

A25 Series Warm Air Control with Manual Reset

The A25 Series Warm Air Control with Manual Reset is designed to shut down fans, burners, dampers, etc., when the temperature of the sensed air becomes greater than the controller's setpoint.

When the sensed temperature increases to the controller's setpoint, the A25's switch will open. Manual reset is required to reclose the electrical circuit. The A25 may be used as a high limit control in the supply air duct (or plenum) where a lockout type control is desired or required by local code.



Figure 1: The A25 Series Warm Air Control with Manual Reset

Features and Benefits	
<input type="checkbox"/> Trip-free Reset Lever	Does not allow the reset switch to hold the contacts in a closed (on) position
<input type="checkbox"/> Pilot Duty Electrical Rating for up to 600 Volts Maximum	Allows direct control of high voltage motor starters
<input type="checkbox"/> Enclosed Switch	Protects switch contacts from dust
<input type="checkbox"/> Rod and Tube Sensing Element	Provides maximum response and allows for a high maximum sensing element temperature
<input type="checkbox"/> Adjustable Duct Mounting Flange	Controls the depth of sensor insertion into the airstream; compensates for insulation depth
<input type="checkbox"/> Wide Temperature Range	Allows the A25 to be used with many applications

Application Overview

A typical application for the A25 Series Warm Air Control with Manual Reset is to stop the operation of air conditioning or ventilating fans upon a temperature rise. Models A25AP and A25CP are Factory Mutual approved for use as fire protection devices.

Installation

1. Select a mounting location for the A25 in the duct (or plenum). The location must allow the sensing element to sense the average temperature in the duct.
2. Drill (or cut) a 1-3/8 in. hole in the duct at the selected mounting location (refer to Figure 2).

3. Using the flange as a template on the duct, mark the location for two 1/2 in. (13 mm) No. 10 sheet metal screws.
4. Punch (or drill) both sheet metal screw holes in the duct at the marked locations.
5. Secure the flange to the duct with two 1/2 in. (13 mm) No. 10 sheet metal screws provided.
6. Insert the sensing element and sleeve through the flange installed in Step 5 (and into the duct).
7. Secure the A25 to the flange by screwing the set screw firmly against the sleeve. Do not overtorque the set screw.

Note: Insert the sensing element as far as possible into the air stream without allowing it to contact any object inside the duct. Provide at least 5-3/4 in. (14 cm) clearance between the sensor and any other objects inside the duct.

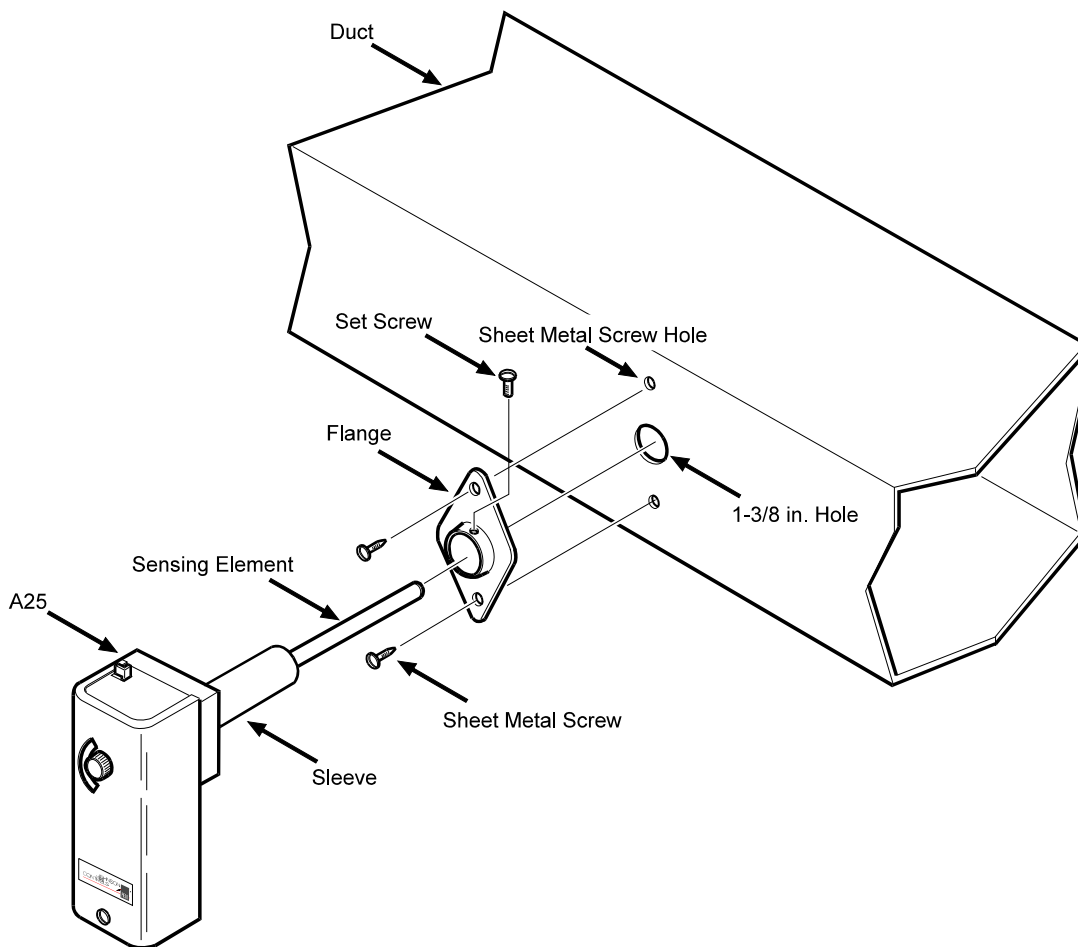


Figure 2: Installing the A25

Wiring



WARNING: Shock hazard. To avoid electrical shock or damage to equipment, disconnect all power before making wiring connections.

IMPORTANT: Only use the terminal screws furnished with the A25 (8-32 x 1/4 in. binder head). Use of other screws will void warranty, may damage switch terminals, and result in improper connections.

If available, follow the instructions for the unit onto which the A25 will be installed. Make all wiring connections only with copper conductors and in accordance with the National Electrical Code and local regulations. Refer to the label inside the A25's cover for the maximum electrical rating.

Models A25CN and A25CP SPDT (Single Pole Double Throw) Units

The wiring terminals on the SPDT (Single Pole Double Throw) models are color coded:

- Red is common.
- The red to yellow circuit closes on temperature increase.
- The red to blue circuit opens on temperature increase.

Refer to Figures 3 and 4 for terminal identification and typical wiring connections.

When the reset lever is pressed during normal operation, the trip free contacts are activated, the red to blue contact opens and the auxiliary red to yellow contact closes. At this point, the auxiliary system will activate.

Models A25AN and A25AP SPST (Single Pole Single Throw) Units

When the temperature increases to above the setpoint, the circuit opens. When the reset lever is pressed after the sensed temperature decreases to approximately 20F° (11C°) below the setpoint, the circuit closes.

Refer to Figures 5 and 6 for terminal identification and typical wiring connections.

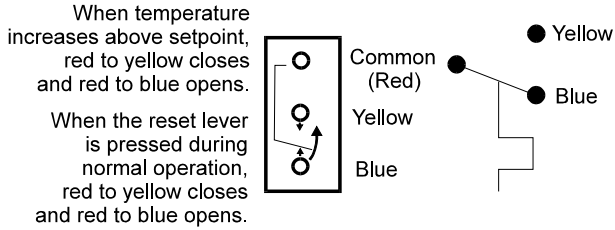


Figure 3: Terminal Identification for A25CN and A25CP SPDT Models

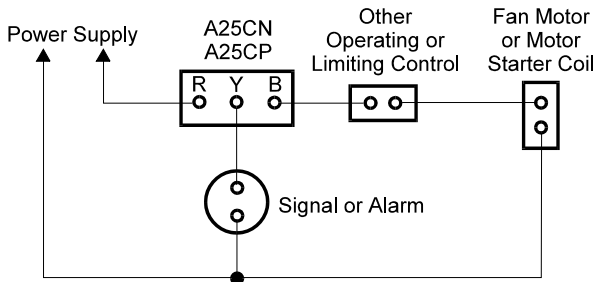


Figure 4: Typical Wiring Diagram of A25CN and A25CP SPDT Models

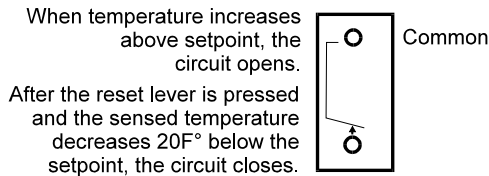


Figure 5: Terminal Identification for A25AN and A25AP SPST Models

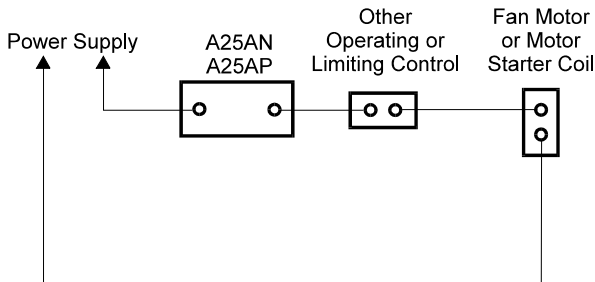


Figure 6: Typical Wiring Diagram for A25AN and A25AP SPST Models

Checkout Procedure

After installing the A25, perform the following procedures. Observe at least three complete operating cycles to verify that all components are functioning properly. If the unit fails to checkout, refer to the troubleshooting chart (Table 2). Do not attempt to make adjustments.

Return Air Applications

1. After completing the installation and wiring procedures, turn on the power to the circuit.
 2. Turn the setpoint knob counterclockwise until the A25 shuts down the system.
The A25 should lockout and the alarm or signal (if applicable) should activate.
- Note: The setpoint at shutdown should equal the approximate duct air temperature.
3. Turn the setpoint knob clockwise to the desired setpoint.
Nothing should happen.
 4. Press the reset lever.
The system should restart and the alarm or signal (if applicable) should shut off.

Supply Air Applications

1. After completing the installation and wiring procedures, turn on the power to the circuit.
 2. Raise the supply air temperature to the setpoint temperature.
- Note: The supply air temperature can be raised by simulating a fan failure or restricting the return air flow.
3. When the system shuts down, determine the temperature at the A25 sensing element.
The temperature reading should closely approximate the A25's setpoint at which the system is shut down and (if applicable) the alarm or signal is activated.
 4. Return the system to normal operation by re-establishing air flow or by restarting the fan.
 5. Press the reset lever.
The system should restart and the alarm or signal (if applicable) should shut off.

Operation

Models A25AN and A25CN

Setpoint Adjustment: Adjust the A25 setpoint by rotating the setpoint knob (Figure 7). The setpoint is displayed in the setpoint window.

Test Procedure:

To test (trip) the A25: Raise the temperature at the sensor above the setpoint or lower the setpoint below the ambient temperature. *The control should lockout (trip).*

To reset after test: Lower the temperature at the sensor to 20F° (11C°) below the setpoint or raise the setpoint to 20F° (11C°) above the ambient temperature. Press the reset lever. The A25 should reset (closing the circuit).

Reset Procedure: Verify that the temperature has dropped to 20F° (11C°) below setpoint. Press the reset lever to reset the A25 (closing the circuit).

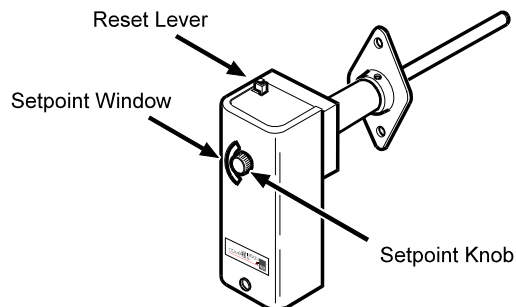


Figure 7: Models A25AN and A25CN

Models A25AP and A25CP

Setpoint Adjustment: Loosen the cover screw (Figure 8) and remove the cover. Adjust the setpoint by rotating the adjusting screw. When adjusted, re-install the cover. Tighten cover screw.

Test Procedure:

To test (trip) the A25: Raise the temperature at the sensor above the setpoint or lower the setpoint below the ambient temperature. The control should lockout (trip).

To reset after test: Lower the temperature at the sensor to 20F° (11C°) below the setpoint or raise the setpoint to 20F° (11C°) above the ambient temperature. Press the reset lever. The A25 should reset (closing the circuit).

Reset Procedure: Verify that the temperature has dropped 20F° (11C°) below setpoint. Press the reset lever to reset the A25 (closing the circuit).

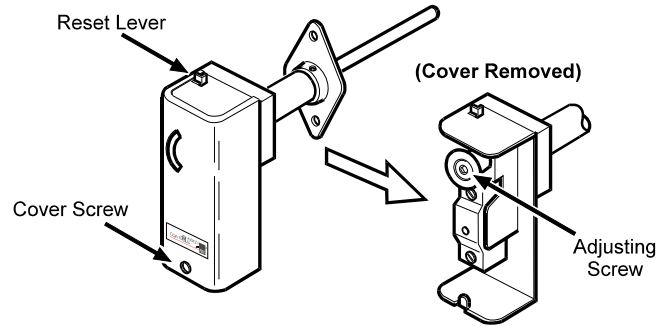


Figure 8: Models A25AP and A25CP

Dimensions

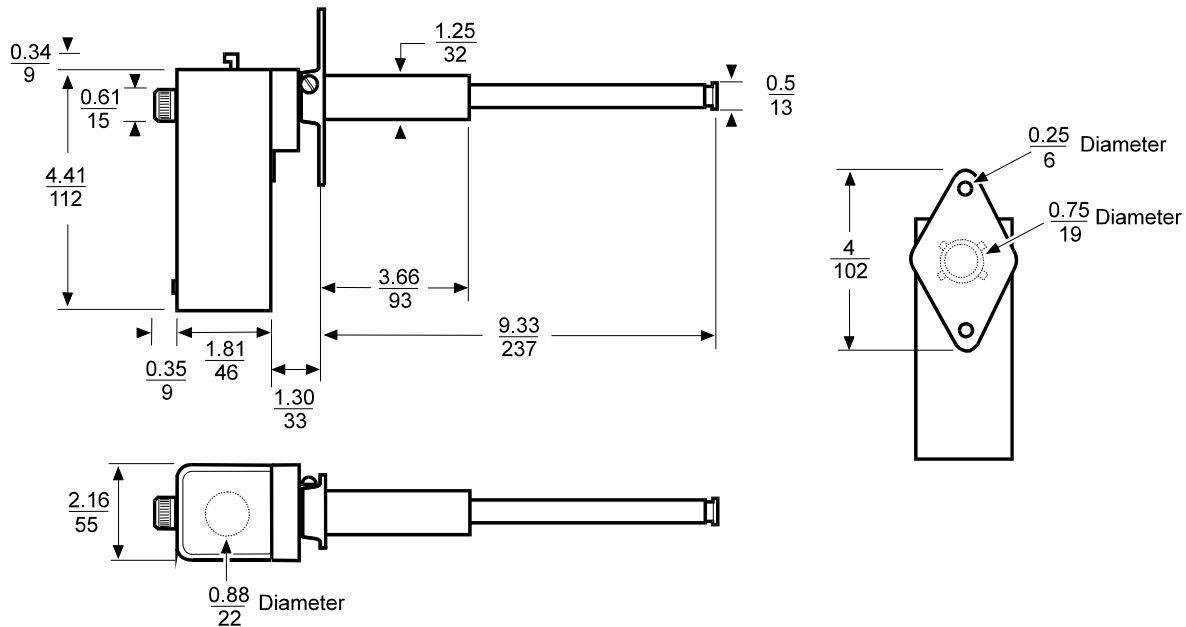


Figure 9: A25 Dimensions, in./mm

Repairs and Replacement

Do not make field repairs. For a replacement control, contact your nearest Johnson Controls representative.

Table 1: Ordering Information

Item	Product Code Number	Product Description
A25 Series Warm Air Control with Manual Reset	A25AN-1	SPST, opens on temperature rise, setpoint knob adjustment.
	A25AP-1	SPST, opens on temperature rise, concealed screwdriver adjustment, Factory Mutual approved.
	A25CN-1	SPDT, setpoint knob adjustment.
	A25CP-1	SPDT, concealed screwdriver adjustment, Factory Mutual approved.

Troubleshooting

Table 2: Troubleshooting Chart

Symptom	Problem	Solution
The A25 is not sensing properly.	The sensing element may not be extended into the airstream or the sensing element is contacting an object inside of the duct (or plenum).	Insert the sensing element as far as possible into the airstream without allowing it to contact any object inside the duct (or plenum).
The system does not operate.	Incorrect switch connections or improper wiring. Damaged sensor. The A25 is tripped.	Ensure that the wiring connections follow the wiring diagrams in the <i>Wiring</i> section. Check connections. Replace the A25. Reset the A25.
A25 does not lockout upon a temperature rise beyond the setpoint.	The A25 is defective.	Replace the A25.
The A25 does not sense the correct air temperature.	The A25 is defective.	Replace the A25.
A25 will not reset.	The temperature in the duct (or plenum) is not 20F° (11C°) below the setpoint.	Check system for overheating or fire.

Notes

Specifications

Product	A25AN-1	SPST, opens on temperature rise, setpoint knob adjustment.			
	A25AP-1	SPST, opens on temperature rise, concealed screwdriver adjustment, Factory Mutual approved.			
	A25CN-1	SPDT, setpoint knob adjustment.			
	A25CP-1	SPDT, concealed screwdriver adjustment, Factory Mutual approved.			
Range	25 to 215°F (-4 to 102°C)				
Electrical Ratings	Volts, AC	120 VAC	208 VAC	240 VAC	277 VAC
	Motor FLA*	16	9.2	8	-
	Motor LRA*	96	55.2	48	-
	Noninductive A	16	16	16	16
Pilot Duty: 125 VA at 24/600 VAC					
Ambient Temperature (Maximum)	Case	104°F (40°C)			
	Element	300°F (149°C)			
Conduit Opening	7/8 in. (22 mm) diameter hole for 1/2 in. conduit				
Switch	Snap-acting contacts in dust protected enclosure				
Cover Finish	Gray baked enamel				
High Limit Dial Stop	125°F				
Material	Case	0.063 in. (1.6 mm) galvanized steel			
	Cover	0.025 in. (0.64 mm) cold rolled steel			
Mounting	Flange for flat surface				
Reset	Positive, trip-free reset mechanism (manual reset 2 operation). Control can be reset when the temperature drops 20F° (11C°) below the dial setting.				
Sensing Element	Bi-metal rod and tube construction				
Shipping Weight	Individual pack	1.8 lb. (0.8 kg)			
	Overpack of 12 units	23 lb. (10.4 kg)			
Wiring Connections	Screw-type terminals				
Agency Listing	UL Recognized: File MP640, Guide MBPR CSA Certified: File LR948, Class 4813 02 Factory Mutual Approved (Models A25AP and A25CP only): Class 3545				

* FLA = Full Load Amps; LRA = Locked Rotor Amps. Values are equivalent to a 1 HP motor rating in accordance with UL353.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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