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Standard Shipping within 3 to 5 days Products ordered through the Rapid Response™ program can ship same day. Expect longer lead times for large quantities and unique parts. See page 1 for details on Rapid Response™ shipping.

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Thermostats

Powerstar Room Thermostats

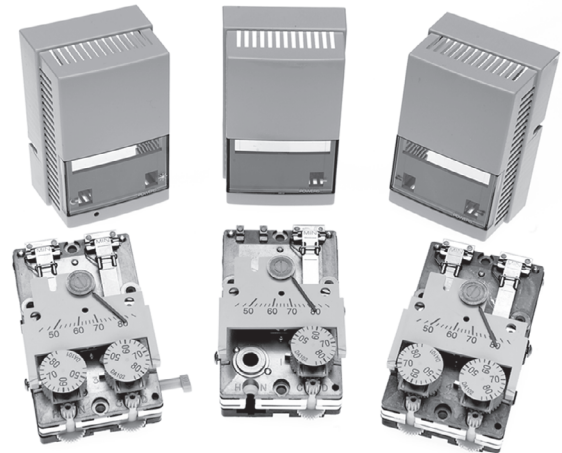
Proven to provide fast response and highly accurate temperature control, Powerstar Pneumatic Room Thermostats are designed to control heating and/or cooling by operating a variety of pneumatic devices such as valves or damper actuators.

Powerstar thermostats are factory-calibrated to control pneumatic devices over a 3 to 15 psi (103 to 207 kPa) range.

Powerstar pneumatic room thermostats are available for the following applications:

- Single Temperature
- Day/Night
- Day/Night/Vent
- Heating/Cooling
- Free Energy Band
- Free Energy Band with Hesitation

Covers are available with concealed or exposed set point adjustment, room temperature indication, and setpoint indicator.



Selection Guide

Air Supply	Applications	Control Outputs	Control Setpoints	Control Actions	Air Output Capacity		Model
					Low (1-pipe)	High (2-pipe)	
15 to 30 psi (103 to 207 kPa)	• Heat or Cool	Single	Single	Direct/Reverse	•	•	192 S
Cool 18 psi (124 kPa) Heat 25 psi (172 kPa)	• Heat and Cool (auto changeover) • Factory-calibrated (194 HC) for Honeywell or Johnson retrofit	Single	Dual (Heat/Cool)	Direct/Direct Reverse/Reverse Direct/Reverse Reverse/Direct		• • • •	192 HC 194 HC
Day 18 psi (124 kPa) Night 25 psi (172 kPa)	• Day and Night (auto changeover) • Factory-calibrated (194 DN) for Honeywell or Johnson retrofit • R2 vent ("0") day, full supply night (DNV only, 3-pipe) • Night override selector switch	Single	Dual (Day/Night)	Direct/Direct Reverse/Reverse		•	192 DN 194 DN
Day 18 psi (124 kPa) Night 25 psi (172 kPa)	• Day and Night (auto changeover) • Factory-calibrated (194 DN for Honeywell or Johnson retrofit) • R2 vent ("0") day, full supply night (DNV only, 3-pipes) • Night override selector switch	Dual	Dual (Day/Night with Vent)	None	•	•	192 DNV 194 DNV
15 to 30 psi (103 to 207 kPa)	• Heat and Cool • Sequence-controlled devices with two control lines (same or different range)	Dual	Dual (Heat/Cool)	Direct/Direct Reverse/Reverse Direct/Reverse Reverse/Direct	• • • •	• • • •	193 HC Free Energy Band
15 to 30 psi (103 to 207 kPa)	• Heat and Cool • Sequence-controlled devices with one control line (different spring ranges)	Single	Dual (Heat/Cool)	Direct/Direct		•	193 HC Free Energy Band (Hesitation)

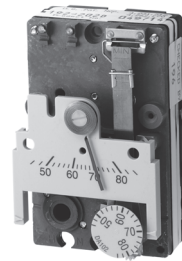
 **TECH TIPS**

Visit us on the web at:
www.usa.siemens.com/hvaccomponents

You can:

- search for products by part number or description.
- print out product information for submittals.
- link to technical documentation.
- locate a distributor near you.

Powerstar Single Setpoint Pneumatic Room Thermostat



192 S Thermostat chassis.



Typical wall plate and screws.

Description

Providing proportional single output, single setpoint, 1-pipe for low air capacity or 2-pipe for high air capacity pneumatic room temperature control, the 192 S Powerstar Single Setpoint Pneumatic Room Thermostat is the most economical model. Refer to the Retroline® Retrostats to replace competitive models.

Features

- Single setpoint dial available in Fahrenheit or Celsius scales
- Available in direct or reverse acting models
- Sensitive bimetal responds to temperature changes
- Integral, field adjustable limit stops
- Wall mounting plate for connection to a variety of rough-in terminal boxes included
- Large volume air capacity relay in 2-pipe models only
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dial, restrictor and filters for decreased maintenance cost

Options

- Quick-connect air connections for ease of installation and service
- Fixed limit stops to meet government specifications
- Large, 1/2" setpoint knob for convalescent homes

Applications

Designed for heating and cooling applications for control of pneumatic valves and damper actuators. The 192 S Powerstar Single Setpoint Pneumatic Room Thermostat is excellent for commercial and institutional facilities.

Recommendation

1-pipe: Use when limited output air capacity is required to operate a single valve and/or actuator; requires external restrictor, 20 scim (5.4 ml/s) air supply.

2-pipe: Use for high output capacity for control of multiple valves and actuators, used with or without high/low limiting controls.

Application Drawings

Dotted lines are alternative control schemes.

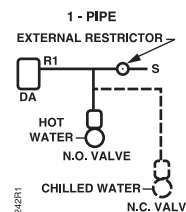


DIAGRAM 1.

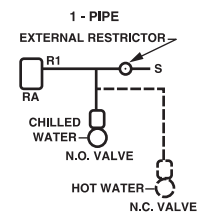


DIAGRAM 2.

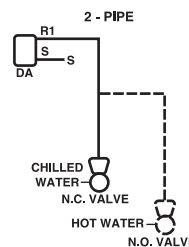


DIAGRAM 3.

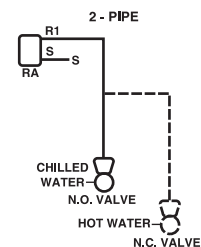


DIAGRAM 4.



For complete conversion kits, refer to the Retroline® Retrostats starting on page A-15.

Scale; Range

Major (minor) Divisions 45 to 85°F, 10(2)°F
(7 to 30°C, 5(1)°C)

Factory Calibration

..... 72°F, 7.5 psig ±0.3
(22°C, 52 kPa @ 1.8)

Sensitivity Adjustment Range

..... 1 to 4 psi/°F (12 to 50 kPa/°C)

Factory Setting

..... 2.5 psig/°F (31 kPa/°C)

Limit Stop

Field Adjustment Range 45/85°F (7/30°C)
Fixed Limit Stop Range 55/75°F (13/24°C)

Temperature

Storage -10 to +140°F (-23 to +60°C)
Ambient Operating 40 to 140°F (4 to 60°C)

Accuracy at Factory

Calibration ±2°F (±1.1°C)
Response 0.1°F (0.06°C)

Supply Air Pressure

Recommended 25 psig (172 kPa)
Maximum 30 psig (207 kPa)

Nominal Air Consumption for Air Compressor Sizing

1-pipe 25 scim (6.8 ml/s)
2-pipe 20 scim (5.5 ml/s)

Nominal Air Capacity for Air Main Sizing

1-pipe 25 scim (6.8 ml/s)
2-pipe 20 scim (5.5 ml/s)

Nominal Chassis Air Capacity

1-pipe Supply 25 scim (6.8 ml/s)
2-pipe Supply 230 scim (63 ml/s)
1-pipe Exhaust 30 scim (8 ml/s)
2-pipe Exhaust 150 scim (41 ml/s)

Air Connections

..... 5/32" (4 mm) OD tubing

Dimensions (with cover)

..... 2.16" W x 3.34" H x 1.59" D
(55 mm W x 85 mm H x 40 mm D)

Shipping Weights (with cover)

Thermostat Chassis and Wall Plate 0.53 lb. (0.24 kg)
Plastic Cover/Metal Cover 0.07 lb. (0.04 kg)/0.27 lb. (0.12 kg)

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Thermostats

192 S	Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate	
		Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action	
						Direct	Reverse
192 S	1-pipe	Single	Single (Heat or Cool)	Low (No Relay)	°F °C	192-200 192-220	192-201 192-221
192 S	2-pipe	Single	Single (Heat or Cool)	High (Integral Relay)	°F °C	192-202 192-222	192-203 192-223
Thermostat Covers	Thermostat Covers Sold Separately		Plastic	Metal	Chassis Options		
	Cover Description				Code	Description (add suffix to Part No.)	
		<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed No logo 	192-257	192-357	K	Chassis with 1/2" (13 mm) diameter setpoint adjustment knob for convalescent facilities. Available in Desert Beige only.	
		<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed With logo 	192-256	192-356			
		<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer exposed 	192-254	192-354			
		<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer concealed Use with 1/2" setpoint knob option 	192-265	192-365	None	Desert Beige (standard)	
		<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer exposed Use with 1/2" setpoint knob option 	192-266	192-366	W	White	
		<ul style="list-style-type: none"> Adjustment setpoint exposed Indicator setpoint exposed Chassis thermometer concealed 	192-250	192-350			
	<ul style="list-style-type: none"> Adjustment setpoint exposed Indicator setpoint exposed Chassis thermometer exposed 	192-252	192-352				
Cover Color Options							
PLASTIC COLORS							
Code	Color (add suffix to Part No.)						
None	Desert Beige (standard)						
W	White						

Ordering Notes

- "Exposed features" are indicated in green on corresponding illustration.
- For 194 refer to Powerstar Retroline section.
- The standard thermostat color is Desert Beige; White is also available. To order White, simply add a "W" to the end of the Part No., 192-250W.



Part No. in black box Ships same day when requested through Rapid Response™ shipping. See page 1 for details.

SIEMENS

Powerstar Heating/Cooling Pneumatic Room Thermostats



192 HC Thermostat chassis.



Typical wall plate and screws.



192 HC Thermostat with plastic cover. Chassis wall plate with easy maintenance plug-in adapters shown (optional).

Description

Providing proportional single output, dual setpoint with 2-pipe for high air capacity pneumatic room temperature control, the 192 HC Powerstar Heating/Cooling Pneumatic Room Thermostat provides two thermostats under one cover; one side for heating and the other for cooling. Switchover is accomplished by changing the air pressure to the thermostat.

Features

- Dual setpoint dial available in Fahrenheit or Celsius scales
- Available in direct or reverse acting models
- Sensitive bimetal responds to temperature changes
- Integral, field adjustable limit stops
- Adjustable changeover pressure
- Large volume air capacity relay
- Wall mounting plates provides connection to a variety of rough-in terminal boxes
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dials, restrictor and filters

Options

- Fixed limit stops to meet government specifications
- Quick-connect air connections for ease of installation and service
- Large, 1/2" setpoint knob for convalescent homes

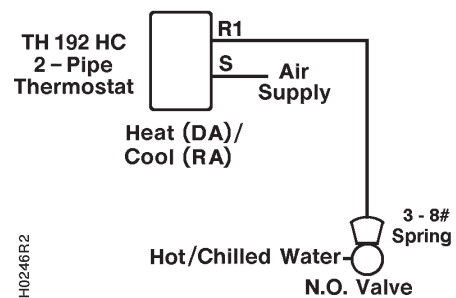
Applications

Designed for temperature control of heating and cooling applications, the 192 HC Powerstar Heating/Cooling Pneumatic Room Thermostat controls valves and damper actuators in cooling equipment. Providing energy management and occupant comfort, the thermostat automatically adjusts to seasonal changes from heating setpoint to cooling setpoint in commercial and institutional facilities.

Recommendation

For control of multiple valves and actuators, use with or without high/low limiting controls.

Application Drawing



Specifications/Product Ordering



For complete conversion kits, refer to the Retroline® Retrostats starting on page A-15.

Scale; Range

Major (minor) Divisions45 to 85°F, 10(2)°F
(7 to 30°C, 5(1)°C)

Factory Calibration 72°F, 7.5 psig ± 0.3
(22°C, 52 kPa @ 1.8)

Sensitivity Adjustment Range 1 to 4 psi/°F (12 to 50 kPa/°C)

Factory Setting 2.5 psig/°F (31 kPa/°C)

Limit Stop

Field Adjustment Range45/85°F (7/30°C)

Fixed Limit Stop Range55/75°F (3/24°C)

Temperature

Storage -10 to +140°F (-23 to +60°C)

Ambient Operating40 to 140°F (4 to 60°C)

Accuracy at Factory

Calibration ±2°F (±1.1°C)

Response 0.1°F (0.06°C)

Supply Air Pressure

Two Pressure (Recommended) Cooling/Heating 18 psig (124kPa)/
(124 kPa)/25 psig (172 kPa)

Supply Air Pressure

Two Pressure (Range)

Cooling 15 to 19 psig (103 to 131 kPa)

Heating 23 to 30 psig (159 to 207 kPa)

Two Pressure, Honeywell Competitive Model

Cooling/Heating 13 psig (90 kPa)/18 psig (124 kPa)

Two Pressure, Johnson Competitive Model¹

Cooling/Heating 15 psig (103 kPa)/20 psig (138 kPa)

Nominal Air Consum. for Air Compressor Sizing25 scim (6.8 ml/s)

Nominal Air Capacity for Air Main Sizing40 scim (11 ml/s)

Nominal Air Capacity

Supply/Chassis Exhaust 150 scim (41 ml/s)/150 scim (41 ml/s)

Air Connections 5/32" (4 mm) OD tube

Dimensions (with cover) 2.16" W x 3.34" H x 1.59" D
(55 mm W x 85 mm H x 40 mm D)

Shipping Weights

Thermostat Chassis and Wall Plate 0.53 lb. (0.24 kg)

Plastic Cover 0.07 lb. (0.04 kg)

Metal Cover (single/dual) 0.27 lb. (0.12 kg)/0.7 lb. (0.3 kg)

1. Some Johnson Controls heat/cool thermostats have a cooling supply pressure of 20 psig (138 kPa) and a heating supply pressure of 15 psig (103 kPa). For this application, the heating and cooling actions must be reversed. If exposed setpoint is required, order special cover, **192-773**.

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Thermostats

Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate	
	Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action	
192 HC 2-pipe	Single	Dual (Heat and Cool)	High (Integral Relay)	°F	Heat Direct	Heat Reverse
				°F	192-207 Cool (DA)	192-209 Cool (DA)
				°C	192-208 Cool (RA)	192-210 Cool (RA)
				°C	192-227 Cool (DA)	192-229 Cool (DA)
					192-228 Cool (RA)	192-230 Cool (RA)
Thermostat Covers Sold Separately		Cover Description	Plastic	Metal	Chassis Options	
	<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed No logo 	192-257	192-357	Code	Description (add suffix to Part No.)	
	<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed With logo 	192-256	192-356	K	Chassis with 1/2" (13 mm) diameter setpoint adjustment knob for convalescent facilities.	
	<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer exposed 	192-254	192-354	Cover Color Options		
	<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer concealed 	192-267	192-367	PLASTIC COLORS		
	<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer exposed Use with 1/2" setpoint knob option 	192-268	192-368	Code	Color (add suffix to Part No.)	
	<ul style="list-style-type: none"> Adjustment setpoint exposed Indicator setpoint exposed Chassis thermometer concealed Use with 1/2" setpoint knob option 	192-258	192-358	None	Desert Beige (standard)	
	<ul style="list-style-type: none"> Adjustment setpoint exposed Indicator setpoint exposed Chassis thermometer exposed 	192-260	192-360	W	White	

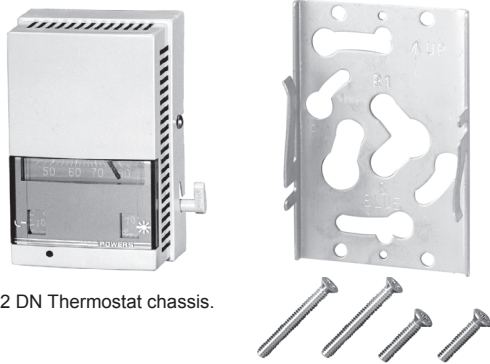
Ordering Note "Exposed features" are indicated in green on corresponding illustration.



Part No. in black box Ships same day when requested through Rapid Response™ shipping. See page 1 for details.

SIEMENS

Powerstar Day/Night/Vent Pneumatic Room Thermostats



192 DN Thermostat chassis.

Typical wall plate and screws.



192 DN Thermostat with plastic cover. Chassis wall plate with easy maintenance plug-in adapters shown (optional).

Description

Providing proportional dual setpoint, 2-pipe or 3-pipe high air capacity pneumatic room temperature control, the 192 DN or DNV Powerstar Pneumatic Room Thermostat automatically resets the room temperature setpoint during unoccupied hours by changing the air pressure to the thermostat. A manual override feature allows occupants to switch to day mode. The override returns to night mode the following night.

Features

- Dual setpoint dial available in Fahrenheit or Celsius scales
- Available in direct or reverse acting models
- Sensitive bimetal responds to temperature changes
- Manual override selector for off-hour occupant comfort
- Adjustable changeover pressure
- Large volume air capacity relay
- Integral, field adjustable limit stops
- Wall mounting plate for connection to a variety of rough-in terminal boxes included
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dial, restrictor and filters

Options

- Fixed limit stops to meet government specifications
- Quick-connect air connections for ease of installation and service
- Large, 1/2" setpoint knob for convalescent homes

Applications

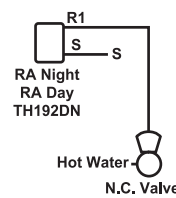
The 192 DN and DNV Powerstar Pneumatic Room Thermostat controls valves and damper actuators in cooling equipment, automatically performing setback changes from day to night. The 192 DNV also performs a purge sequence at night to bring in “vent” outside air to cool the building. A manual override selector switch allows individual room or zone “day” control locally during the night cycle.

During the night control cycle, the 192 DNV models provide a separate output signal (full air supply) allowing ventilation control. Periodic resetting to the “night” control mode during evening or weekend periods using time clocks ensures optimal energy management.

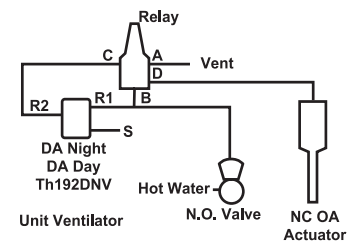
Recommendation

Use 192 DN or DNV for multiple valves and actuators, with or without high/low limiting controls.

Application Drawings



Day/Night.



Day/Night/Vent.

Chassis Port R2 Pressure	Operation Mode (Air Supply)	Switching Relay Connection
Full Air Supply	Night (S=25 psig)	A-D
0 psig	Night Occupied	B-D
0 psig	Day (S=18 psig)	B-D

Specifications/Product Ordering

Scale; Range

Major (minor) Divisions 45 to 85°F, 10(2)°F
(7 to 30°C, 5(1)°C)

Factory Calibration 72°F, 7.5 psig
(22°C, 31 kPa)

Sensitivity Adjustment Range 1 to 4 psi/°F (12 to 50 kPa/°C)

Factory Setting 2.5 psig/°F (31 kPa/°C)

Limit Stop

Field Adjustment Range 45/85°F (7/30°C)
Fixed Limit Stop Range 55/75°F (3/24°C)

Temperature

Storage -10 to +140°F (-23 to +60°C)
Ambient Operating 40 to 140°F (4 to 60°C)

Accuracy at Factory

Calibration ±2°F (±1.1°C)
Response 0.1°F (0.06°C)

Supply Air Pressure

Two Pressure
Day (recommended) 18 psig (124 kPa)
Night (recommended) 25 psig (172 kPa)
Vent-Day/Night 0 psig (0 kPa)/25 psig (172 kPa)
Two Pressure
Day (range) 15 to 19 psig (103 to 131 kPa)
Night (range) 23 to 30 psig (159 to 207 kPa)



For complete conversion kits, refer to the Retroline® Retrostats starting on page A-15.

Two Pressure (Honeywell Competitive Model)

Day/Night 13 psig (90 kPa)/18 psig (124 kPa)

Two Pressure (Johnson Controls Competitive Model)

Day/Night 15 psig (103 kPa)/20 psig (138 kPa)

Nominal Air Consumption for

Air Compressor Sizing 25 scim (6.8 ml/s)

Nominal Air Capacity for Air Main Sizing 40 scim (11 ml/s)

Nominal Chassis Air Capacity

Supply 230 scim (63 ml/s)

Exhaust 150 scim (41 ml/s)

Air Connections 5/32" (4 mm) OD tube

Dimensions (with cover)

192 DN 2.16" W x 3.34" H x 1.59" D
(55 mm W x 85 mm H x 40 mm D)

192 DNV 2.5" W x 3.34" H x 1.59" D
(64 mm W x 85 mm H x 40 mm D)

Shipping Weights

Thermostat Chassis and Wall Plate 0.53 lb. (0.24 kg)

Plastic Cover 0.07 lb. (0.04 kg)

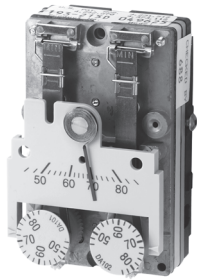
Metal Cover (dual) 0.27 lb. (0.12 kg)

A-10

Thermostats

Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate		
	Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action		
192 DN	Single	Dual (Day and Night)	High (Integral Relay)		D (DA)/ N (DA)	D (RA)/ N (RA)	D(DA)/ N (DA) <small>(with Night Vent)</small>
192 DNV 3-pipe				°F	192-204	192-205	192-206
				°C	192-224	192-225	192-226
Thermostat Covers <i>Sold Separately</i>		Cover Description	Plastic	Metal	Chassis Options		
	<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed 	192-262	192-362	Code	Description (add suffix to Part No.)		
	<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer exposed 	192-264	192-364	K	Chassis with 1/2" (13 mm) diameter setpoint adjustment knob for convalescent facilities.		
	<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer concealed Use with 1/2" setpoint knob option 	192-269	192-369	Cover Color Options			
	<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer exposed Use with 1/2" setpoint knob option 	192-270	192-370	PLASTIC COLORS			
	<ul style="list-style-type: none"> Adjustment setpoint key (night) exposed (day) Indicator setpoint exposed Chassis thermometer exposed 	192-271	192-371	Code	Color (add suffix to Part No.)		
Ordering Notes				None	Desert Beige (standard)		
<ul style="list-style-type: none"> DNV 3-pipe model provides full air supply on R2 vent port during night control cycle. "Exposed features" are indicated in green on corresponding illustration. For 194 refer to Powerstar Retroline section. 				W	White		

Powerstar Free Energy Band Heating/Cooling Pneumatic Room Thermostats



193 HC Thermostat chassis.



Typical wall plate and screws.



193 HC Thermostat with plastic cover. Chassis wall plate with easy maintenance plug-in adapters shown (optional).



Description

Providing proportional, dual output, dual setpoint, 2-pipe (dual 1-pipe low air capacity) or 3-pipe (dual 2-pipe high air capacity) pneumatic room temperature control, the 193 HC Powerstar Free Energy Band Pneumatic Room Thermostat creates a deadband so that no heating or cooling occurs during the Free Energy Band.

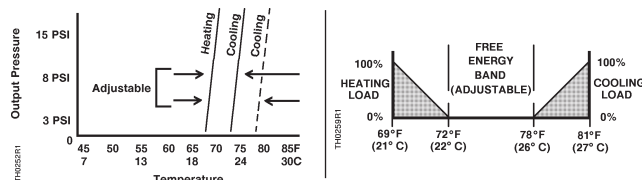
Features

- Dual setpoint dials available in Fahrenheit or Celsius scales
- Integral, field adjustable limit stops
- Sensitive bimetal responds to temperature changes
- Adjustable Free Energy Band
- Test port for fast check of output pressure without removing the cover
- Wall mounting plates for connection to a variety of rough-in terminal boxes included
- Field replaceable thermometer, setpoint dials, restrictors and filters
- Competitive adapter mounting kits available

Options

- Fixed limit stops to meet government specifications
- Quick-connect air connections for ease of installation and service
- Large, 1/2" setpoint knob for convalescent homes

Input/Output Characteristics



Applications

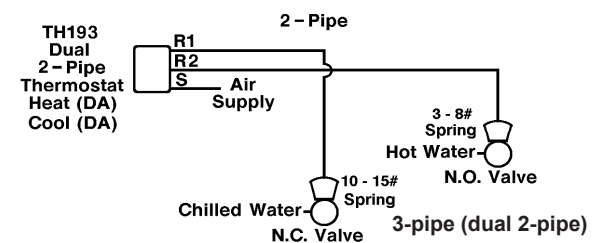
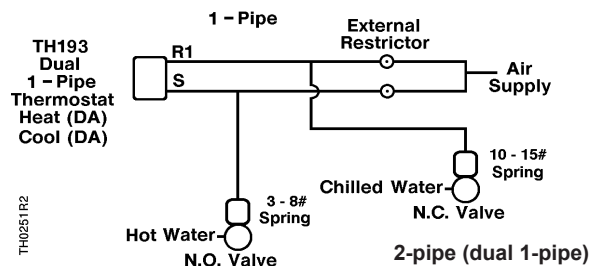
Designed for buildings with early morning heat requirements and mid-morning to afternoon cooling requirements, the Powerstar Free Energy Band Pneumatic Room Thermostat two temperature thermostat controls valves, damper actuators and mechanical heating and cooling equipment. Providing energy management and occupant comfort, the thermostat automatically reduces heating load and increases cooling load.

Recommendation

2-pipe (dual 1-pipe): Use when a limited air capacity is required to operate a single valve and/or actuator.

3-pipe (dual 2-pipe): Use for multiple valves and actuators with or without high/low limiting controls which require higher air capacities.

Application Drawings



Specifications/Product Ordering



For complete conversion kits, refer to the Retroline® Retrostats starting on page A-15.

Scale; Range

Major (minor) Divisions 45 to 85°F, 10(2)°F (7 to 30°C, 5(1)°C)

Factory Calibration 72°F, 7.5 psig ±0.3
(22°C, 52 kPa @ 1.8)

Sensitivity Adjustment Range 1 to 4 psi/°F (12 to 50 kPa/°C)

Factory Setting 2.5 psig/°F (31 kPa/°C)

Limit Stop

Field Adjustment Range 45/85°F (7/30°C)

Fixed Limit Stop Range 55/75°F (13/24°C)

Temperature

Storage -10 to +140°F (-23 to +60°C)

Ambient Operating 40 to 140°F (4 to 60°C)

Accuracy at Factory

Calibration ±2°F (±1.1°C)

Response 0.1°F (0.06°C)

Supply Air Pressure

Two Pressure (recommended) 25 psig (172 kPa)

Maximum 30 psig (207 kPa)

Nominal Air Consumption for Air Compressor Sizing

1-pipe 50 scim (14 ml/s)

2-pipe 40 scim (11 ml/s)

Nominal Air Capacity for Air Main Sizing

1-pipe 50 scim (14 ml/s)

2-pipe 40 scim (11 ml/s)

Nominal Chassis Air Capacity

1-pipe Supply 25 scim (6.8 ml/s) per side

2-pipe Supply 230 scim (63 ml/s) per side

1-pipe Exhaust 30 scim (8 ml/s) per side

2-pipe Exhaust 150 scim (41 ml/s) per side

Air Connections

..... 5/32" (4 mm) OD tubing

Dimensions (with cover)

..... 2.16" W x 3.34" H x 1.59" D

(55 mm W x 85 mm H x 40 mm D)

Shipping Weights

Thermostat Chassis and Wall Plate 0.53 lb. (0.24 kg)

Plastic Cover 0.07 lb. (0.04 kg)

Metal Cover (dual) 0.27 lb. (0.12 kg)

A-12

Thermostats

Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate	
	Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action	
					Heat Direct	Heat Reverse
193 HC 1-pipe	Dual (1-pipe)	Dual (Heat and Cool)	Low (No Relay)	°F	193-211 Cool (DA)	193-213 Cool (DA)
				°F	193-212 Cool (RA)	193-214 Cool (RA)
				°C	193-231 Cool (DA)	193-233 Cool (DA)
				°C	193-232 Cool (RA)	193-234 Cool (RA)
193 HC 2-pipe	Dual (2-pipe)	Dual (Heat and Cool)	High (Integral Relay)	°F	193-215 Cool (DA)	193-217 Cool (DA)
				°F	193-216 Cool (RA)	193-218 Cool (RA)
				°C	193-235 Cool (DA)	193-237 Cool (DA)
				°C	193-236 Cool (RA)	193-238 Cool (RA)
Thermostat Covers Sold Separately		Cover Description	Plastic	Metal	Chassis Options	
	<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed No logo 	192-257	192-357	Code	Description (add suffix to Part No.)	
	<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed With logo 	192-256	192-356			K
	<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer exposed 	192-254	192-354	Cover Color Options		
	<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer concealed 	192-267	192-367	PLASTIC COLORS		
	<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer exposed Use with 1/2" setpoint knob option 	192-268	192-368	Code	Color (add suffix to Part No.)	
	<ul style="list-style-type: none"> Adjustment setpoint exposed Indicator setpoint exposed Chassis thermometer concealed Use with 1/2" setpoint knob option 	192-258	192-358	None	Desert Beige (standard)	
	<ul style="list-style-type: none"> Adjustment setpoint exposed Indicator setpoint exposed Chassis thermometer exposed 	192-260	192-360	W	White	

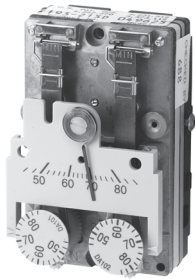
Ordering Note "Exposed features" are indicated in green on corresponding illustration.



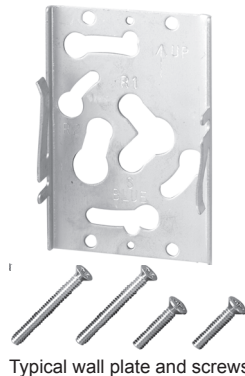
Part No. in black box Ships same day when requested through Rapid Response™ shipping. See page 1 for details.

SIEMENS

Powerstar (Hesitation) Free Energy Band Heating/Cooling Pneumatic Room Thermostats



193 HC Thermostat chassis.



Typical wall plate and screws.



193 HC Thermostat with plastic cover. Chassis wall plate with easy maintenance plug-in adapters shown (optional).

Description

Providing proportional, single output, dual setpoint, 2-pipe pneumatic room temperature control, the 193 HC Powerstar (Hesitation) Free Energy Band Heating/Cooling Pneumatic Room Thermostat is designed to sequence a heating device or a cooling device.

The hesitation feature keeps the output pressure constant through a 6°F (10.8°C) range (typical), causing a deadband.

Features

- Dual setpoint dials available in Fahrenheit or Celsius scales
- Sensitive bimetal responds to temperature changes
- Integral, field adjustable limit stops
- Adjustable Free Energy Band
- Wall mounting plate for connection to a variety of rough-in terminal boxes included
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dials, restrictors, and filters

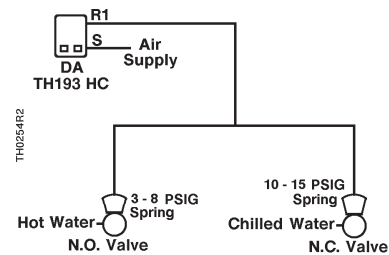
Options

- Fixed limit stops to meet government specifications
- Quick-connect air connections for ease of installation and service
- Large, 1/2" setpoint knob for convalescent homes

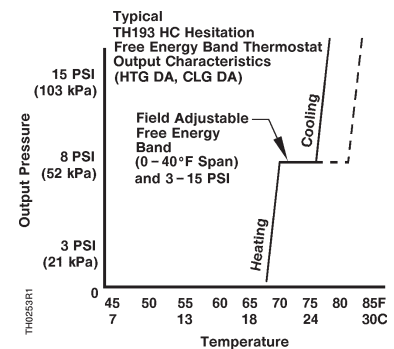
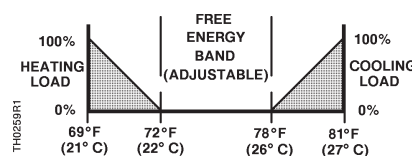
Applications

The 193 HC Powerstar (Hesitation) Free Energy Band Heating/Cooling Pneumatic Room Thermostat is an excellent choice for saving energy by sequencing heating and cooling valves. In most heat/cool pneumatic applications, a 3 to 8 psig (21 to 55 kPa) heating valve and a 10 to 14 psig (69 to 103 kPa) cooling valve is used. By design, this provides a 2 psi (14 kPa) deadband where no heating or cooling is occurring. The hesitation feature allows you to change the deadband range to a 3, 4 or 5 psi (21, 28, or 34 kPa) range to save energy. Refer to the Input/Output chart below for more information.

Application Drawing



Input/Output Characteristics



Specifications/Product Ordering

Scale; Range

Major (minor) Divisions 45 to 85°F, 10(2)°F/
(7 to 30°C, 5(1)°C)

Factory Calibration

"FEB" Output Pressure 7.5 psi (52 kPa)
Temperature 72°F (22°C)
Sensitivity 2.5 psi/°F (31 kPa/°C)

Sensitivity Adjustment Range

..... 1 to 4 psi/°F
(12 to 50 kPa/°C)

Limit Stop, Field Adjustment Range

..... 55/75°F (13/24°C)

Temperature

Storage -10 to +140°F (-23 to +60°C)
Ambient Operating 40 to 140°F (4 to 60°C)

Accuracy at Factory

Calibration ±2°F (±1.1°C)
Response 0.1°F (0.06°C)

Supply Air Pressure

Recommended 25 psig (172 kPa)
Maximum 30 psig (207 kPa)

Free Energy Band

Output Pressure Adjustment 1 to 15 psig (7 to 103 kPa)
Range 0 to 40°F (0 to 20°C)

Nominal Air Capacity for Compressor Sizing

..... 40 scim (11 ml/s)

Nominal Air Capacity for Air Main Sizing

..... 40 scim (11 ml/s)

Nominal Chassis Air Capacity

Supply 150 scim (41 ml/s)
Exhaust 150 scim (41 ml/s)
Supply/2-pipe Exhaust 150 scim (41 ml/s) per side

Air Connections

..... 5/32" (4 mm) OD tubing

Dimensions (with cover)

..... 2.16" W x 3.34" H x 1.59" D
(55 mm W x 85 mm H x 40 mm D)

Shipping Weights

Thermostat Chassis and Wall Plate 0.53 lb. (0.24 kg)
Plastic Cover 0.07 lb. (0.04 kg)
Metal Cover (dual) 0.27 lb. (0.12 kg)

A-14

Thermostats

193 HC	Model #	Thermostat Chassis Type			Thermostat Chassis & Wall Plate		
	193 HC Hesitation	Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action	
		Single	Dual (Heat and Cool)	High (Integral Relay)	°F	Heat (DA)/Cool (DA)	Heat (RA)/Cool (RA)
					°C	193-219	193-220
						193-239	193-240
Thermostat Covers	Thermostat Covers Sold Separately		Cover Description	Plastic	Metal	Chassis Options	
		<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed No logo 	192-257	192-357	Code	Description (add suffix to Part No.)	
		<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer concealed Logo 	192-256	192-356			
		<ul style="list-style-type: none"> Adjustment setpoint concealed Indicator setpoint concealed Chassis thermometer exposed 	192-254	192-354	Code	Description (add suffix to Part No.)	
		<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer concealed Use with 1/2" setpoint knob option 	192-267	192-367			
		<ul style="list-style-type: none"> Adjustment setpoint key Indicator setpoint exposed Chassis thermometer exposed Use with 1/2" setpoint knob option 	192-268	192-368			
		<ul style="list-style-type: none"> Adjustment setpoint exposed Indicator setpoint exposed Chassis thermometer concealed 	192-258	192-358			
		<ul style="list-style-type: none"> Adjustment setpoint exposed Indicator setpoint exposed Chassis thermometer exposed 	192-260	192-360			
					PLASTIC COLORS Code Color (add suffix to Part No.) None Desert Beige (standard) W White		

Ordering Note

- "Exposed features" are indicated in green on corresponding illustration.



Part No. in black box

Ships same day when requested through Rapid Response™ shipping. See page 1 for details.

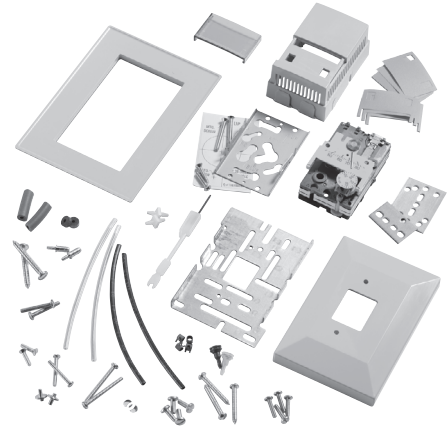
SIEMENS

RETROLINE® Powerstar Retrostat Pneumatic Room Thermostats

RETROLINE®

easily replaces:

- Barber-Colman (Siebe)
- Johnson Controls
- Honeywell
- Robertshaw (Siebe)



192/194 Dual Setpoint Pneumatic Room Thermostat Kit.

Description

The Powerstar Retroline Retrostat Pneumatic Room Thermostat converts most existing pneumatic room thermostats to a Powerstar 192 direct or reverse acting, 2-pipe, single or dual setpoint unit.

Day/Night or Heat/Cool Retrostat is factory-calibrated to match the appropriate changeover pressure of the competitive thermostat.

Features

- Complete kit including Retrostat cover kit with exposed or concealed setpoint adjustment
- Setpoint dials available in Fahrenheit or Celsius scales
- Factory-calibrated for accuracy
- All installation hardware and calibration wrench provided.
- Fits into large format wall openings, using “goof plate,” which is included.
- Integral, field adjustable limit stops
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dial(s), restrictor(s), and filter(s)

Options

- Quick-connect air connections for ease of installation and service
- Large, 1/2" setpoint knob for convalescent homes

Applications

Retroline Retrostat kits are available for most 2-pipe applications in direct and reverse acting models, including:


- Single Temperature
- Day/Night
- Heat/Cool

Refer to the Powerstar products to select the appropriate application.

Specifications/Product Ordering

A-16

Thermostats

Single Setpoint	Description	Thermometer & Setpoint Scales	Control Action			
			Direct	Reverse		
	Single Temperature	°F	192-840	192-841	 <p><i>Kits include covers. If a different cover is required, refer to the Accessories and Service Kit section.</i></p>	
	Single Temperature	°C	192-850	192-851		
Dual Setpoint	Action/Changeover Pressure		Manufacturer	Thermometer & Setpoint Scales	Kit Part No.	Day/Night
	Day (DA) 13 psi (90 kPa)/Night (DA) 18 psi (124 kPa)		Honeywell	°F	194-3042	
	Day (DA) 13 psi (90 kPa)/Night (DA) 18 psi (124 kPa)		Honeywell	°C	194-3142	
	Day (DA) 15 psi (103 kPa)/Night (DA) 20 psi (138 kPa)		Johnson/B-C	°F	194-3043	
	Day (DA) 15 psi (103 kPa)/Night (DA) 20 psi (138 kPa)		Johnson/B-C	°C	194-3143	
	Day (DA) 18 psi (124 kPa)/Night (DA) 25 psi (172 kPa)		Siemens	°F	192-3044	
	Day (DA) 18 psi (124 kPa)/Night (DA) 25 psi (172 kPa)		Siemens	°C	192-3144	
	Day (RA) 13 psi (90 kPa)/Night (RA) 18 psi (124 kPa)		Honeywell	°F	194-3052	
	Day (RA) 15 psi (103 kPa)/Night (RA) 20 psi (138 kPa)		Johnson/B-C	°F	194-3053	
	Day (RA) 18 psi (124 kPa)/Night (RA) 25 psi (172 kPa)		Siemens	°F	192-3054	
	Day (RA) 18 psi (124 kPa)/Night (RA) 25 psi (172 kPa)		Siemens	°C	192-3154	
	Heat (DA) 18 psi (124 kPa)/Cool (RA) 13 psi (90 kPa)		Honeywell	°F	194-3082	Heat/Cool
	Heat (DA) 20 psi (138 kPa)/Cool (RA) 15 psi (103 kPa)		Johnson/B-C	°F	194-3083	
	Heat (DA) 25 psi (172 kPa)/Cool (RA) 18 psi (124 kPa)		Siemens	°F	192-3084	
Heat (DA) 25 psi (172 kPa)/Cool (RA) 18 psi (124 kPa)		Siemens	°C	192-3184		

Ordering Notes

- For detailed specifications on Day/Night, refer to 192 DN or DNV.
- For detailed specifications on Heat/Cool, refer to 193 HC.
- The changeover pressures for RobertShaw thermostats are 16 psi Day/25 psi Night.
- All kits include covers.

Cover Color Options

PLASTIC COLORS	
Code	Color (add suffix to Part No.)
None	Desert Beige (standard)
W	White
K	Chassis with 1/2" (13 mm) diameter setpoint adjustment knob for convalescent facilities.

Accessories & Service Kits

A-77



Part No. in black box

Ships same day when requested through Rapid Response™ shipping. See page 1 for details.

SIEMENS

Product Ordering

RETROLINE®	Thermostats	Manufacturer Part Number	Control Action/Temperature Scale	Retroline Part No.		Johnson Controls
				Kit	Replace. Chassis	
		T-4002-201 ¹	Single Temperature, Direct Acting	192-840	192-202	
		T-4002-202 ¹	Single Temperature, Reverse Acting	192-841	192-203	
		T-4002-203	Single Temperature, Direct Acting	192-840	192-202	
		T-4002-204	Single Temperature, Reverse Acting	192-841	192-203	
		T-4506-201 ¹	Day (DA) 15 psi (103 kPa) changeover/Night (DA) 20 psi (138 kPa)	194-3043	194-2043	
		T-4506-202	Day (DA) 15 psi (103 kPa) changeover/Night (DA) 20 psi (138 kPa)	194-3043	194-2043	
		T-4506-203 ^{1,2}	Day (DA) 15 psi (103 kPa) changeover/Night (DA) 20 psi (138 kPa)	194-3043	194-2043	
		T-4506-204 ²	Day (DA) 15 psi (103 kPa) changeover/Night (DA) 20 psi (138 kPa)	194-3043	194-2043	
		T-4506-209 ¹	Day (RA) 15 psi (103 kPa) changeover/Night (RA) 20 psi (138 kPa)	194-3053	194-2053	
		T-4506-217 ^{1,2}	Day (RA) 15 psi (103 kPa) changeover/Night (RA) 20 psi (138 kPa)	194-3053	194-2053	
		T-4756-205 ¹	Heat (DA) 20 psi (138 kPa) changeover/Cool (RA) 15 psi (103 kPa)	194-3083	194-2083	
		T-4756-206	Heat (DA) 20 psi (138 kPa) changeover/Cool (RA) 15 psi (103 kPa)	194-3083	194-2083	
		TP970A1002	Single Temperature, Direct Acting	192-840	192-202	 Honeywell
		TP970A1012	Single Temperature, Direct Acting	192-840	192-202	
		TP970A1035	Single Temperature, Direct Acting	192-840	192-202	
		TP970A1038	Single Temperature, Direct Acting	192-840	192-202	
		TP970A1053	Single Temperature, Direct Acting	192-840	192-202	
		TP970A1061	Single Temperature, Direct Acting	192-840	192-202	
		TP970A2004	Single Temperature, Direct Acting	192-840	192-202	
		TP970A1002	Single Temperature, Reverse Acting	192-841	192-203	
		TP970B1028	Single Temperature, Reverse Acting	192-841	192-203	
		TP970B1036	Single Temperature, Reverse Acting	192-841	192-203	
		TP970B1044	Single Temperature, Reverse Acting	192-841	192-203	
		TP971A1003	Day (DA) 13 psi (90 kPa) changeover/Night (DA) 18 psi (124 kPa)	194-3042	194-2042	
		TP971A1029	Day (DA) 13 psi (90 kPa) changeover/Night (DA) 18 psi (124 kPa)	194-3042	194-2042	
		TP971A1037	Day (DA) 13 psi (90 kPa) changeover/Night (DA) 18 psi (124 kPa)	194-3042	194-2042	
		TP971A1045	Day (DA) 13 psi (90 kPa) changeover/Night (DA) 18 psi (124 kPa)	194-3042	194-2042	
		TP971A1086	Day (DA) 13 psi (90 kPa) changeover/Night (DA) 18 psi (124 kPa)	194-3042	194-2042	
		TP971B1001	Day (RA) 13 psi (90 kPa) changeover/Night (RA) 18 psi (124 kPa)	194-3052	194-2052	
		TP971B1004	Day (RA) 13 psi (90 kPa) changeover/Night (RA) 18 psi (124 kPa)	194-3052	194-2052	
		TP972A1002	Heat (DA) 18 psi (124 kPa) changeover/Cool (RA) 13 psi (90 kPa)	194-3082	194-2082	
		TP972A1028	Heat (DA) 18 psi (124 kPa) changeover/Cool (RA) 13 psi (90 kPa)	194-3082	194-2082	
		TP972A1036	Heat (DA) 18 psi (124 kPa) changeover/Cool (RA) 13 psi (90 kPa)	194-3082	194-2082	
		TP972A1101	Heat (DA) 18 psi (124 kPa) changeover/Cool (RA) 13 psi (90 kPa)	194-3082	194-2082	

Ordering Notes

1. Suggested Retrofit Kit converts horizontal thermostat to vertical position.
2. Suggested Retrofit Kit has an additional manual changeover switch, not provided on the original.

Product Ordering

A-18

Thermostats

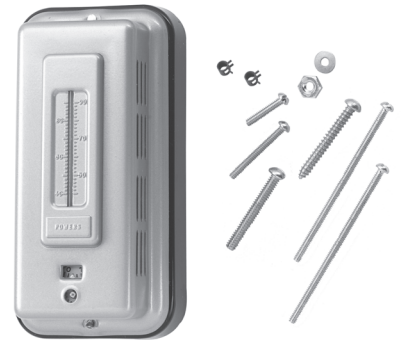
Manufacturer Part No.	Control Action/Temperature Scale	Retroline Part No.		
		Kit	Replace. Chassis	
TK-18	Single Temperature, Direct Acting	192-840	192-202	Barber-Colman
TK-19	Single Temperature, Reverse Acting	192-841	192-203	
TK-19-1	Single Temperature, Reverse Acting	192-841	192-203	
TK-19-19	Single Temperature, Reverse Acting	192-841	192-203	
TK-1001	Single Temperature, Direct Acting	192-840	192-202	
TK-1101	Single Temperature, Reverse Acting	192-841	192-203	
TK-1001-116	Single Temperature, Direct Acting	192-850	192-222	
TK-1002	Single Temperature, Direct Acting	192-840	192-202	
TK-1002	Single Temperature, Reverse Acting	192-841	192-203	
TK-5001-116	Single Temperature, Direct Acting	192-850	192-222	
TKR-18	Single Temperature, Direct Acting	192-840	192-202	
TKR-18-91	Single Temperature, Direct Acting	192-840	192-202	
TKR-19	Single Temperature, Reverse Acting	192-841	192-203	
TKR-1001	Single Temperature, Direct Acting	192-840	192-202	
TKR-1101	Single Temperature, Reverse Acting	192-841	192-203	
2212-118	Single Temperature, Direct Acting	192-840	192-202	Robertshaw
2212-119	Single Temperature, Reverse Acting	192-841	192-203	
2212-128	Single Temperature, Direct Acting	192-840	192-202	
2212-129	Single Temperature, Reverse Acting	192-841	192-203	
2212-418	Single Temperature, Direct Acting	192-840	192-202	
2212-419	Single Temperature, Reverse Acting	192-841	192-203	
2212-518	Single Temperature, Direct Acting	192-840	192-202	
2212-519	Single Temperature, Reverse Acting	192-841	192-203	
T15-101	Single Temperature, Direct Acting	192-840	192-202	
T18-101	Single Temperature, Direct Acting	192-840	192-202	
T18-201	Single Temperature, Direct Acting	192-840	192-202	
T18-301	Single Temperature, Direct Acting	192-840	192-202	
T18-3011	Single Temperature, Direct Acting	192-840	192-202	
192-202	Single Temperature, Direct Acting	192-840	192-202	Powers
192-203	Single Temperature, Reverse Acting	192-841	192-203	
192-204	Day (DA) 18 psi (124 kPa)/Night (DA) 25 psi (172 kPa) changeover	192-3044	192-204	
192-205	Day (RA) 18 psi (124 kPa)/Night (RA) 25 psi (172 kPa) changeover	192-3054	192-205	
192-208	Heat (DA) 25 psi (172 kPa)/Cool (RA) 18 psi (124 kPa) changeover	192-3084	192-208	
192-222	Single Temperature, Direct Acting	192-850	192-222	
192-223	Single Temperature, Reverse Acting	192-851	192-223	
192-224	Day (DA) 18 psi (124 kPa) changeover/Night (DA) 25 psi (172 kPa)	192-3144	192-224	
192-225	Day (RA) 18 psi (124 kPa) changeover/Night (RA) 25 psi (172 kPa)	192-3154	192-225	
192-228	Heat (DA) 25 psi (172 kPa) changeover/Cool (RA) 18 psi (124 kPa)	192-3184	192-228	



Part No. in black box Ships same day when requested through Rapid Response™ shipping. See page 1 for details.



Pneumatic Room Thermostats



832 D Pneumatic Room Thermostat and screws.

Description

The single setpoint, direct acting thermostat provides gradual acting pneumatic room temperature control for heating and cooling applications. The 832 D Thermostat is ruggedly constructed for dependable, long-term service.

Features

- All metal construction
- Rapid response to temperature change
- Unique design of supply and exhaust air valves prevents waste
- Quiet operation
- Easy-to-calibrate and service
- Tamper-proof cover screws
- Exposed remote changeover control
- Calibrated thermometer

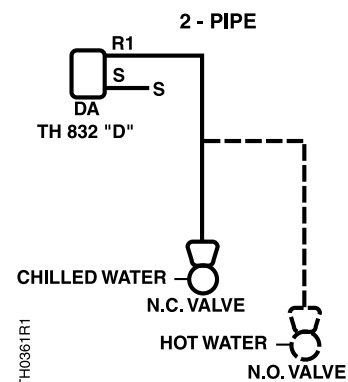
Applications

Designed for controlling rooms heated or cooled by radiation, ventilation, or an air conditioning system, the 832 D Pneumatic Room Thermostat is versatile and responsive for individual room control.

Other applications include room control of radiant panels, finned radiation, and unit ventilators.

Application Drawing

Dotted lines are alternative control schemes.



Specifications/Product Ordering

Control Action Direct
 Operating Range 60 to 85°F (15 to 30°C)
 Sensitivity Fixed 2.5 psi/°F (31 kPa/°C)
 Temperature Response 0.5°F (0.3°C)
 Maximum Ambient Temperature 110°F (43°C)
 Dial Graduations 2°F (1.1°C)
 Normal Air Supply Pressure 18 psi (124 kPa)
 Maximum Operating Pressure 30 psi (207 kPa)
 Dimensions 2.88" W x 5.63" H x 2.19" D
 (73 mm W x 143 mm H x 56 mm D)

Air Consumption for Compressor Sizing 10 scim (2.7 ml/s)
 Cover Style Key or concealed setpoint adjustment
 Cover Finish Silver; Special order other finishes.
 Shipping Weight 3.0 lb. (1.36 kg)

Accessories
& Service Kits

A-77

	Description	Thermostat Part No. ²	Cover Assembly
832D	Concealed adjustment with thermometer	832-0120	856-036
	Concealed adjustment without thermometer	832-0490	856-046 ¹
	Exposed key adjustment with thermometer	832-0500	856-044
	Exposed knob adjustment with thermometer	832-1260	856-044

Thermostat comes complete with cover.

Ordering Notes

1. Blind cover, **856-046**, does not include mounting screws, **856-014**, that are required for installation.
2. Does not include adjustment key, **856-055**, that is required for installation.

Order the Calibration Kit in the Accessories and Service Kits section.

A-20

Thermostats

TECH TIPS

To calibrate any pneumatic thermostat, perform the following:

1. Remove the cover.
2. Measure the ambient temperature.
3. Set the setpoint dial to the ambient temperature.
4. Measure the controller output pressure (branch pressure).
5. Turn the calibration screw(s) until the branch pressure equals the midpoint of the control span [usually 8 psi (55 kPa)].
6. Replace the cover.

Limitem Rigid Bulb Thermostats



356 Limitem Rigid Bulb Thermostat.

Description

The 356 Limitem Rigid Bulb Thermostat is a pneumatically-operated, duct-mounted thermostat, which is available in either direct or reverse acting in a variety of ranges.

Features

- Durable copper motor tube and steel rod temperature sensing element
- Two-valve design reduces air waste
- Duct mounting hardware included
- All metal construction
- 18" (46 cm) sensing tube

Applications

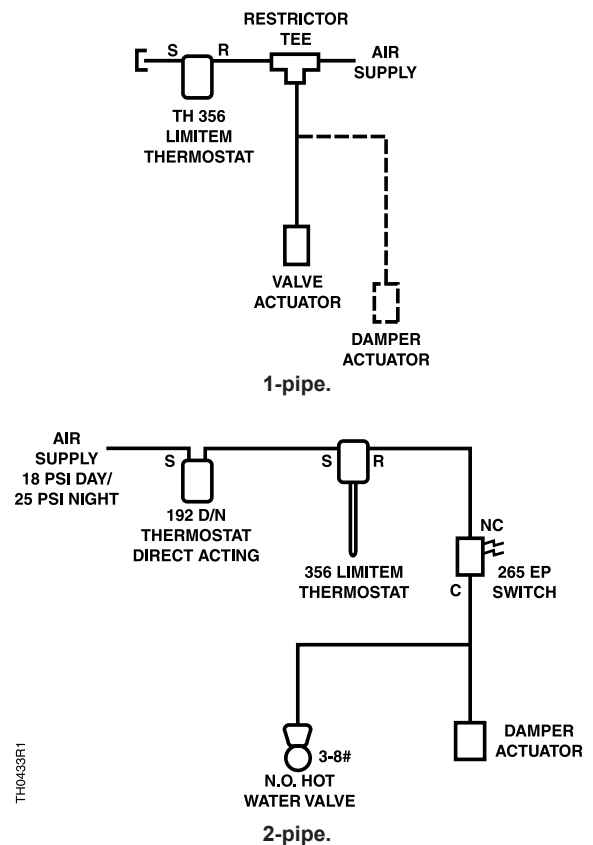
The 356 Limitem Rigid Bulb Thermostat provides primary control for unit ventilators, fan coils and other air handling units. Can also be used as low limit control for air flow to a controlled space.

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Thermostats

Application Drawings

Dotted lines are alternative control schemes.



Specifications/Product Ordering

Control Action Direct or Reverse
Maximum Supply Air Pressure 30 psi (207 kPa)
Sensitivity Range (adjustable) 0.25 to 2 psi/°F (3 to 25 kPa/°C)
Factory Sensitivity Setting 1.25 psi/°F (15 kPa/°C)
Temperature Response 0.50°F (0.9°C)
Dial Graduations 5°F (2.7°C)/2°C (3.6°F)
Maximum Ambient Temperature
 Case 200°F (93°C)
 Bulb (Direct Acting) 225°F (107°C)
 Bulb (Reverse Acting) 250°F (121°C)

Nominal Air Supply Pressure 18 to 25 psi (124 to 172 kPa)
Maximum External Pressure (on bulb) 250 psi (1722 kPa)
Mounting Flange or 3/8" NPT
Air Connections 1/8" NPT
Dimensions
 Bulb Length 18" (457 mm)
 Flange OD 2.56" (65 mm)
 Case 1.5" Diameter x 3" L
 (33 mm Diameter x 76 mm L)
Shipping Weight 2.0 lb. (0.91 kg)

356 Limitem	Temperature Operating Range		Part No.	Direct Acting
	0 to 100°F (-18 to +38°C)		356-0012	
	30 to 180°F (-1.11 to +82.2°C)		356-0750	
	0 to 100°F (-18 to +38°C)		356-0013	Reverse Acting
	30 to 180°F (-1.11 to +82.2°C)		356-1005	
100 to 250°F (37.8 to 121°C)		356-1006		

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Accessories
& Service Kits

A-92

Thermostats

TECH TIPS

When using the Limitem as a one-pipe device, a 40 scim (11 ml/s) restrictor will limit your output to 80% of supply. A 20 scim (5 ml/s) restrictor will limit your output to 60% of supply.

Example: With a 20 scim (5 ml/s) restrictor and 25 psi (11.3 kPa) supply, your maximum output is 15 psi (6.8 kPa).

Limitem Remote Bulb Thermostats



357 D Limitem Remote Thermostat with an average bulb.

Description

The 357 D Limitem Remote Bulb Thermostat is a pneumatically-operated thermostat that is gradual, direct acting with a remote or averaging bulb.

Features

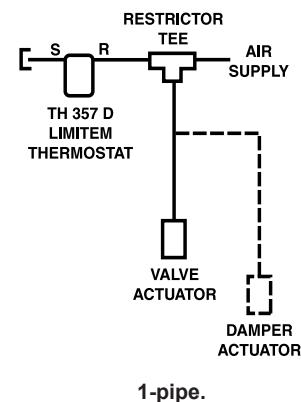
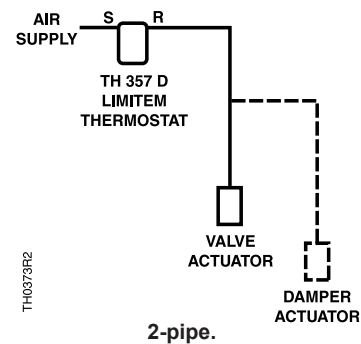
- Direct acting only
- Remote or averaging bulbs for flexibility in installation
- Liquid-filled sensing element for rapid response to temperature changes
- Two-valve design reduces air waste
- Adjustable sensitivity

Applications

The 357 D Limitem Remote Bulb Thermostat provides primary monitoring and control for air handling units or a low limit control.

Application Drawings

Dotted lines are alternative control schemes.



Specifications/Product Ordering

Control Action Direct
 Maximum Supply Air Pressure 30 psi (207 kPa)
 Sensitivity Range (adjustable) 0.33 to 3.5 psi/°F (4 to 43 kPa/°C)
 Factory Sensitivity Setting 1.25 psi/°F (15 kPa/°C)
 Bulb Liquid-filled
 Temperature Response 0.5°F (0.3°C)
 Dial Graduations 5°F (2.7°C), 2°C (3.6°F)
 Maximum Ambient Temperature (case) 180°F (82°C)
 Nominal Air Supply Pressure 18 to 25 psi (124 to 172 kPa)
 Mounting Bracket supplied

Air Connection 1/8" NPT
 Dimensions (Case) 1.75" Diameter x 3.5" H
 (44.5 mm Diameter x 88.9 mm H)
 Shipping Weight 2.0 lb. (0.9 kg)

Accessories
& Service Kits

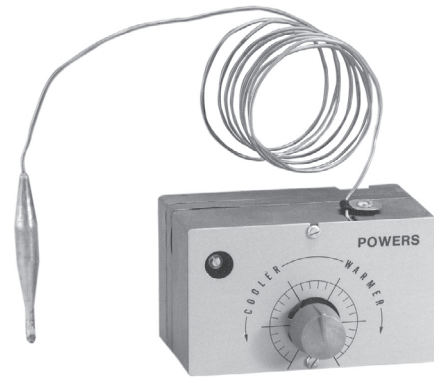
A-92

	Temperature Operating Range	Sensing Element	Capillary	Bulb	Maximum Ambient Temp.	Part No.
357 D Limitem	20 to 100°F (-6.7 to +37.8°C)	Remote Bulb	8' (2.4 m)	3/8" x 4' (0.95 mm x 10.2 cm)	201°F (94°C)	357-0003
	35 to 145°F (1.7 to 62.8°C)	Averaging Bulb	40' (12.2 m)	3/32" x 15' (0.24 mm x 457 cm)	210°F (99°C)	357-0004
	120 to 230°F (48.9 to 110°C)	Remote Bulb	40' (12.2 m)	3/8" x 4" (0.95 mm x 10.2 cm)	261°F (127°C)	357-0005
	35 to 145°F (1.7 to 62.8°C)	Averaging Bulb	6" (15 cm)	3/32" x 8' (0.24 mm x 244 cm)	211°F (99.4°C)	357-0001

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Thermostats

Unit Mounted Thermostats



188 Unit Mounted Thermostat.

Description

The 188 Unit Mounted Thermostat is a gradual acting thermostat with a remote bulb operating on the force-balance principle, using pneumatic feedback to obtain linearity and maintain selected room temperature by positioning pneumatic devices to control heating or cooling.

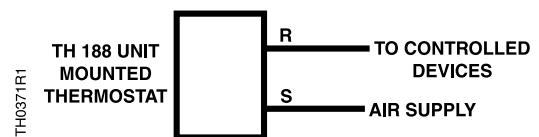
Features

- Liquid-filled thermal system temperature sensing element
- Durable die-cast metal case with rugged setpoint knob
- Adjustable sensitivity
- Universal mounting bracket for easy installation
- Integral adjustable limit stops
- Available as:
 - Direct Acting only (Heating)
 - Reverse Acting only (Cooling)
 - Heat or Cool depending on supply air pressure

Applications

The 188 Unit Mounted Thermostats are designed primarily for use in fan coil induction units and unit ventilators to control the temperature within and occupied space. The thermostat's temperature range is limited to applications at ambient temperatures.

Typical Connections



Specifications/Product Ordering

Control Action Heating/Cooling, Direct and Reverse;
 Direct only; Reverse only
Operating Range 60 to 85°F (15.5 to 29.4°C)
Operating Pressure 30 psi (207 kPa) max.
Adjustment Sensitivity 1 to 5.25 psi/°F (12 to 65 kPa/°C)
Factory Sensitivity Setting 2.25 psi/°F (28 kPa/°C)
Temperature Response 0.2°F (0.1°C)
Maximum Ambient Temperature
 Case 135°F (57.2°C)
 Bulb 231°F (111°C)
Scale Graduations 1°F (0.55°C)
Nominal Air Supply Pressure
 Direct or Reverse Acting 25 psi (172 kPa)
 Heating/Cooling 25 psi (172 kPa)/18 psi (124 kPa)
Average Air Usage
 20 scim Restrictor 25 scim (6.8 ml/s)
 40 scim Restrictor 45 scim (12.2 ml/s)

Air Connections 1/4" (6 mm) Brass barbed for polyethylene tubing
Bulb Size 3/8" Diameter x 3-1/2" L
 (9.5 mm Diameter x 89 mm L)
Capillary Length 48" (121.9 cm) approx.
Finish Corrosion-resistant Zinc Chromate
Dimensions (case)
 Heating/Cooling, Reverse Acting 3.1" W x 2.4" H x 2.13" D
 (100 mm W x 61 mm H x 54 mm D)
 Direct Acting 3.1" W x 2.4" H x 1.38" D
 (100 mm W x 61 mm H x 35 mm D)
Shipping Weight 3.0 lb. (1.36 kg)

Accessories
& Service Kits

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Thermostats

	Control Action	Changeover Pressure	Average Air Usage	Part No.	
	Direct Acting/25 psi (172 kPa)	—	40 scim (11 ml/s)	188-0031	Single Setpoint
	Reverse Acting (Cooling) 18 psi	—	20 scim (5 ml/s)	188-0024	
188	Direct Acting/Reverse Acting (Cooling) 18 psi (124 kPa)	—	40 scim (11 ml/s)	188-0030	Heat/Cool
	Retroline Direct Acting/Reverse Acting 18 psi (124 kPa)/13 psi (90 kPa). Retroline replacement for Honeywell LP916BXXXX .	15 psi (103 kPa)	40 scim (11 ml/s)	188-0033	
	Retroline Direct Acting/Reverse Acting 20 psi (138 kPa)/15 psi (103 kPa). Retroline replacement for Johnson Controls T-3300-2 .	17 psi (117 kPa)	40 scim (11 ml/s)	188-0034	

Pneumatic High and Low Temperature Detection Thermostats



134 Pneumatic Low Temperature Detection Thermostat.

Description

The 134 High and Low Temperature Detection Pneumatic Thermostats automatically “lockout” at setpoint and require manual reset.

Features

- Snap-acting pneumatic switch
- Sight-set calibrated setpoint scale
- No leakage of air prior to reset of switch
- Easily adjustable settings
- Normally closed air valve; bleeds to less than 2 psig (14 kPa) when supplied through a restrictor
- Barb fitting for push-on connection of 1/4" (6 mm) OD polyethylene tubing
- Holds dead-ended line to approximately 22 psig (152 kPa) air pressure

Applications

The 134 Pneumatic High and Low Temperature Detection Thermostats are used on pneumatic heating and cooling systems in areas protected from the weather.

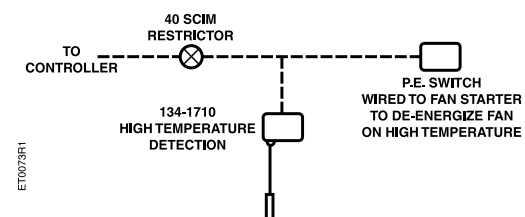
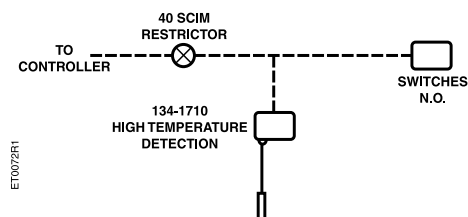
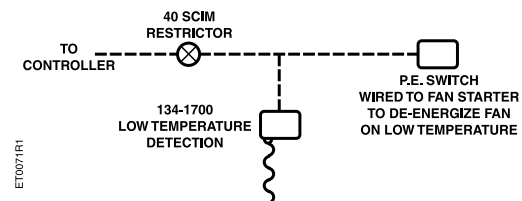
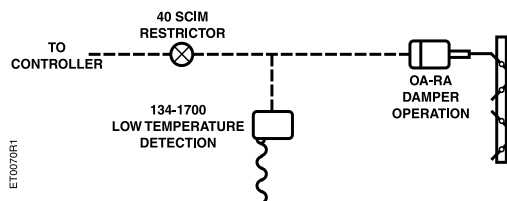
On a typical high limit application, the thermostat shuts down air conditioning or ventilating fans when the duct temperature becomes excessively high. A normally closed switch opens at setpoint.

On a typical low temperature application, the thermostat stops the fan or closes a damper when the temperature drops to the setpoint at any one foot (30.5 cm) or more of the sensing element.

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Thermostats

Application Drawings



Specifications/Product Ordering

Part No. 134-1700

Ambient Temperature Range Greater than setpoint to 140°F (60°C)
Pneumatic Switch NC, 0.020" (0.6 mm) diameter bleed
Control Point Low Temperature Thermostat Lowest temperature at any one foot section of the sensing bulb
Case Finish Gray Baked Enamel
Shipping Weight 2.45 lb. (1.11 kg)

Part No. 134-1710

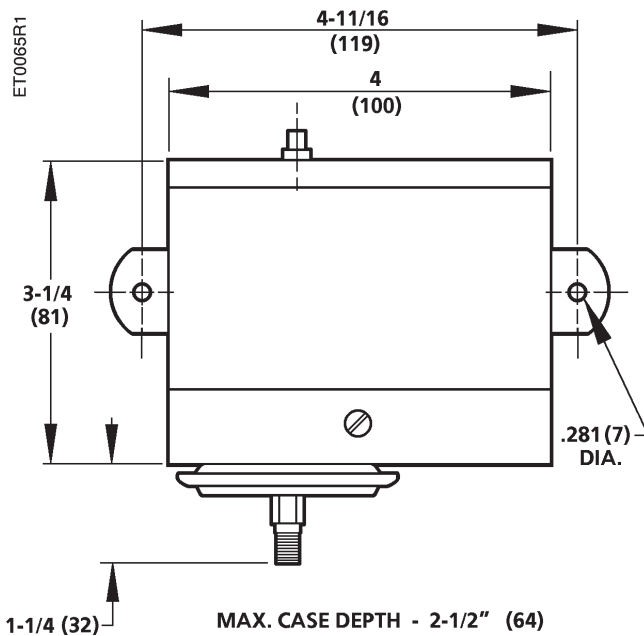
Ambient Temperature Range -40 to +140°F (-40 to +60°C)
Pneumatic Switch NC, 0.02" (0.6 mm) diameter bleed
Control Point Low Temperature Thermostat Lowest temperature at any one foot section of the sensing bulb
Case Finish Gray Baked Enamel
Shipping Weight 2.38 lb. (1.08 kg)

	Temperature Range	Differential	Maximum Bulb Temperature	Bulb & Capillary Length	Switch Reclose	Part No.	
134	15 to 55°F (-9 to +12.8°C) with stop at 35°F (1.67°C)	5°F (2.8°C) Non-Adjustable	400°F (204°C)	20' (6 m)	Temperature must increase by 5°F (2.8°C) before pneumatic switch can be reclosed.	134-1700	Low Temp.
	100 to 170°F (38 to 77°C)	10°F (5.6°C) Non-Adjustable	250°F (121°C)	2.7" (69 mm) Dia. x 10" (25.4 cm) L bulb with 6' (183 mm) capillary	Temperature must drop 10°F (5.6°C) before pneumatic switch can be reclosed.	134-1710	High Temp.

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Thermostats

Dimensions



Dimensions shown in inches (mm).

Accessories & Service Kits **A-91**

Electric Line Voltage Remote Bulb Thermostats



141 Electric Line Voltage Remote Bulb Thermostat.

Description

The 141 Electric Line Voltage Remote Bulb Thermostat is a two-position electric line voltage thermostat with remote bulb.

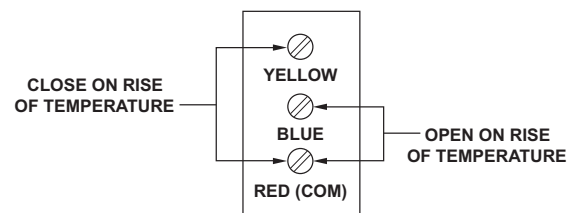
Features

- Temperature sensitive, liquid-filled sensing element
- Single-pole, double-throw snap-acting switches
- Enclosed switches suitable for low or line voltage power switching
- Gray baked enamel case

Applications

The 141 Electric Line Voltage Remote Bulb Thermostat is used for temperature control in heating and cooling application, typically to directly operate two-position damper motor actuators, motor actuated valves, relays and similar equipment. Typical applications includes summer-winter change over and the direct control of liquid or air temperatures where two position (ON-OFF) control is acceptable.

Typical Connections



Specifications/Product Ordering

Inductive Amps

Full Load Amps	
120 Vac.....	7.4
240 Vac.....	3.7
Locked Rotor Amps	
120 Vac.....	44.5
240 Vac.....	22.2

Resistive Amps

120 Vac	25
240 Vac	20

Dimensions 2.5" W x 5.38" H x 2.31" D
(64 mm x 136 mm x 59 mm)

Shipping Weight 1.8 lb. (0.82 kg)

Accessories & Service Kits	A-91
---------------------------------------	-------------

	Temperature Scale Range	Max. Bulb Temp.	Bulb Size	Switch Differential	Part No.
141	20 to 120°F (-7 to +49°C)	130°F (54°C)	.038" Diameter x 4.03" L (9.9 mm Diameter x 102 mm L) Capillary 6' (183 cm)	Adjustable 6 to 30°F (3 to 16°C)	141-0520
	100 to 240°F (38 to 110°C)	250°F (121°C)	.029" Diameter x 2.33" L (7.4 mm Diameter x 59.2 mm L) Capillary 6' (183 cm)	Adjustable 7 to 45°F (14 to 25°C)	141-0521

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Thermostats



Part No. in black box Ships same day when requested through Rapid Response™ shipping. See page 1 for details.

SIEMENS

Electric Line Voltage Room Thermostats Heating/Cooling



134 Electric Line Voltage Room Thermostat—Heating/Cooling.

Description

The 134 Electric Line Voltage Room Thermostat is a line voltage On/Off room thermostat for heating and cooling applications.

Models are available with SPST or SPDT contact action and for standard, nominal 1/4 hp / 10 amps noninductive, or heavy duty, nominal 1 hp / 22 amps noninductive applications.

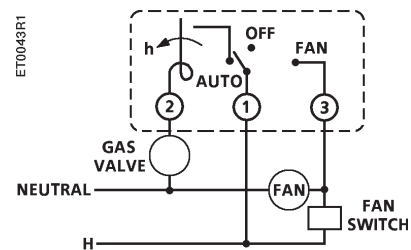
Features

- Single setpoint dial
- Exposed bimetal thermometer
- Temperature range from 50 to 90°F (10 to 30°C)
- High and low limit stops
- Standard or heavy duty models
- Dual Fahrenheit/Celsius scale plate

Applications

The 134 Electric Line Voltage Room Thermostat controls heating and cooling applications or year-round air conditioning units in commercial, industrial, or residential installations.

Typical Connections



A-31

Thermostats

Specifications/Product Ordering

Part No. 134-1083

Motor Rating
 120 Vac 6.0 A
 240 Vac 3.7 A

Switch Action SPST with "Auto-Off-Fan" switch

Dimensions 2.78" W x 5.19" H x 1.88" D
 (71 mm W x 132 mm H x 48 mm D)

Shipping Weight 1.3 lbs. (0.6 kg)

Part No. 134-1084

Motor Rating
 120 Vac 6.0 A
 240 Vac 3.0 A

Resistive Rating
 120 Vac 10.0 amps
 240 Vac 10.0 amps

Switch Action SPDT

Dimensions 3" W x 4.75" H x 1.44" D
 (75 mm W x 120 mm H x 36 mm D)

Shipping Weight 1.0 lb. (0.6 kg)

Part No. 134-1085

Motor Rating
 120 Vac 16.0 Heating/8.0 Cooling
 240 Vac 8.0 Heating/8.0 Cooling

Resistive Rating
 120 Vac 22.0 Heating
 240 Vac 22.0 Heating

Switch Action SPDT

Dimensions 3" W x 4.75" H x 1.44" D
 (75 mm W x 120 mm H x 36 mm D)

Shipping Weight 1.0 lb. (0.6 kg)

Part No. 134-1086

Motor Rating
 120 Vac 6.0 A
 240 Vac 3.0 A

Switch Action SPST

Dimensions 3" W x 4.75" H x 1.44" D
 (75 mm W x 120 mm H x 36 mm D)

Shipping Weight 1.3 lb. (0.6 kg)

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Thermostats

	Temp. Set Point Range	Temp. Set Point Adjustment	Temperature Difference	Part No.
134	40 to 90°F (5 to 30°C)	Concealed	1.8°F (1°C)	134-1083
	40 to 90°F (5 to 30°C)	Concealed	1.8°F (1°C)	134-1086
	40 to 90°F (5 to 30°C)	Exposed Knob or Concealed ¹	1.8°F (1°C) Heating 2.31°F (1.3°C) Cooling	134-1084
	40 to 90°F (5 to 30°C)	Exposed Knob or Concealed ¹	3°F (1.7°C) Heating 3.5°F (2°C) Cooling	134-1085

Ordering Note

- Each thermostat is shipped with a blank faceplate for use when concealed adjustment is desired.



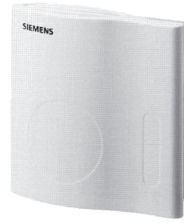
Accessories & Service Kits **A-91**



Part No. in black box Ships same day when requested through Rapid Response™ shipping. See page 1 for details.

SIEMENS

Electric Room Thermostats



RAA10C Fan Coil Thermostat with concealed setpoint knob.

RAA20U Room Thermostat with exposed setpoint knob.

Description

Designed for simple heating or cooling or heating/cooling applications, RAA... Electric Room Thermostats are an attractive and economical solution that utilize two-wire, gas membrane technology.

RAA... Electric Room Thermostats are available in single scale Fahrenheit or Celsius models, except the RAA10C, with models for dry wall or electrical wall box mounting. Models are designed for wall box mounting includes wall box plate adapter and screws.

Features

- Two-point control algorithm for on/off control
- 24...120, 277 Vac line
- Two mounting styles: electrical wall box or drywall
- Dual Fahrenheit/Celsius scale (RAA20U)

Options

- Tamperproof cover (concealed setpoint knob) noted with a C
- Available with wall plate

Applications

The RAA... Electric Room Thermostats are typically used in public buildings, storage rooms, entrance hallways and maintenance rooms where two-position (On/Off) control is required.

Descriptions of models are as follows:

RAA10C...model is a heating or cooling only thermostat that has a concealed setpoint knob for use in areas where setpoint adjustment is limited to authorized personnel. Typical applications are frost and overheat protection and temporary heat for buildings under construction.

RAA20U... model is a heating or cooling only thermostat that has an external setpoint knob for occupant adjustment.

Note:

ARG 70 wall plate is required in order to be UL compliant for switching line voltage.

The RAA... Room Thermostats are designed for either simple heating or cooling or for 2-pipe heating and cooling systems where fan control is not required.

Specifications/Product Ordering

Operating Voltage24...120, 277 Vac
Frequency50 or 60 Hz
Setpoint Adjustment Range50 to 85°F (10 to 29°C)
Switching Differential ≤ 1.8°F (1°C)
Switch Rating6A RES, 3.5 A FLA, 12A LRA
Time Constant14 min.
Switch Action OutputSPDT Two-position (On/Off)
Operation—Conditions
 Operating Temperature32 to 122°F (0 to 50°C)
 Relative Humidity<95% RH
Transportation/Storage Conditions
 Temperature-4 to +122°F (-20 to +50°C)
 Relative Humidity<95% RH

Housing
 MaterialPlastic
 ColorWhite
 BellowsEnvironmentally-friendly gas
WiringScrew terminals for wires of
 2 x 16 AWG or 1 x 14 AWG, 20 AWG max.
Agency ListingsConforms to CE requirements
 UL listed to 873
 cUL listed to Canadian standard C22.2 No. 24-93
Shipping Weight0.31 lb. (0.14 kg)

RAA...	Description	Part Nos.	
		Electric Wall Box ¹	Dry Wall
	Thermostat for heating or cooling only	RAA10CW	RAA10C
	Thermostat for heating or cooling only with exposed setpoint knob	RAA20UW	RAA20U



Accessories & Service Kits

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Ordering Note

1. Includes wall plate, **ARG70**, to be UL compliant for switching line voltage.

A-34

Thermostats



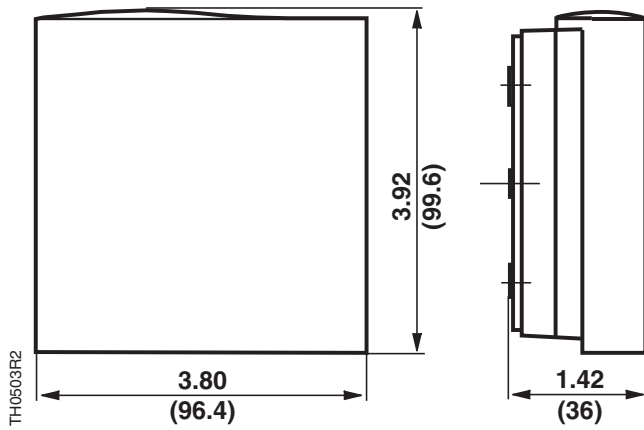
Part No. in black box

Ships same day when requested through Rapid Response™ shipping. See page 1 for details.

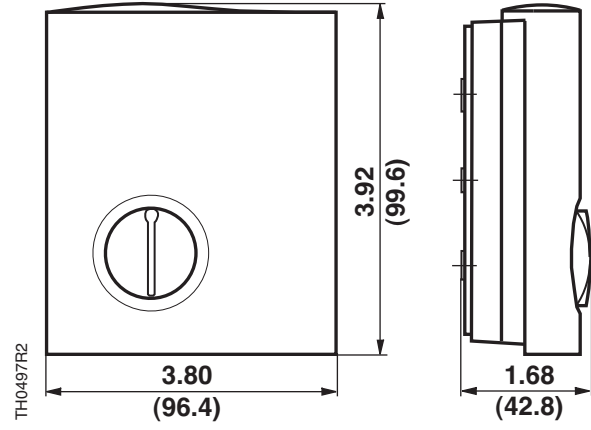
SIEMENS

Dimensions

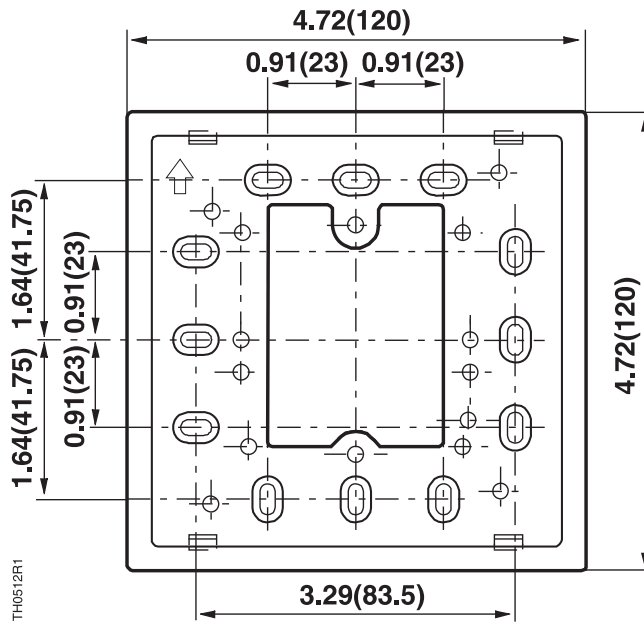
RAA10C... Thermostat



RAA20U... Thermostat

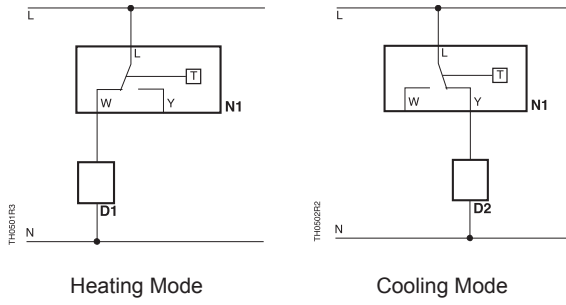


Wall Plate (ARG70) for Mounting
(RAA10CW and RAA20UW)



Dimensions shown in inches (mm).

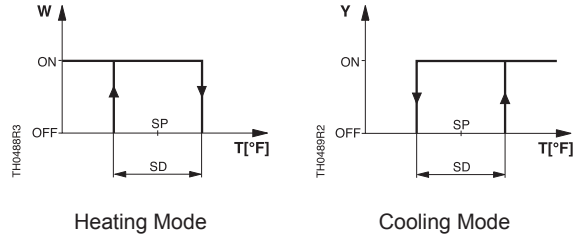
Wiring Diagrams



RAA10C.../RAA20U...

Key	
D1 Heating device	S On/Off switch
D2 Cooling device	T Thermostat
L Operating voltage	W Heating control output
N Neutral	Y Cooling control output
N1 Room thermostat	

Operating Diagrams



RAA10C.../RAA20U...

Key	
T Room temperature	W Heating output signal
SD Switching differential	Y Cooling output signal
SP Room temperature setpoint	