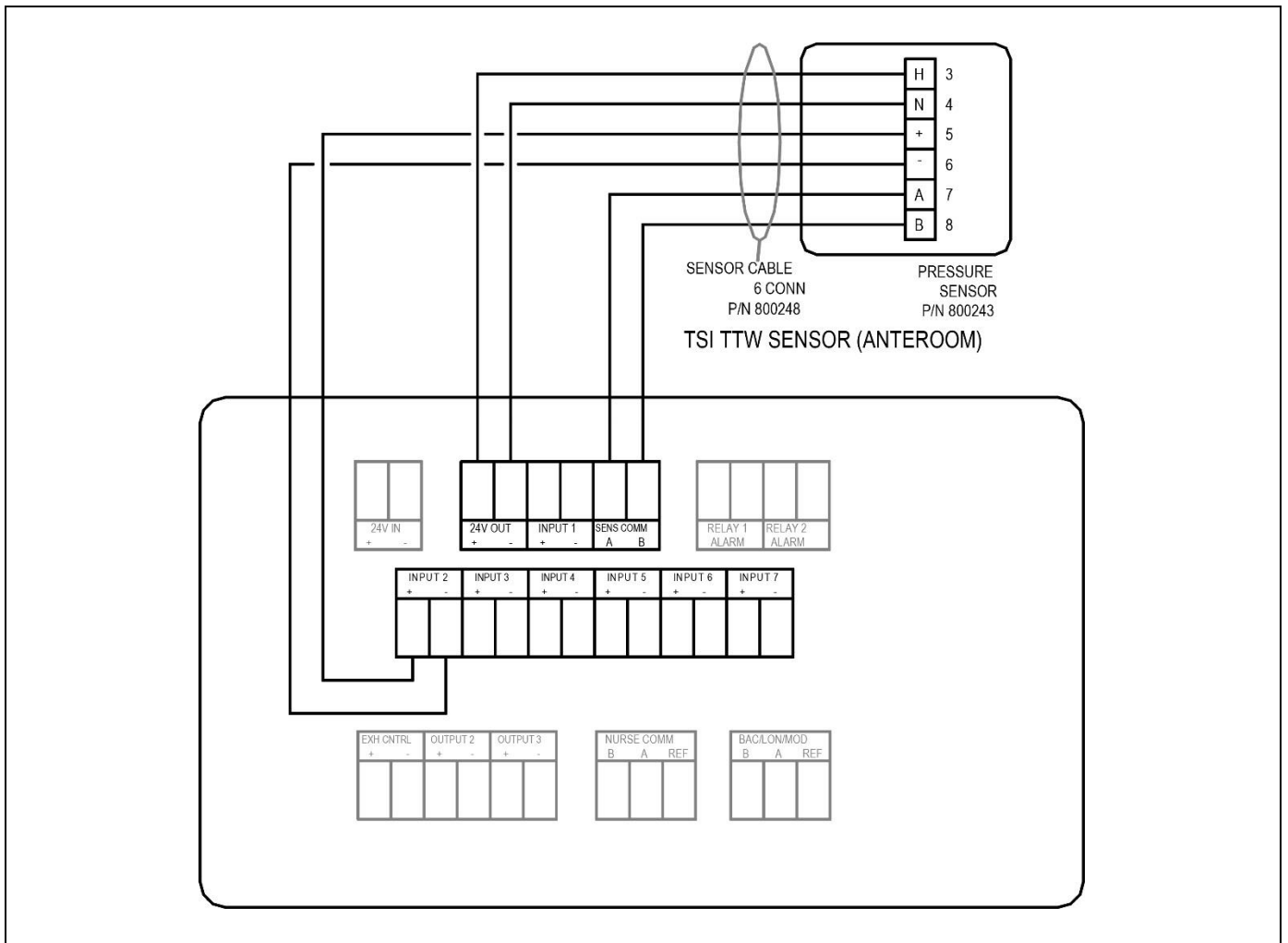
Through the Wall Sensor Each
 24VAC, 50/60 Hz, 3VA



WARNING

Controller must be wired exactly as wire diagram shows. Making modifications to the wiring may severely damage the unit.

Figure 8: Wiring Diagram –Through-The-Wall Sensor Wiring to Model RPC30



WARNING

Controller must be wired exactly as wire diagram shows. Making modifications to the wiring may severely damage the unit.

Figure 9: Optional Anteroom Through-The-Wall Sensor Wiring to Model RPC30

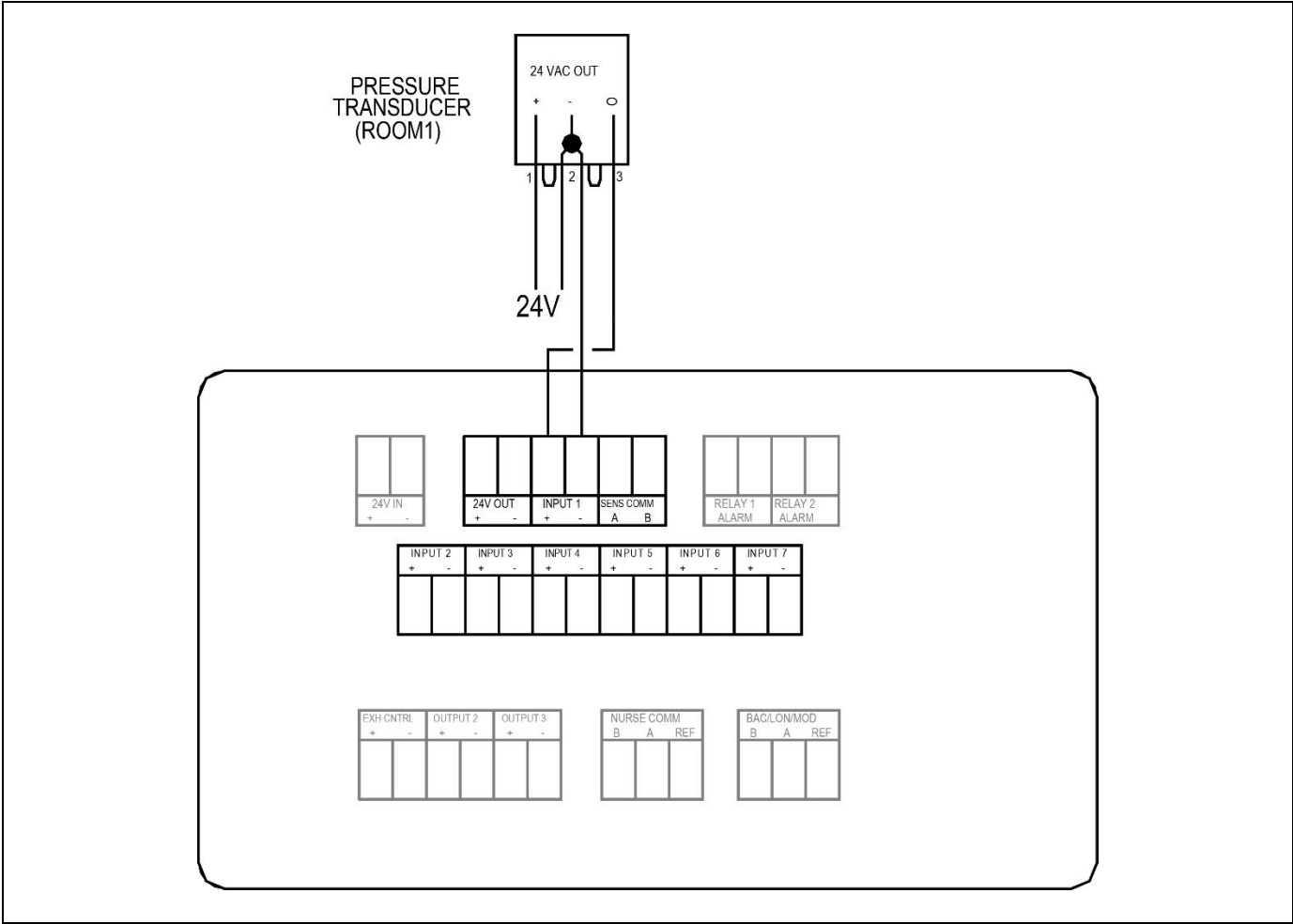


Figure 10. Wiring Diagram – Pressure Transducer Sensor to Model RPC30

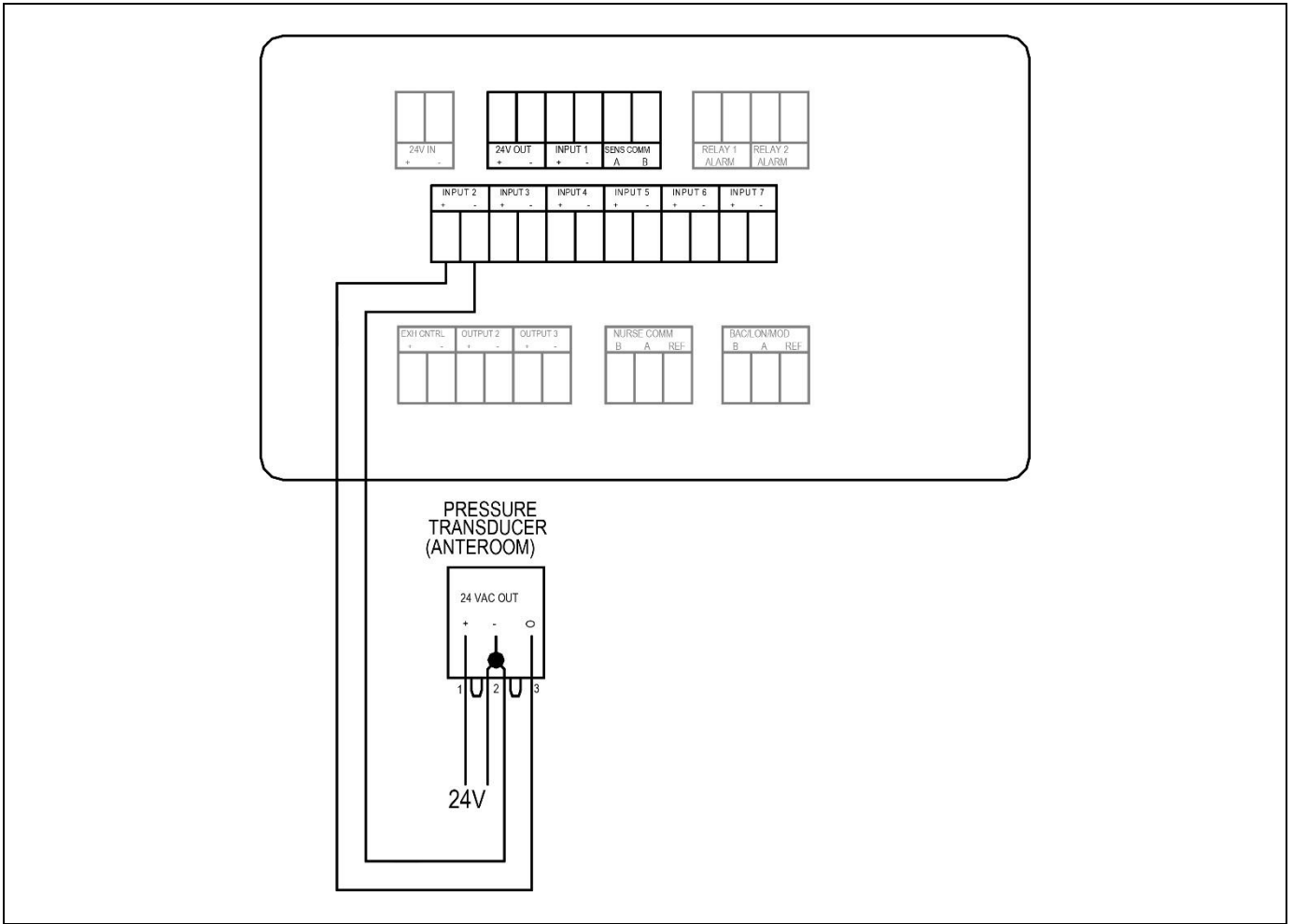


Figure 11. Optional Anteroom Pressure Transducer Sensor Wiring to Model RPC30

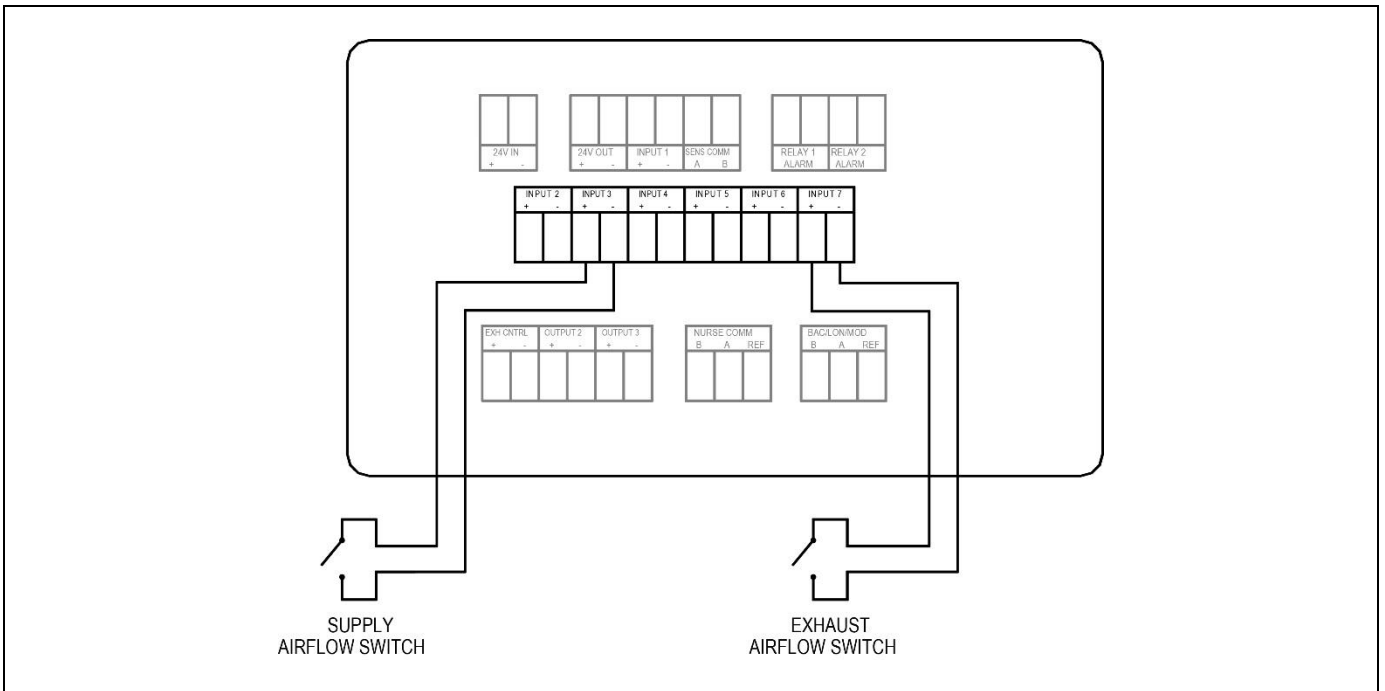


Figure 12. Optional Supply & Exhaust Flow Switch Wiring to Model RPC30

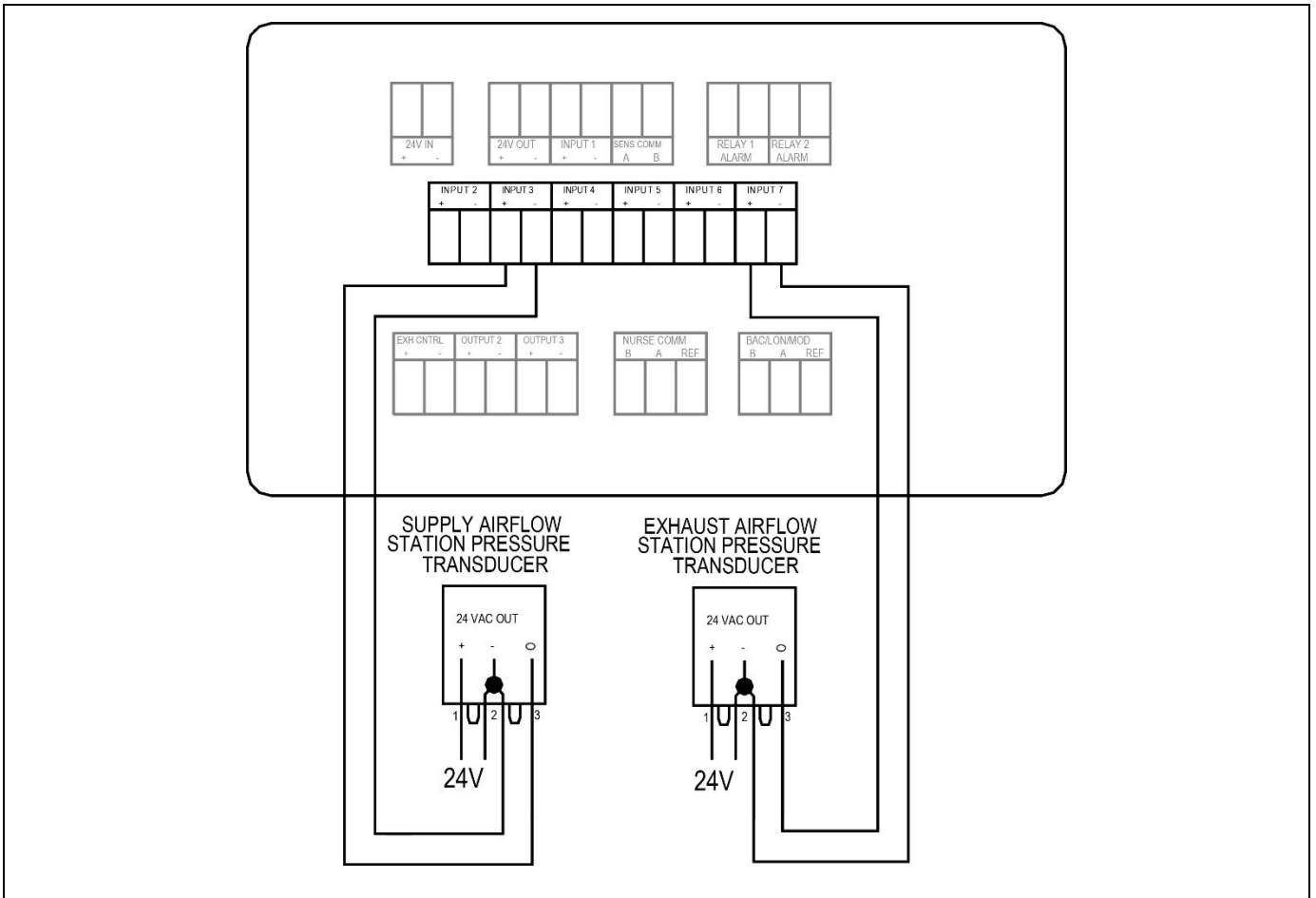


Figure 13. Optional Supply & Exhaust Pressure-Based Flow Station Wiring to Model RPC30

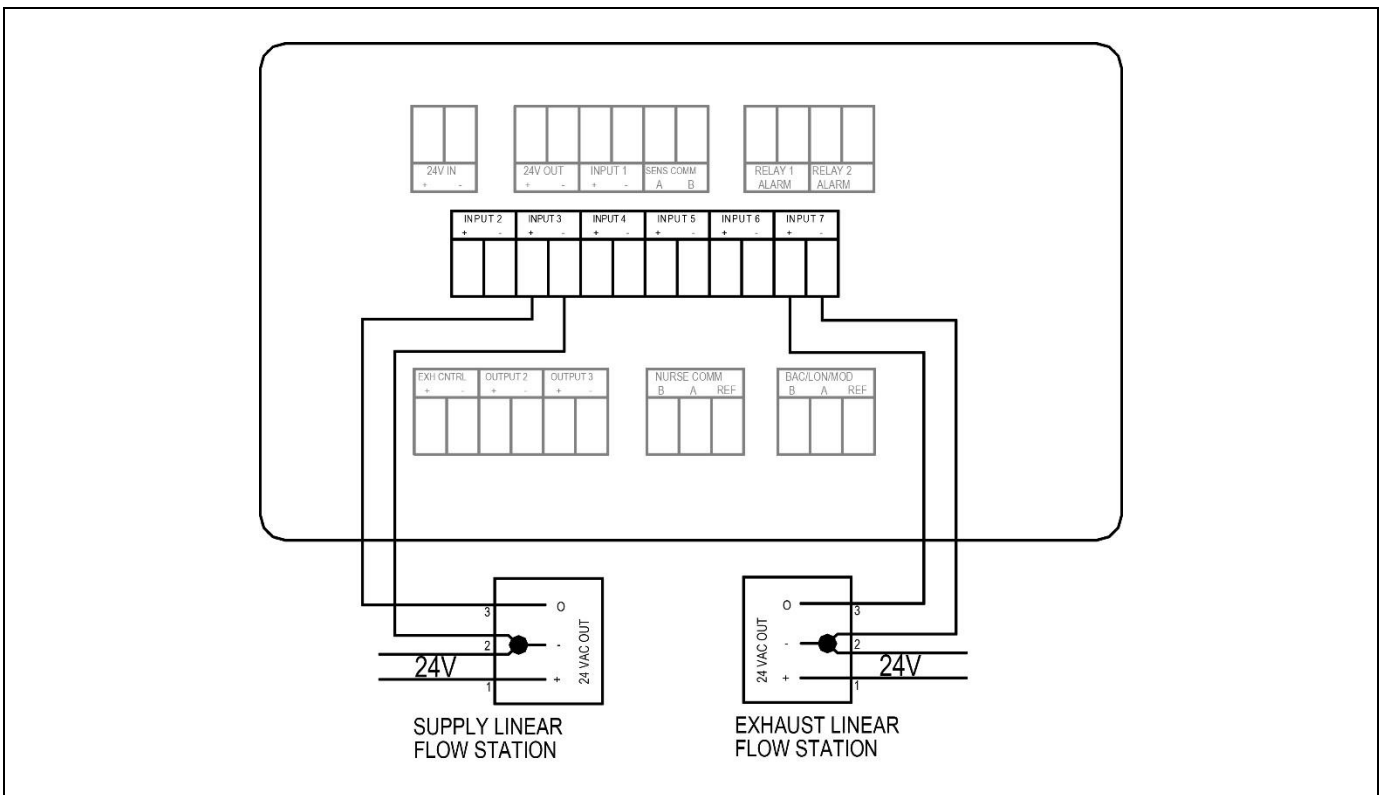


Figure 14. Optional Supply & Exhaust Linear Flow Station Wiring to Model RPC30

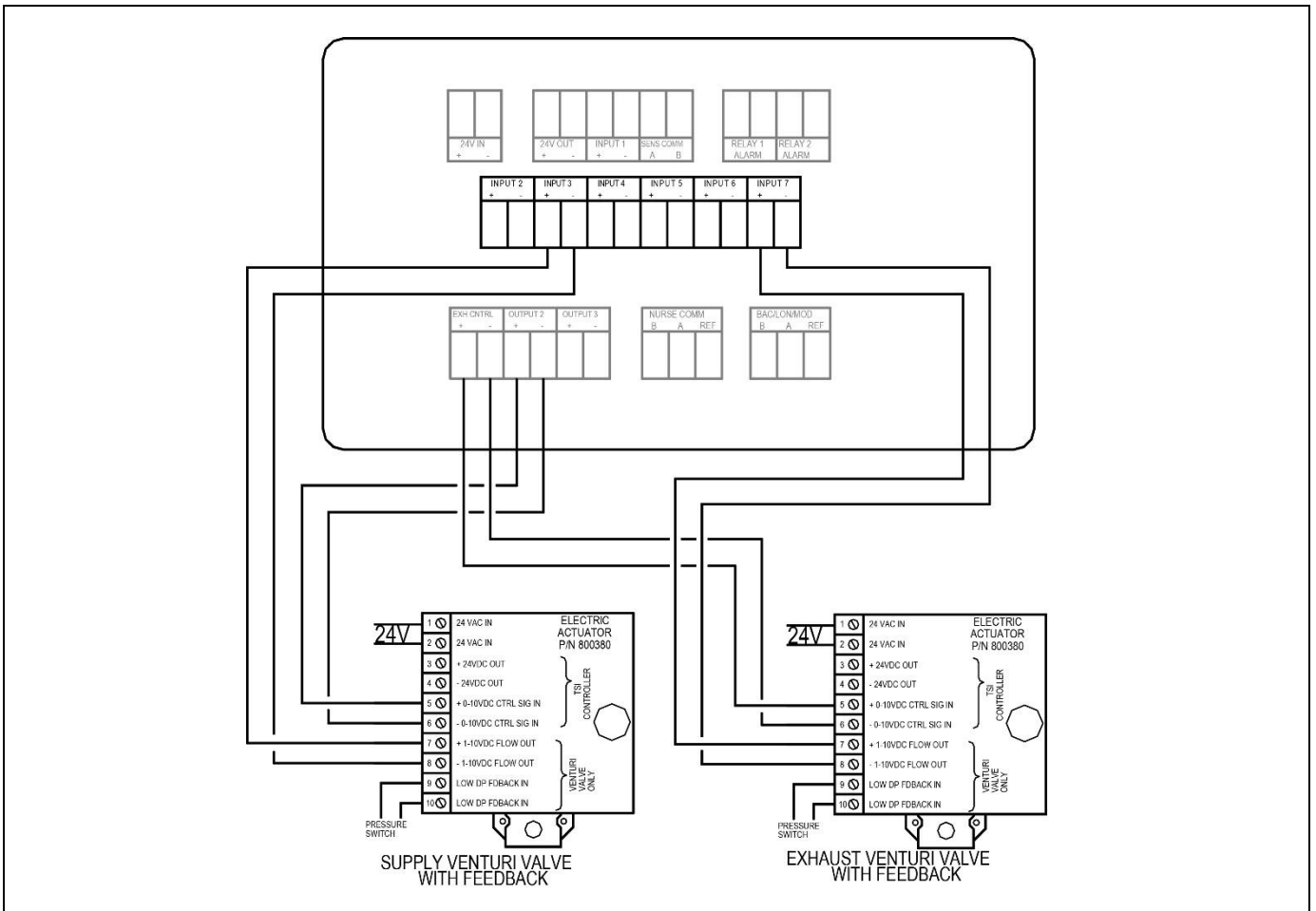


Figure 15. Optional Supply & Exhaust Venturi Valve Wiring to Model RPC30

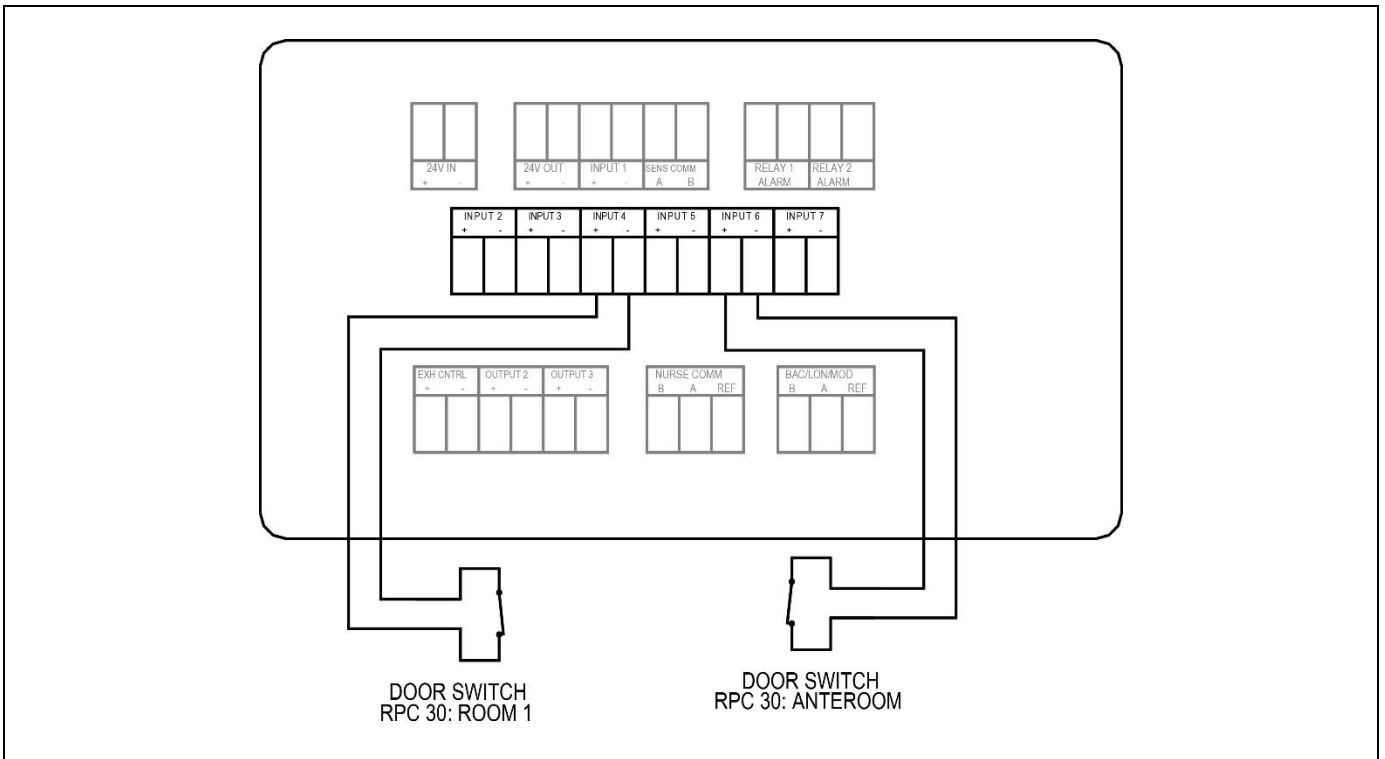


Figure 16. Optional Door Switch Wiring to Model RPC30

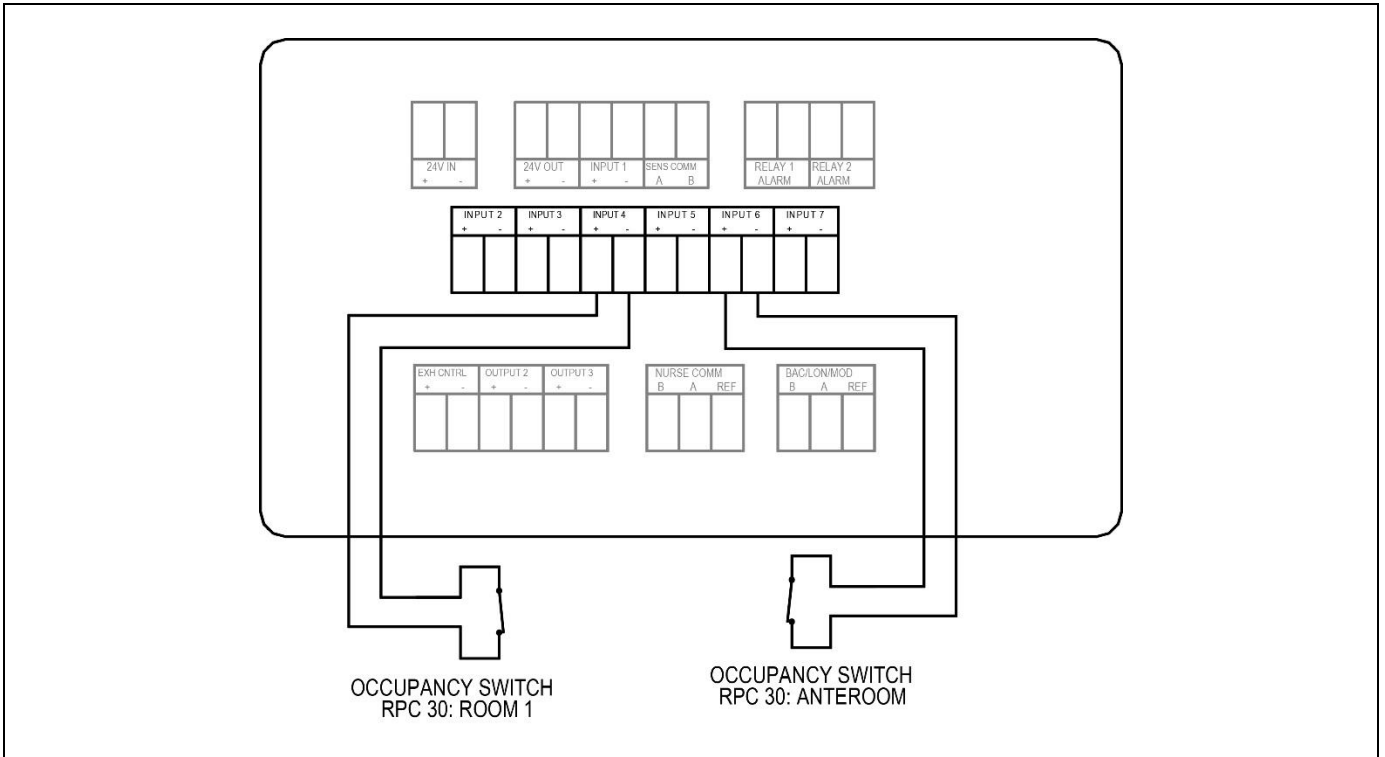


Figure 17. Optional Occupancy Sensor Wiring to Model RPC30

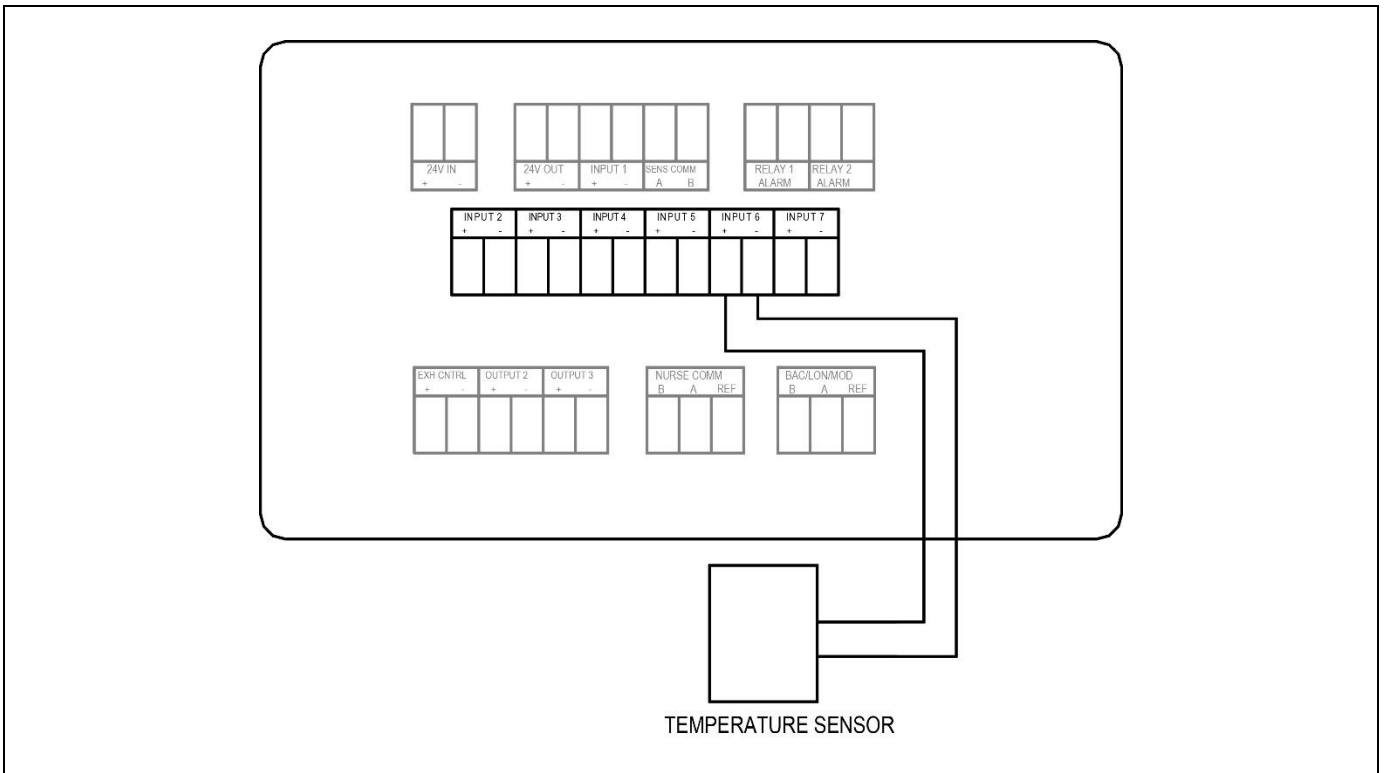


Figure 18. Optional Temperature Sensor Wiring to Model RPC30

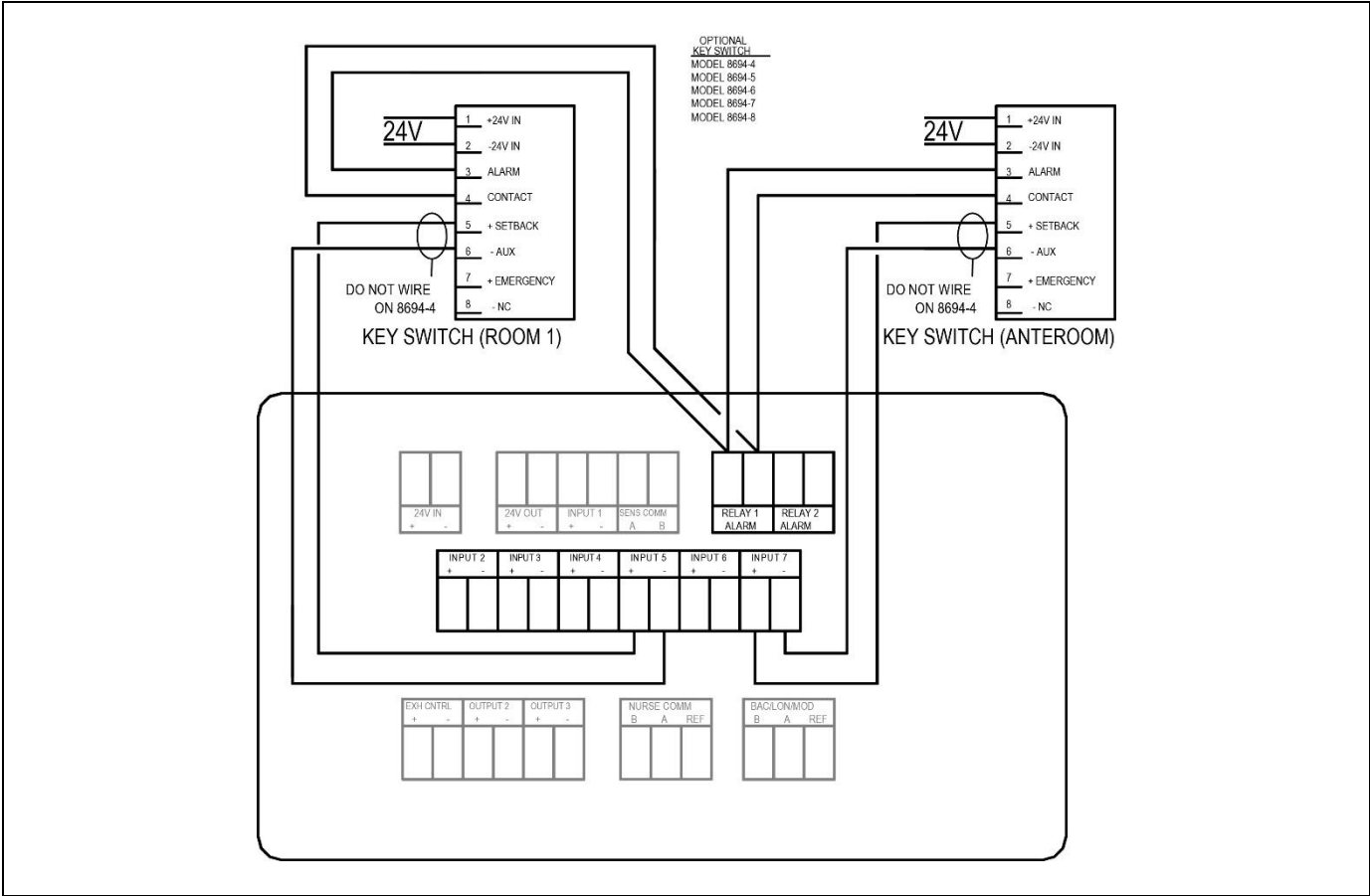


Figure 19. Optional Keyswitch Wiring to Model RPC30

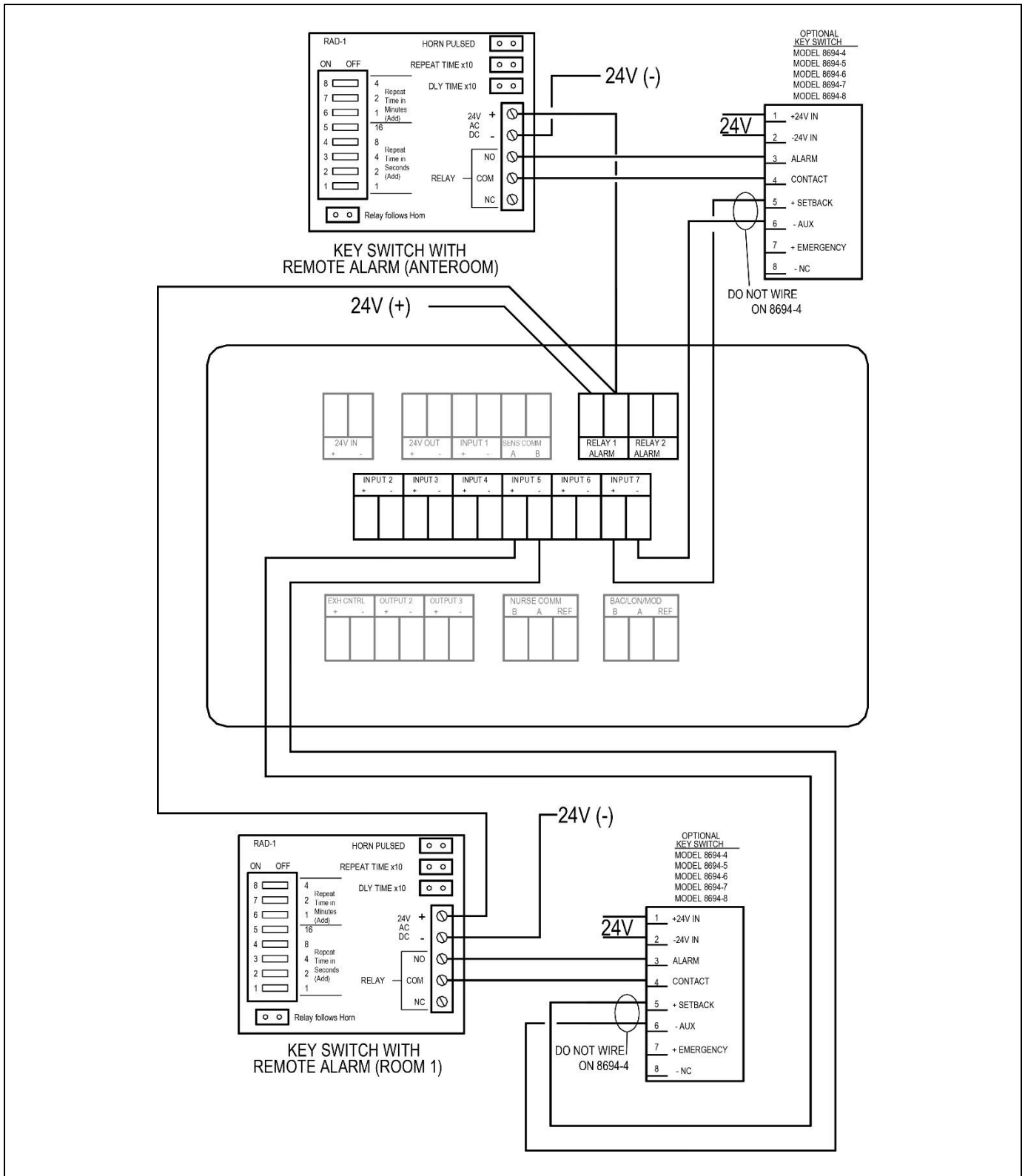


Figure 20. Optional Keyswitch with Remote Alarm Wiring to Model RPC30

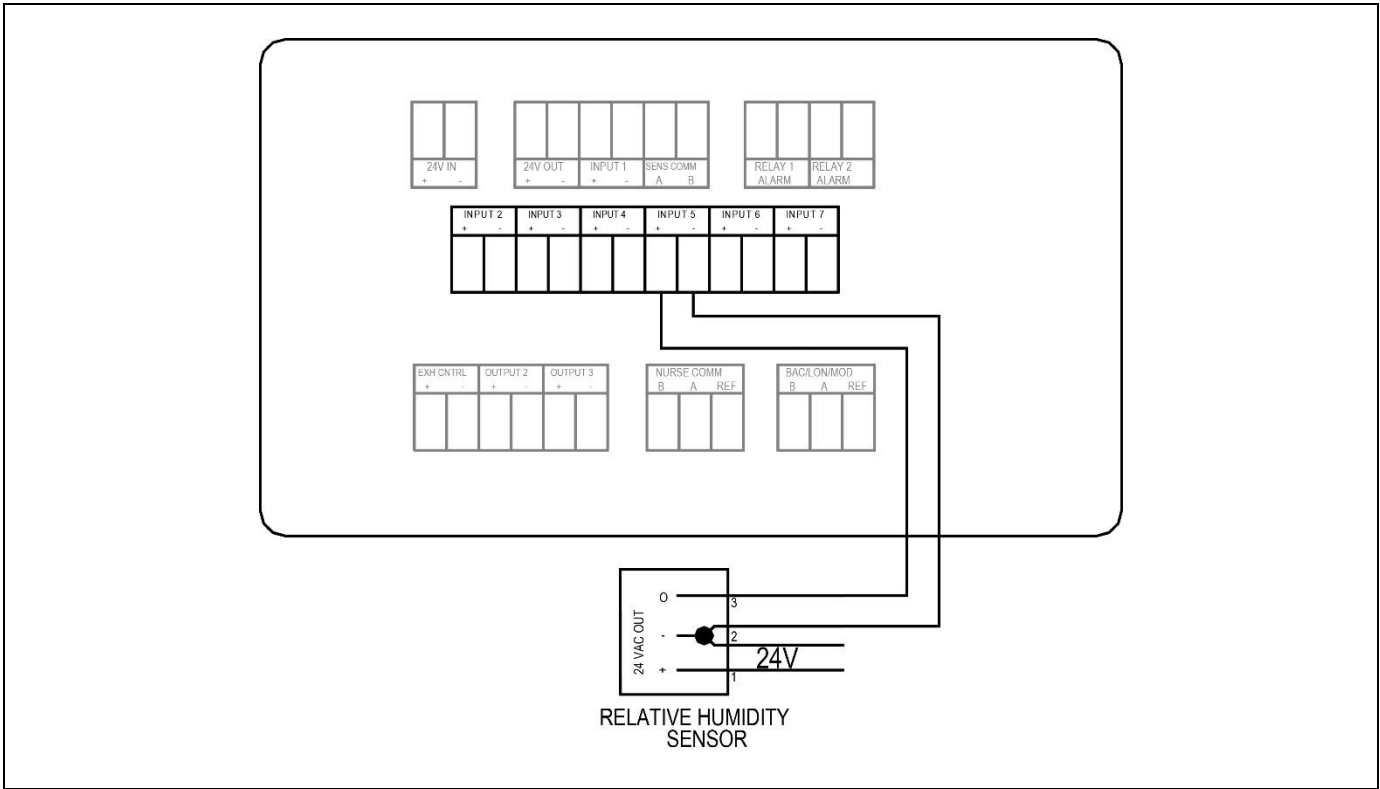


Figure 21. Optional Relative Humidity Sensor Wiring to Model RPC30

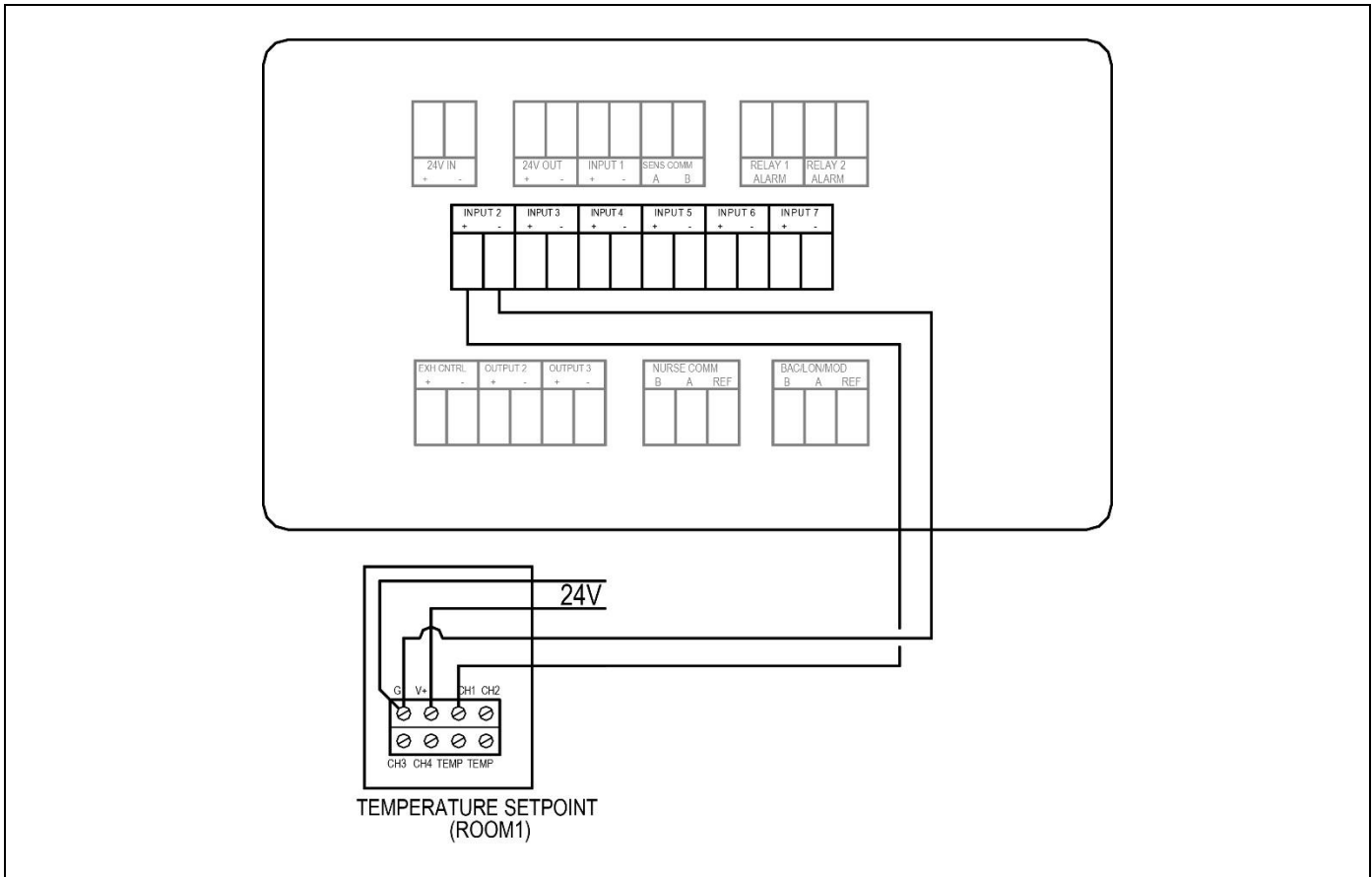


Figure 22. Optional Temperature Setpoint Wiring to Model RPC30

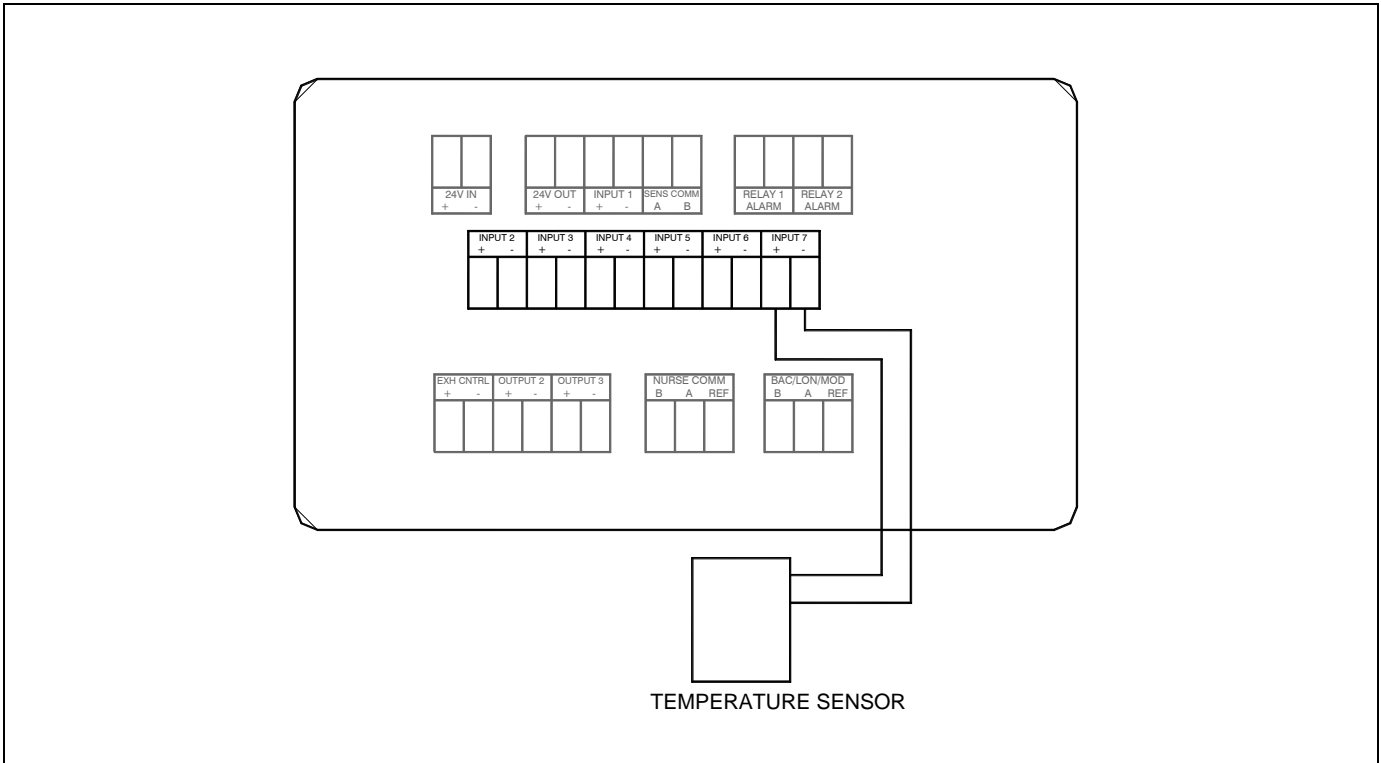


Figure 23. Optional Supply Air Temperature Sensor Wiring to Model RPC30

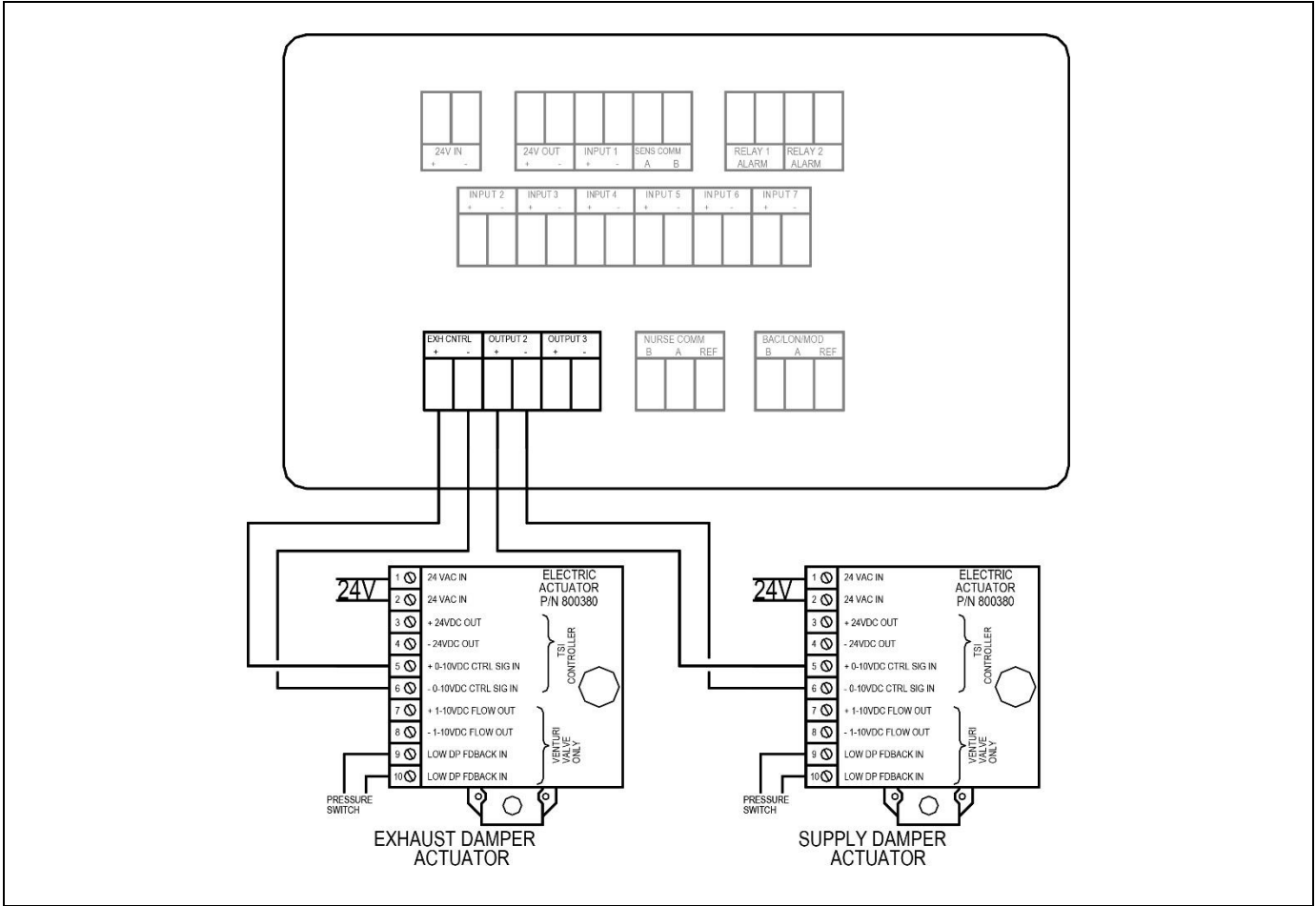


Figure 24. Optional Supply & Exhaust Actuator Wiring to Model RPC30

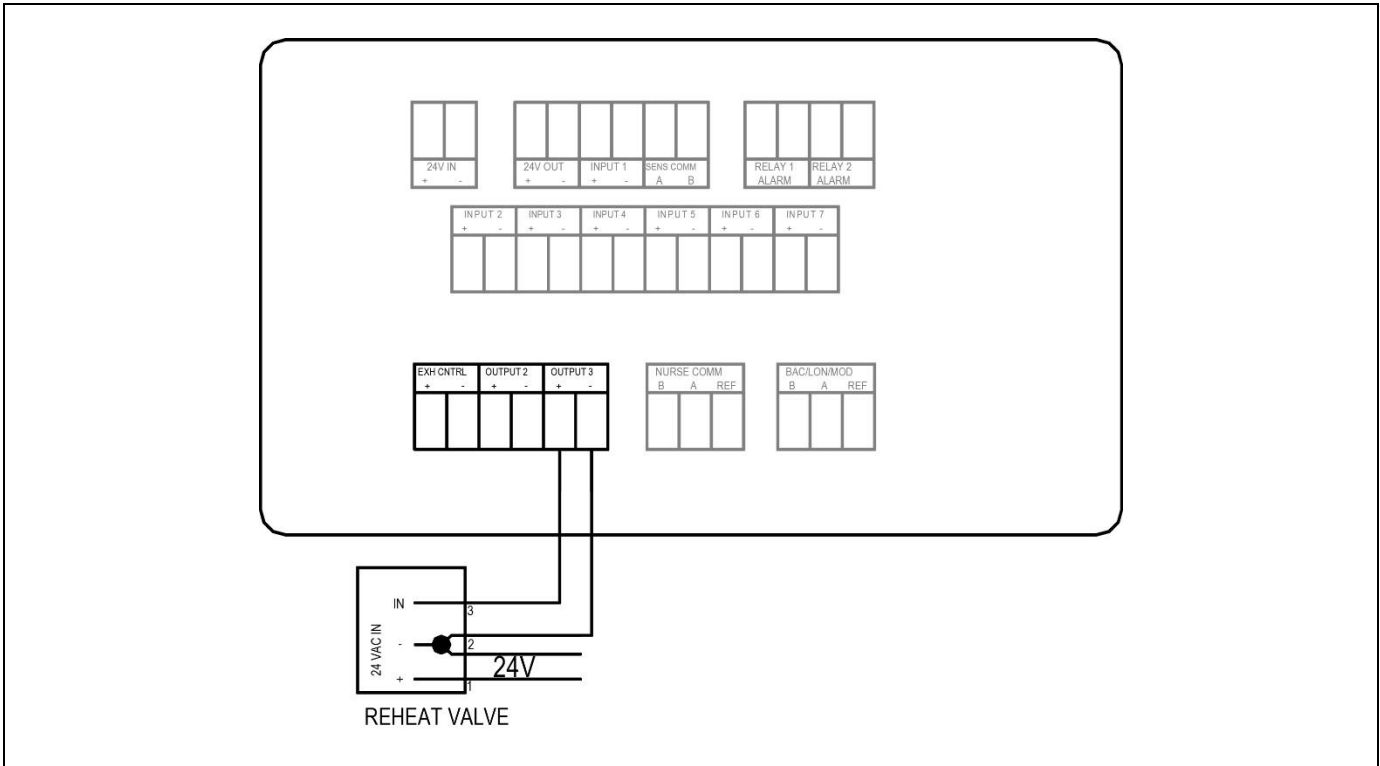
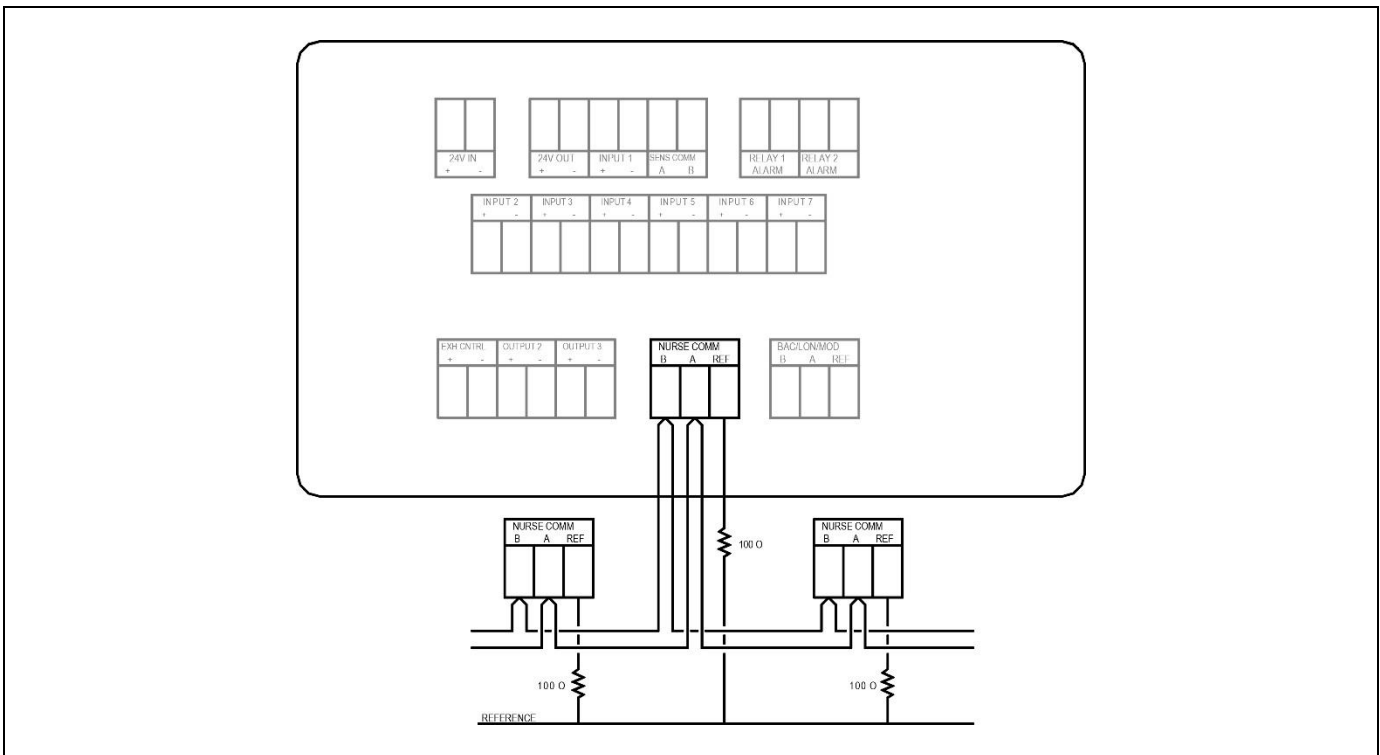


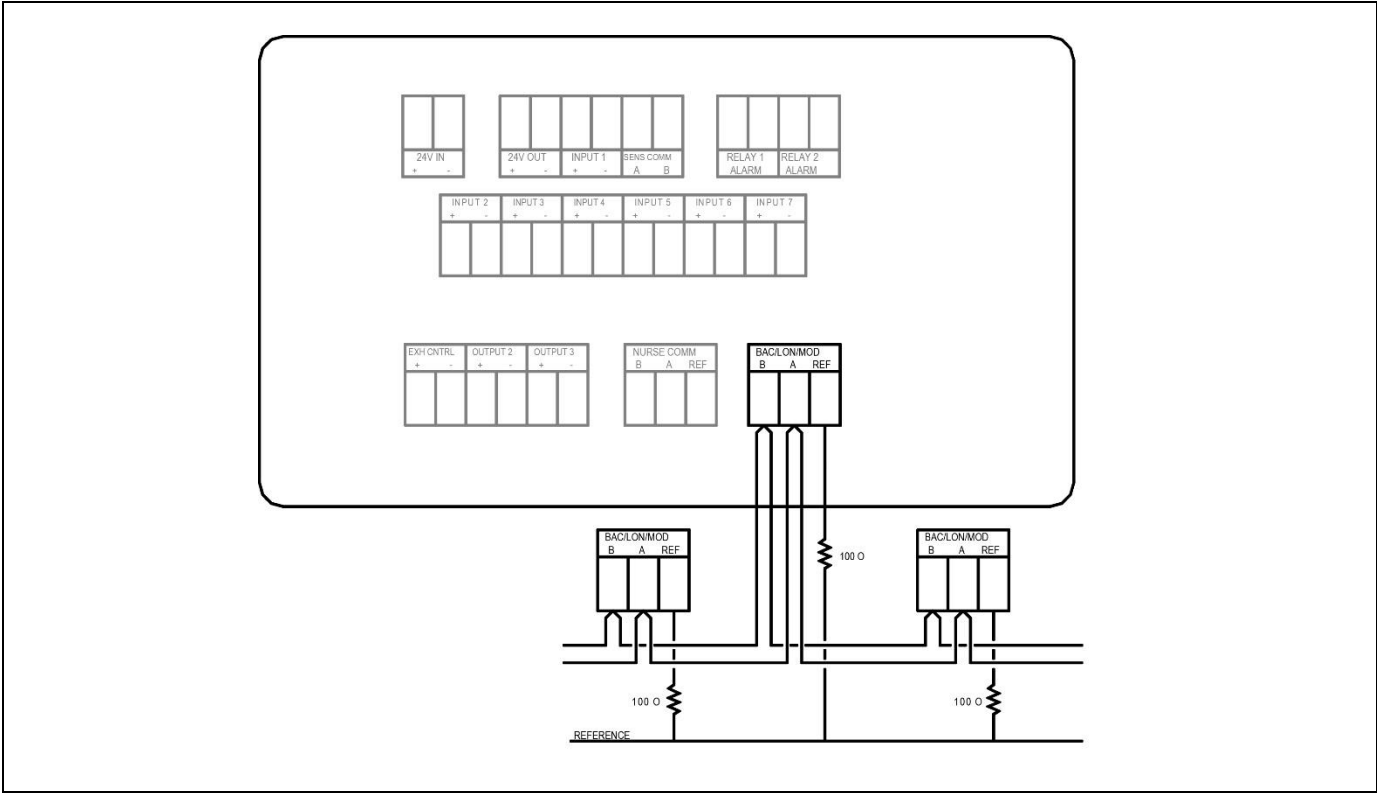
Figure 25. Optional Reheat Actuator Wiring to Model RPC30.



NOTICE

A 120Ω resistor should be installed on both ends of the RS-485 loop.

Figure 26. Wiring Diagram – Optional Nurses Station Communications Wiring to Model RPC30



NOTICE

A 120Ω resistor should be installed on both ends of the RS-485 loop.
B is Negative (-), **A** is Positive (+)

Figure 27. Optional Modbus and BACnet™ MS/TP Communications Wiring to Model RPC30

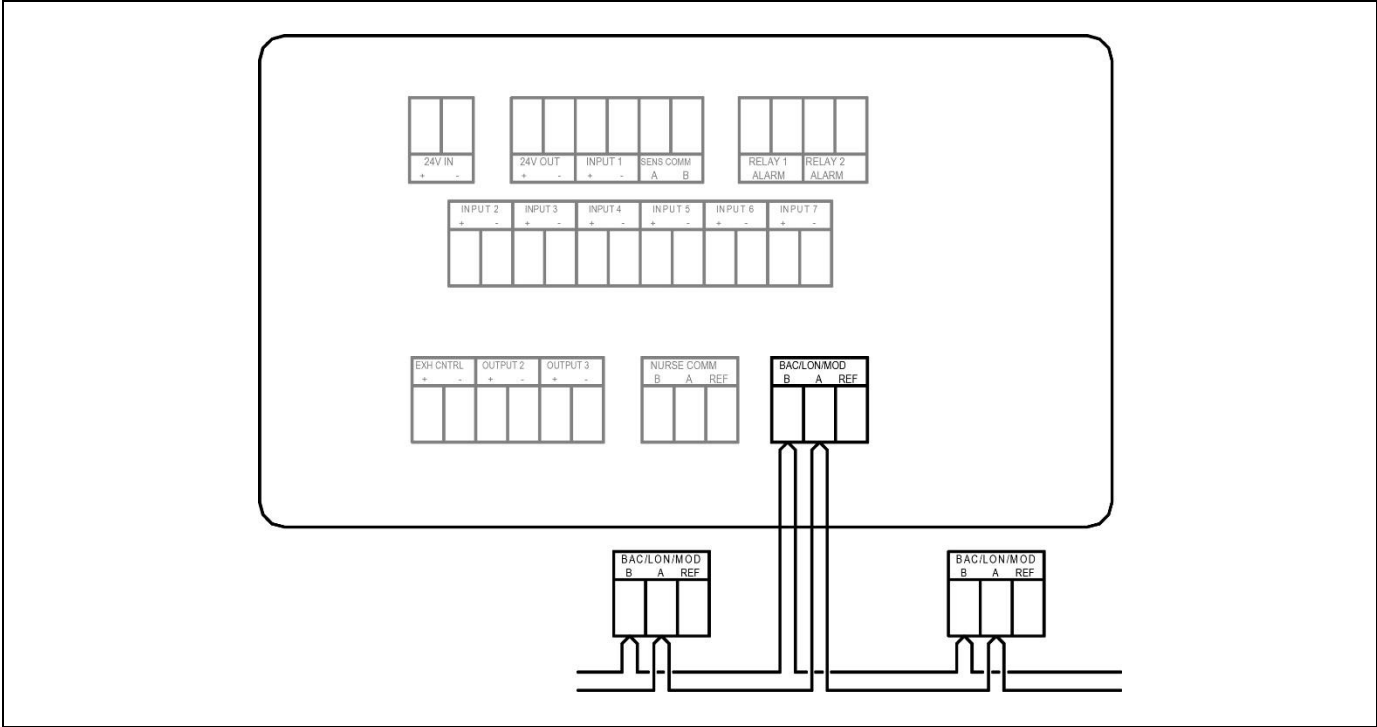
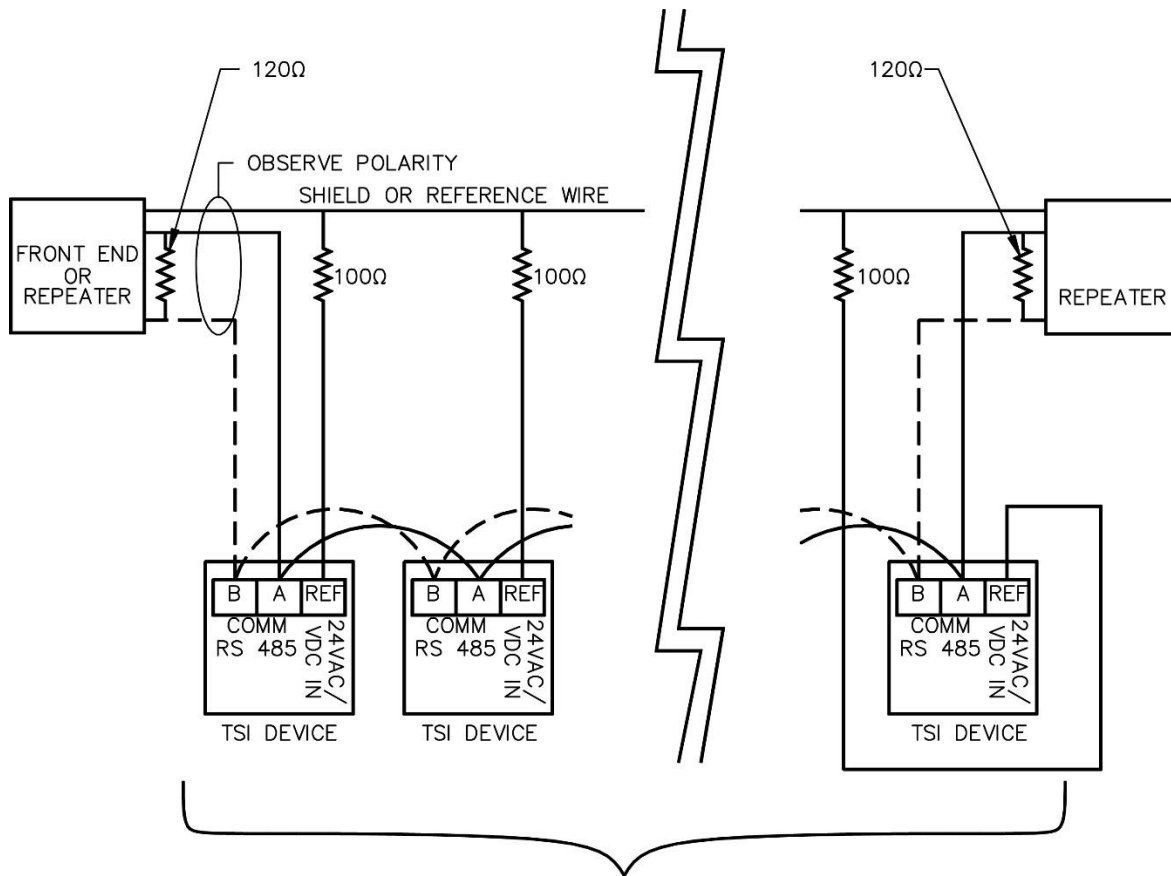


Figure 28. Optional LONworks Communications Wiring to Model RPC30



30 TSI UNITS IF 2 REPEATERS

31 TSI UNITS IF 1 REPEATER

NOTES:

- 1) EACH REPEATER COUNTS AS ONE UNIT OF NETWORK
- 2) 120Ω RESISTOR AT BEGINNING AND END OF LINE. IF NO REPEATER, INSTALL RESISTOR ON LAST TSI DEVICE. NO RESISTOR ON OTHER DEVICES
- 3) 100Ω RESISTOR TO REF OF EACH TSI DEVICE
- 4) CABLE: 24 AWG STRANDED SHIELDED TWISTED PAIR OR LARGER. POLYETHYLENE INSULATION, PVC JACKET.

Figure 29. Proper Communication Wiring Diagram

TSI Actuator/Damper Installation

WARNING

Building prints normally determine damper location and mounting configuration. They supersede the guidelines below.

- The actuators are shipped mounted to the damper. No adjustments are needed prior to mounting the assembly.
- The damper must be installed with the damper shaft parallel to the ground (Figure 30).
- Slip-fit dampers mount INSIDE the duct work. Flanged dampers bolt to the duct work. No ductwork can be inside of dampers, or interfere with damper rotation.
- Screw slip-fit damper to duct work using 1-inch or shorter screws. Make sure screws do not interfere with damper blade rotation. Bolt flanged dampers securely to ductwork, but do not “force” damper to fit (deforms damper).

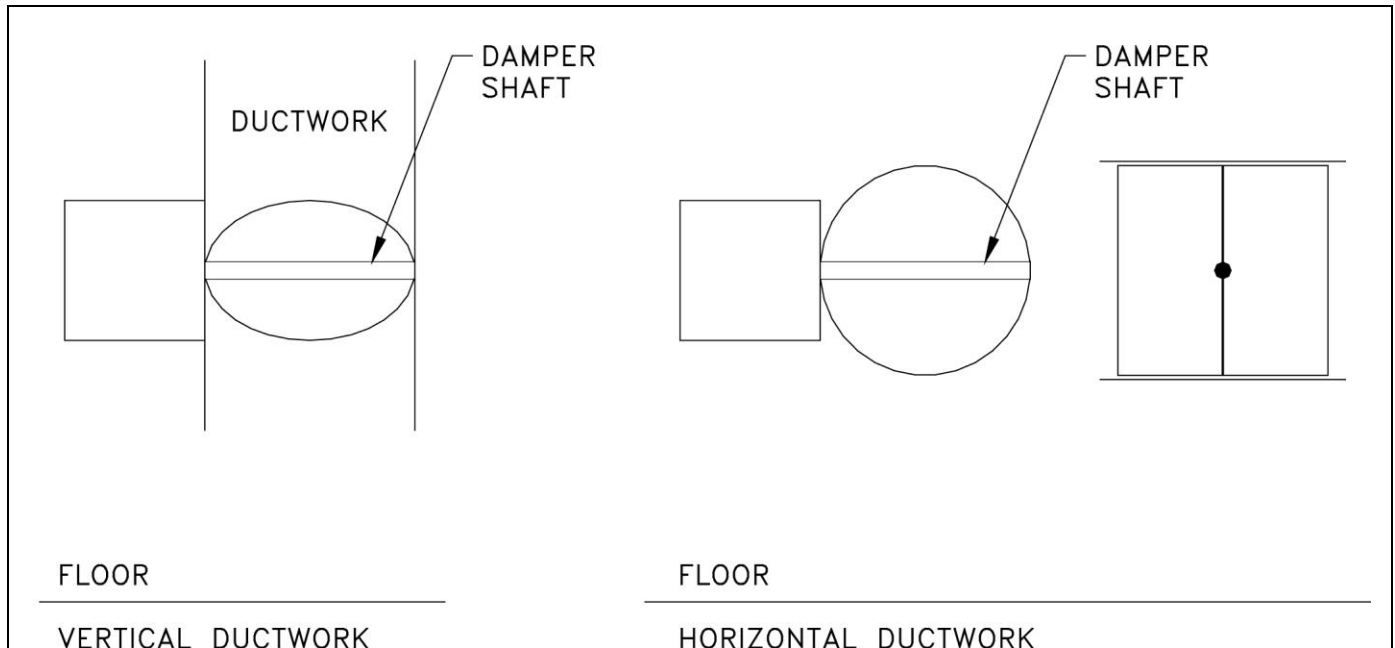


Figure 30. Proper Damper Mounting

NOTICE

If you need assistance installing the system, call TSI® Customer Service at (800) 680-1220.



Knowledge Beyond Measure.

TSI Incorporated – Visit our website www.tsi.com for more information.

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