

Overview

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

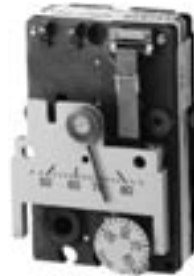
Covers are available with concealed or exposed set point adjustment, room temperature indication, and set point indicator.



Selection Guide

Air Supply	Applications	Control Outputs	Control Set Points	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)

Powerstar Single Set Point Pneumatic Room Thermostat



192 S Thermostat chassis.



Typical wall plate and screws.

Description

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

Applications

Designed for heating and cooling applications for control of pneumatic valves and damper actuators. The 192 S Powerstar Single Set Point 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 scfm (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.

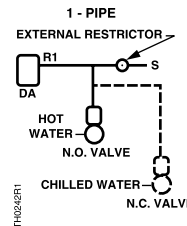


DIAGRAM 1.

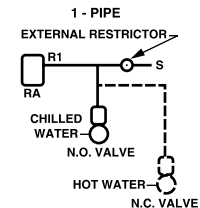


DIAGRAM 2.

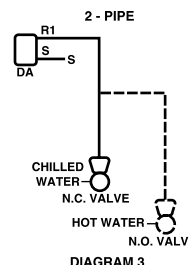


DIAGRAM 3.

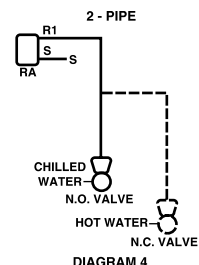


DIAGRAM 4.

features

- Single set point 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, set point 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" set point knob for convalescent homes

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

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)

192 S	Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate	
		Output	Set Point	Air Output Capacity	Thermometer & Set Point Scales	Control Action	
						Direct	Reverse
192 S	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		Cover Description	Plastic	Metal	Chassis Options	
			<ul style="list-style-type: none"> Adjustment set point concealed Indicator set point concealed Chassis thermometer concealed No logo 	192-257	192-357	Code	Description (add suffix to Part No.)
			<ul style="list-style-type: none"> Adjustment set point concealed Indicator set point concealed Chassis thermometer concealed With logo 	192-256	192-356	K	Chassis with 1/2" (13 mm) diameter set point adjustment knob for convalescent facilities.
			<ul style="list-style-type: none"> Adjustment set point concealed Indicator set point concealed Chassis thermometer exposed 	192-254	192-354	For Horizontal Cover, refer to the Accessories and Service Kits section.	
			<ul style="list-style-type: none"> Adjustment set point key Indicator set point exposed Chassis thermometer concealed Use with 1/2" set point knob option 	192-265	192-365	Cover Options	
			<ul style="list-style-type: none"> Adjustment set point key Indicator set point exposed Chassis thermometer exposed Use with 1/2" set point knob option 	192-266	192-366	PLASTIC COLORS	
			<ul style="list-style-type: none"> Adjustment set point exposed Indicator set point exposed Chassis thermometer concealed 	192-250	192-350	Code	Color (add suffix to Part No.)
			<ul style="list-style-type: none"> Adjustment set point exposed Indicator set point exposed Chassis thermometer exposed 	192-252	192-352	None	Desert Beige (standard)
						W	White
						METAL COLORS	
						Code	Color (add suffix to part No.)
						A	#1 Silver
						B	#5 Satin Chrome
						C	#7 Light Statuary Bronze
						D	#10 Special Bronze
						E	Brushed Electroplated Satin Chrome
						F	Sierra Gold
						G	Brushed Aluminum
						H	White
						For Color Chip Samples, order 152-178P10 .	

Ordering Notes

- “Exposed features” are indicated in **green** on corresponding illustration.
- For **194** refer to Powerstar Retroline section.

192 HC

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 set point 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.

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 set point to cooling set point in commercial and institutional facilities.

Recommendation

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

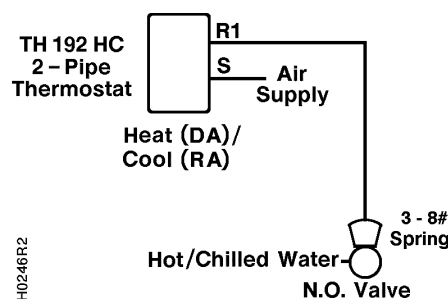
features

- Dual set point 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, set point 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" set point knob for convalescent homes

Application Drawing



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 (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 (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 Sizing 25 scim (6.8 ml/s)

Nominal Air Capacity for Air Main Sizing 40 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




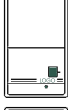



Thermostat Chassis and Wall Plate 0.53 lb. (0.24 kg)

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 Control □

For this application, the heating and cooling actions must be reversed. If exposed set point is required, order special cover, **192-773**.

192 HC	Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate			
	192 HC 2-pipe	Single	Dual (Heat and Cool)	Air Output Capacity High (Integral Relay)	Thermometer & Set Point Scales °F °F °C °C	Control Action			
						Heat Direct	Heat Reverse		
						192-207 Cool (DA)	192-209 Cool (DA)		
						192-208 Cool (RA)	192-210 Cool (RA)		
						192-227 Cool (DA)	192-229 Cool (DA)		
						192-228 Cool (RA)	192-230 Cool (RA)		
Thermostat Covers	Thermostat Covers Sold Separately		Cover Description	Plastic	Metal	Chassis Options			
		• Adjustment set point concealed • Indicator set point concealed • Chassis thermometer concealed • No logo	192-257	192-357	Code	Description (add suffix to Part No.)			
					K	Chassis with 1/2" (13 mm) diameter set point adjustment knob for convalescent facilities.			
				• Adjustment set point concealed • Indicator set point concealed • Chassis thermometer concealed • With logo	192-256	192-356	For Horizontal Cover, refer to the Accessories and Service Kits section.		
				• Adjustment set point concealed • Indicator set point concealed • Chassis thermometer exposed	192-254	192-354	Cover Options		
				• Adjustment set point key • Indicator set point exposed • Chassis thermometer concealed	192-267	192-367	Code	Color (add suffix to Part No.)	
					None	Desert Beige (standard)			
		• Adjustment set point key • Indicator set point exposed • Chassis thermometer exposed • Use with 1/2" set point knob option	192-268	192-368	W	White			
					METAL COLORS				
				Code	Color (add suffix to part No.)				
				A	#1 Silver				
				B	#5 Satin Chrome				
				C	#7 Light Statuary Bronze				
				D	#10 Special Bronze				
	• Adjustment set point exposed • Indicator set point exposed • Chassis thermometer concealed • Use with 1/2" set point knob option	192-258	192-358	E	Brushed Electroplated Satin Chrome				
				F	Sierra Gold				
	• Adjustment set point exposed • Indicator set point exposed • Chassis thermometer exposed	192-260	192-360	G	Brushed Aluminum				
				H	White				
				For Color Chip Samples, order 152-178P10.					

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

192 DN/DNV

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 set point, 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 set point 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.

- Dual set point 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, set point 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" set point knob for convalescent homes

Applications

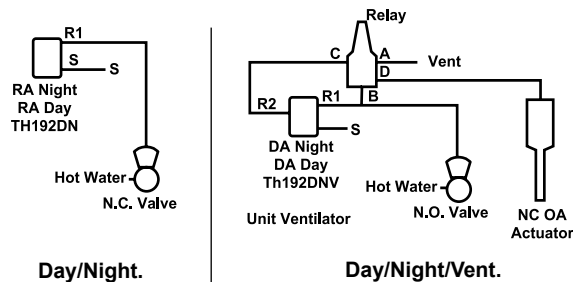
The 192 DN and DNV Powerstar Pneumatic Room Thermostat controls valves and damper actuators in cooling equipment, automatically performing setback changes from day to night. The 192 DNV also performs a purge sequence at night to bring in "vent" outside air to cool the building. A manual override selector 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



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

features

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)



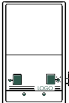
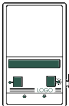
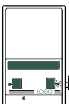
192 DNV 2.5" W x 3.34" H x 1.59" D
(64 mm W x 85 mm H x 40 mm D)

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)

192 DN/DNV	Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate		
		Output	Set Point	Air Output Capacity	Thermometer & Set Point Scales	Control Action		
	192 DN	Single	Dual (Day and Night)	High (Integral Relay)	°F °C	D (DA)/ N (DA)	D (RA)/ N (RA)	D(DA)/ N (DA) <small>(with Night Vent)</small>
	192 DNV 3-pipe					192-204	192-205	192-206
						192-224	192-225	192-226
Thermostat Covers	Thermostat Covers Sold Separately		Cover Description	Plastic	Metal	Chassis Options		
		• Adjustment set point concealed • Indicator set point concealed • Chassis thermometer concealed		192-262	192-362	Code	Description (add suffix to Part No.)	
						K	Chassis with 1/2" (13 mm) diameter set point adjustment knob for convalescent facilities.	
		• Adjustment set point concealed • Indicator set point concealed • Chassis thermometer exposed		192-264	192-364	Cover Options		
		• Adjustment set point key • Indicator set point exposed • Chassis thermometer concealed • Use with 1/2" set point knob option		192-269	192-369	PLASTIC COLORS		
						Code	Color (add suffix to Part No.)	
		• Adjustment set point key • Indicator set point exposed • Chassis thermometer exposed • Use with 1/2" set point knob option		192-270	192-370	None	Desert Beige (standard)	
						W	White	
		• Adjustment set point key (night) exposed (day) • Indicator set point exposed • Chassis thermometer exposed		192-271	192-371	METAL COLORS		
						Code	Color (add suffix to part No.)	
						A	#1 Silver	
						B	#5 Satin Chrome	
					C	#7 Light Statuary Bronze		
					D	#10 Special Bronze		
					E	Brushed Electroplated Satin Chrome		
					F	Sierra Gold		
					G	Brushed Aluminum		
					H	White		
	Ordering Notes					For Color Chip Samples, order 152-178P10.		
	• 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.							



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 set point, 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.

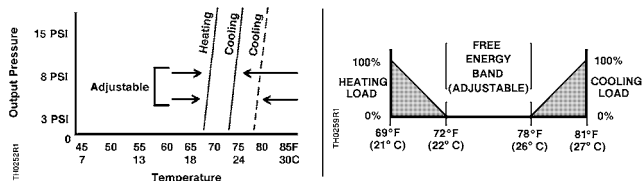
- Dual set point dials available in Fahrenheit or Celsius scales
- Integral, field adjustable limit stops
- Sensitive bimetal responds to temperature changes
- Adjustable Free Energy Band
- Test port for fast check of output pressure without removing the cover
- Wall mounting plates for connection to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

features

Input/Output Characteristics



Applications

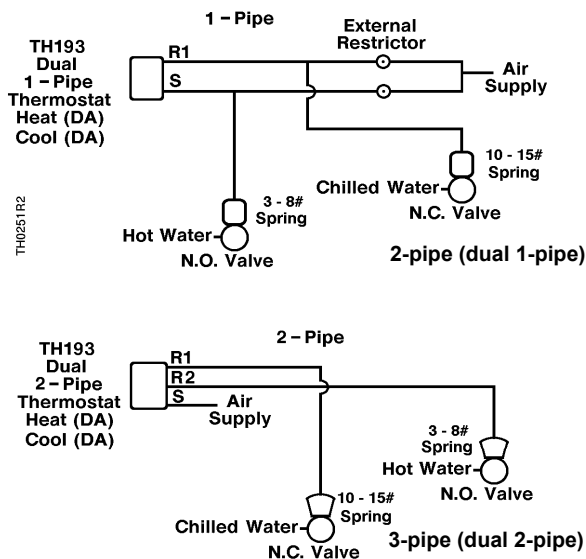
Designed for buildings with early morning heat requirements and mid-morning to afternoon cooling requirements, the Powerstar Free Energy Band Pneumatic Room Thermostat two temperature thermostat controls valves, damper actuators and mechanical heating and cooling equipment. Providing energy management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




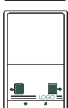



(55 mm W x 85 mm H x 40 mm D)

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)

193 HC	Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate	
		Output	Set Point	Air Output Capacity	Thermometer & Set Point 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 set point concealedIndicator set point concealedChassis thermometer concealedNo logo	192-257	192-357	Code	Description (add suffix to Part No.)		
	<ul style="list-style-type: none">Adjustment set point concealedIndicator set point concealedChassis thermometer concealedWith logo	192-256	192-356	K	Chassis with 1/2" (13 mm) diameter set point adjustment knob for convalescent facilities.		
	<ul style="list-style-type: none">Adjustment set point concealedIndicator set point concealedChassis thermometer exposed	192-254	192-354	For Horizontal Cover, refer to the Accessories and Service Kits section.			
	<ul style="list-style-type: none">Adjustment set point keyIndicator set point exposedChassis thermometer concealed	192-267	192-367	Cover Options			
	<ul style="list-style-type: none">Adjustment set point keyIndicator set point exposedChassis thermometer exposedUse with 1/2" set point knob option	192-268	192-368	PLASTIC COLORS			
	<ul style="list-style-type: none">Adjustment set point exposedIndicator set point exposedChassis thermometer concealedUse with 1/2" set point knob option	192-258	192-358	Code	Color (add suffix to Part No.)		
	<ul style="list-style-type: none">Adjustment set point exposedIndicator set point exposedChassis thermometer exposed	192-260	192-360	None	Desert Beige (standard)		
				W	White		
				METAL COLORS			
				Code	Color (add suffix to part No.)		
				A	#1 Silver		
				B	#5 Satin Chrome		
				C	#7 Light Statuary Bronze		
				D	#10 Special Bronze		
				E	Brushed Electroplated Satin Chrome		
				F	Sierra Gold		
				G	Brushed Aluminum		
				H	White		
				For Color Chip Samples, order 152-178P10.			

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

193 HC

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

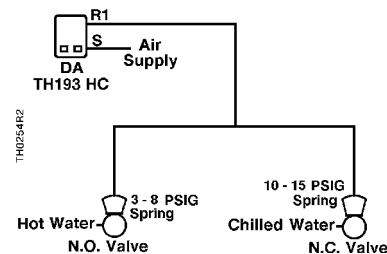
Providing proportional, single output, dual set point, 2-pipe pneumatic room temperature control, the 193 HC Powerstar (Hesitation) Free Energy Band Heating/Cooling Pneumatic Room Thermostat is designed to sequence a heating device or a cooling device.

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

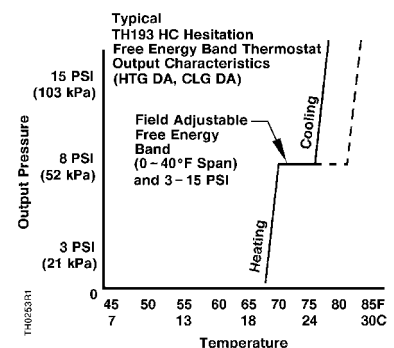
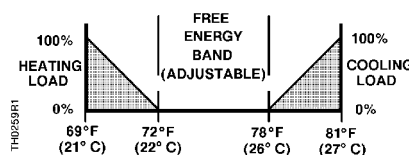
Applications

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



- Dual set point 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, set point 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" set point knob for convalescent homes

features

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




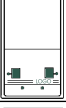



5/32" (4 mm) OD tubing

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

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Plastic Cover 0.07 lb. (0.04 kg)
Metal Cover (dual) 0.27 lb. (0.12 kg)

193 HC	Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate			
	193 HC Hesitation	Output	Set Point	Air Output Capacity	Thermometer & Set Point 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 set point concealedIndicator set point concealedChassis thermometer concealedNo logo		192-257	192-357	Code	Description (add suffix to Part No.)		
						K	Chassis with 1/2" (13 mm) diameter set point adjustment knob for convalescent facilities.		
						For Horizontal Cover, refer to the Accessories and Service Kits section.			
		<ul style="list-style-type: none">Adjustment set point concealedIndicator set point concealedChassis thermometer concealedLogo		192-256	192-356				
		<ul style="list-style-type: none">Adjustment set point concealedIndicator set point concealedChassis thermometer exposed		192-254	192-354	Cover Options			
		<ul style="list-style-type: none">Adjustment set point keyIndicator set point exposedChassis thermometer concealedUse with 1/2" set point knob option		192-267	192-367	Code	Color (add suffix to Part No.)		
	None					Desert Beige (standard)			
W	White								
	<ul style="list-style-type: none">Adjustment set point keyIndicator set point exposedChassis thermometer exposedUse with 1/2" set point knob option		192-268	192-368	METAL COLORS				
	<ul style="list-style-type: none">Adjustment set point exposedIndicator set point exposedChassis thermometer concealed		192-258	192-358	Code	Color (add suffix to part No.)			
A					#1 Silver				
B					#5 Satin Chrome				
	<ul style="list-style-type: none">Adjustment set point exposedIndicator set point exposedChassis thermometer exposed		192-260	192-360	C	#7 Light Statuary Bronze			
D					#10 Special Bronze				
E					Brushed Electroplated Satin Chrome				
					F	Sierra Gold			
					G	Brushed Aluminum			
					H	White			
					For Color Chip Samples, order 152-178P10.				

Ordering Note

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