FCP Non-programmable and Progammable Fan Coil or PTAC Thermostat
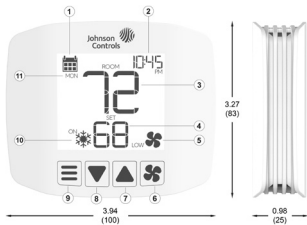
Quick Start Guide

Figure 1: FCP dimensions, in. (mm) and UI layout

Table 1: UI layout

Number	Description
1	Schedule
2	Time
3	Room temperature
4	Temperature setpoint
5	Fan speed
6	Mode
7	Down
8	Up
9	Fan
10	Cool or heat status
11	Day

■ Parts included

- One FCP thermostat
- One Quick Start Guide
- Four mounting screws
- One lock screw
- Seven pre-installed terminal wires
- One wire label
- One coin cell battery (included only with FCP-PA-701)

■ Applications

The FCP-NA-701 non-programmable, non-connected fan coil unit (FCU) or package terminal air conditioning (PTAC) thermostat and FCP-PA-701 programmable, non-connected FCU or PTAC thermostat are compatible with most 24 VAC FCU or PTAC equipment. The following list shows the compatible configurations of the equipment:

- 2-Pipe with 3-speed fan
- 4-Pipe with 3-speed fan
- Conventional PTAC
- Heat pump PTAC with or without auxiliary heat

■ North American emissions compliance

United States

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canada

CAN ICES-3(B)/NMB-3(B). This Class (B) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (B) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

> ⚠ **WARNING**
>
> **Risk of Electric Shock**
>
> Disconnect the power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

> ⚠ **AVERTISSEMENT**
>
> **Risque de décharge électrique**
>
> Débrancher l'alimentation avant de réaliser tout branchement électrique. Tout contact avec des composants conducteurs de tensions dangereuses risque d'entraîner une décharge électrique et de provoquer des blessures graves, voire mortelles.

■ Mounting

You can mount the FCP thermostat directly on the wall or to a junction box.

To mount the thermostat directly on the wall, complete the following steps:

1. To mark the screw holes, hold the back housing of the thermostat against the wall and use a pencil to lightly mark the holes. Ensure the hole in the center of the back housing lines up with the wires in the wall.
2. Drill the holes.
3. **Optional:** insert drywall anchors into the holes.
4. Use the included screws to attach the back housing to the wall. See Figure 2.
5. Connect the wires to the front of the thermostat according to your equipment. See *Wiring* for diagrams.
6. Attach the front of the thermostat to the back housing. See Figure 3.
7. **Optional:** insert the lock screw. See Figure 3.

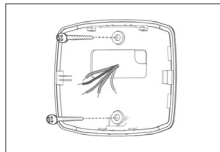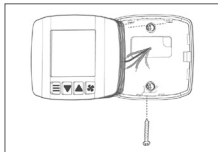**Figure 2: Mounting the back housing to the wall**

Figure 3: Attaching the front housing to the back housing

To mount the thermostat to a junction box, complete the following steps:

1. Pull the wires through the hole in the junction box.
2. Insert the included screw in the top screw hole of the junction box. Tighten the screw until it sticks out 0.07 in. to 0.12 in. (2 mm to 3 mm).
3. Place the top screw hole of the trim plate over the partly inserted screw in the junction box, then pull the wires through the trim plate opening.
4. Slide the trim plate down to hook the plate onto the screw. See Figure 4.
5. Place the back housing in the trim plate opening.
6. Use the included screws to attach the back housing to the trim plate. The bottom screw joins with the junction box. See Figure 5.
7. Connect the wires to the front of the thermostat according to your equipment. See *Wiring* for diagrams.
8. Attach the front of the thermostat to the trim plate. See Figure 6.
9. **Optional:** insert the lock screw.

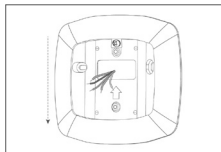Figure 4: Attaching the trim plate to the junction box

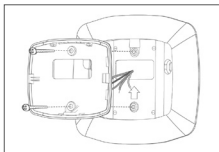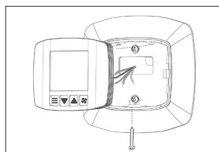Figure 5: Attaching the back housing to the trim plate

Figure 6: Attaching the front housing to the back housing

Wiring

Figure 7: 2-Pipe fan coil unit
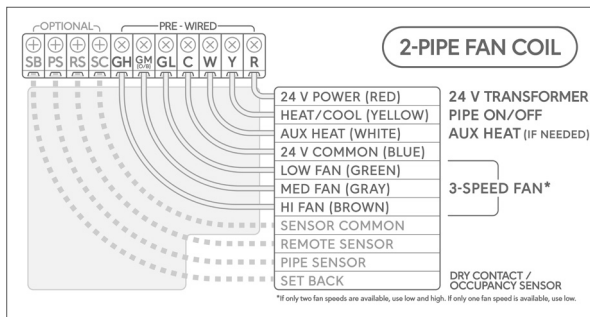
Figure 8: 4-Pipe fan coil unit
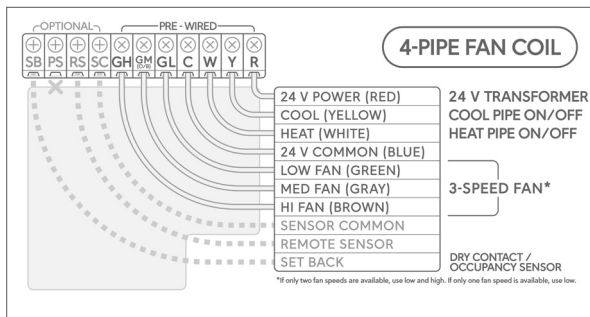
Figure 9: Conventional PTAC
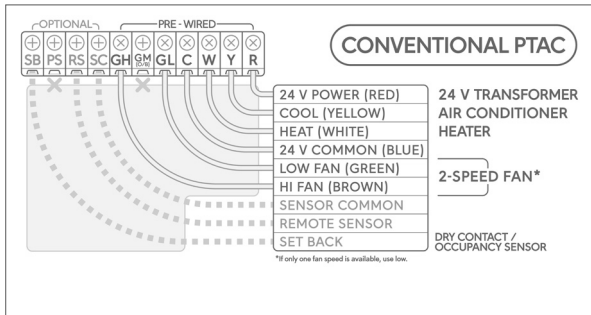
Figure 10: Heat pump PTAC
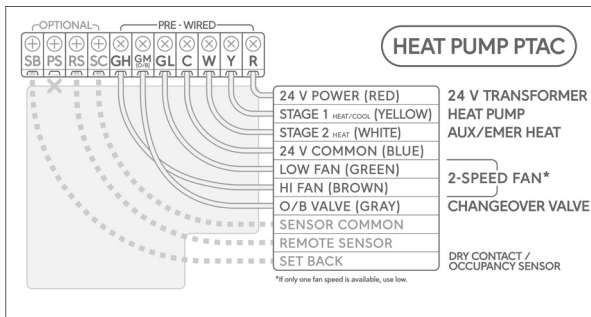
Setup and adjustments

Preset configuration profiles

The FCP thermostat includes 20 preset configuration profiles. You can use these profiles to quickly configure essential settings, such as system type, remote sensor, and pipe sensor.

The thermostat screen shows the preset configuration menu on the first power up or after a factory reset. To select a configuration profile, use the **Up** or **Down** buttons to scroll through the configuration profiles, then press **Mode** to confirm your selection. Table 2 lists the preset configuration profiles.

Table 2: Preset configuration profiles

Profile #	Remote sensor	Pipe sensor	System type	2-pipe FCU with aux heat	Available modes: 1: heat only 2: cool only 3: heat and cool with Auto 4: heat and cool without Auto	HP valve type	Remote sensor location: 0: in room 1: in duct	Pipe state - calendar	Pipe state: 0: heat 1: cool	Number of fan speeds
1	Yes	Yes	2-pipe FCU	Yes	3	-	0	Off	-	3
2	Yes	Yes	2-pipe FCU	Yes	3	-	1	Off	-	3
3	Yes	Yes	2-pipe FCU	No	4	-	0	Off	-	3
4	Yes	Yes	2-pipe FCU	No	4	-	1	Off	-	3
5	Yes	No	2-pipe FCU	Yes	3	-	0	On	-	3
6	Yes	No	2-pipe FCU	Yes	3	-	1	On	-	3
7	Yes	No	2-pipe FCU	No	4	-	0	On	-	3
8	Yes	No	2-pipe FCU	No	4	-	1	On	-	3
9	No	Yes	2-pipe FCU	Yes	3	-	-	Off	-	3
10	No	Yes	2-pipe FCU	No	4	-	-	Off	-	3
11	No	No	2-pipe FCU	Yes	3	-	-	On	-	3
12	No	No	2-pipe FCU	No	4	-	-	On	-	3
13	No	No	2-pipe FCU	No	4	-	-	Off	0	3
14	No	No	2-pipe FCU	No	4	-	-	Off	1	3
15	Yes	No	4-pipe FCU	-	3	-	0	-	-	3
16	Yes	No	4-pipe FCU	-	3	-	1	-	-	3
17	No	No	4-pipe FCU	-	3	-	-	-	-	3
18	No	No	HP	-	3	O	-	-	-	2
19	No	No	HP	-	3	B	-	-	-	2
20	No	No	H-C	-	3	-	-	-	-	2

■ **Button combinations**

The following table describes the button combinations that you can use to access menus or functions. The table also indicates the modes in which these button combinations are applicable.

Table 3: Button combinations

Menu or function	Applicable in mode	Button combination
Advance setting menu	OFF mode	Mode + Fan for 5 seconds
Access programming menu	OFF mode, when programming is enabled in advanced settings	Mode + Up for 5 seconds
Pipe State (Heat/Cool) Selection	OFF mode and system type = 2-pipe FC	Fan + Up for 5 seconds
Ex-Factory Reset	OFF mode	Mode + Fan + Up for 5 seconds
Toggle Keypad lock/unlock	HEAT and COOL mode	Mode + Up + Down for 10 seconds
Toggle EMER HEAT	HEAT mode	Mode + Down for 5 seconds
Enable/Disable unoccupied mode manually	HEAT and COOL mode	Mode for 5 seconds

Control mode

The FCP thermostat supports the following control modes:

Table 4: FCP available modes

System type		Control mode			
	2-pipe FCU with aux heat	Heat only	Cool only	Heat and cool without auto	Heat and cool with auto
2-pipe FCU	No	✓	✓	✓	-
2-pipe FCU	Yes	✓	-	✓	✓
4-pipe FCU		✓	✓	✓	✓
PTAC conventional		✓	✓	✓	✓
PTAC heat pump		✓	✓	✓	✓

Press **Mode** to access the control mode menu. Press **Mode** again to select the required control mode. Do not press any button for 2 seconds to confirm a change.

Run mode

Depending on your configuration, the thermostat runs in one of the following modes:
• Hold: the FCP-NA-701 model always runs in hold mode. The FCP-PA-701 model runs in hold mode if you do not enable the schedule. Schedule is available only on the FCP-PA-701 model.
• Schedule: the thermostat runs in schedule mode if you enable the schedule. Schedule is available only on the FCP-PA-701 model.
• Unoccupied: the thermostat runs in setpoint change or off mode, depending on the unoccupied action that you set.

Fan mode

Depending on your configuration, the following fan modes are available:
• 1-speed: low
• 2-speed: low and high. This is the default for conventional PTAC and heat pump PTAC.
• 3-speed: low, medium, and high. This is the default for 2-pipe FCU and 4-pipe FCU. Not available for conventional PTAC and heat pump PTAC.

When a fan speed is set to low, medium, or high, the fan runs continuously at the selected fan speed. If you change the fan mode to Auto, the fan turns to ON when heating or cooling is called.

Smart Auto fan

If smart auto fan is ON, then the fan terminal switches automatically to low, medium or high, depending on the difference between the air temperature and set temperature. If smart auto fan is OFF, then the auto fan terminal used with heating or cooling is always set to low. You can set the smart auto fan option through the installer configuration setting.

Fan mode reset

When you enable the fan mode reset time, the fan mode resets to Auto when the set time elapses. You can enable and configure the fan mode reset through the installer configuration setting.

Setting the temperature

To change the temperature when the thermostat is in hold mode, press the **Up** or **Down** button to adjust the temperature setpoint. You can also override the the temperature when the thermostat is in schedule mode. To override the temperature, press the **Up** or **Down** button to adjust the temperature setpoint. The thermostat runs in the new setpoint until the next scheduled period.

Advanced settings

You can edit user preference settings (UP), system configuration settings (SS), and installer configuration settings (IS) through the advanced settings menu.
To access the advanced settings menu, complete the following steps:
1. Press **Mode** to set the thermostat to OFF mode.
2. Press and hold **Mode** and **Fan** for 5 seconds.

The first screen of the advanced settings menu shows your system configuration summary. Use the **Up** and **Down** buttons to scroll through the advanced settings menu and press **Mode** to enter a submenu. Press **Fan** to go back to the previous menu.

Navigating the user preference settings, system configuration settings, and installer configuration settings

• Press **Mode** to scroll through the menu and press **Up** or **Down** to change options.
• Press **Mode** to confirm a change.
• Press **Fan** to move backward in the menu, or press **Mode** at the end of the menu to return to the advanced settings menu.

The following tables list the user preference settings and system configuration settings. For an overview of the installer configuration setting items, see *FCP Programmable and Non-programmable Fan Coil or PTAC Thermostat User Guide, LIT-2013635*.

Table 5: User preference settings

Menu item	Description	Setting options	Default
01	Temperature scale	F: Fahrenheit C: Celsius	F
02	User temperature calibration	Temperature with calibration value. Offset: +/- 5.4°F (+/- 3.0°C)	0.0°F (0.0°C)
03	Temperature calibration – remote sensor	Temperature with calibration value. Offset: +/- 5.4°F (+/- 3.0°C)	0.0°F (0.0°C)
04	Temperature calibration – pipe sensor	Temperature with calibration value. Offset: +/- 5.4°F (+/- 3.0°C)	0.0°F (0.0°C)
05	Backlight on duration	10 seconds, 30 seconds, always ON	10 seconds
06	Backlight brightness level	20, 40, 60, 80, 100	80
07	Display content	0: ambient temperature + set temperature 1: set temperature only 2: ambient temperature only	0
08	Clock format (available only on FCP-PA-701)	12: 12 hour 24: 24 hour	12
09	Auto Daylight Savings (available only on FCP-PA-701)	ON: Auto DST on OFF: Auto DST off	ON
10	Programming mode (available only on FCP-PA-701)	ON: programmable OFF: manual	OFF
11	Periods per day (available only on FCP-PA-701)	1, 2, 3, 4, 5, 6	2
12	Use default temperatures after mode change	ON: uses default temperatures OFF: uses last temperature for each mode	ON
13	Default heat mode set temperature	60°F (15.5°C) - Max Heat Set Temp	70°F (21°C)
14	Default cool mode set temperature	Min Cool Set Temp - 80°F (27°C)	74°F (23.5°C)

Table 6: System configuration settings (part 1 of 2)

Menu item	Description	Setting options	Default
21	System type	2FCU: 2-pipe fan coil unit 4FCU: 4-pipe fan coil unit HP: heat pump H-C: conventional (furnace elect)	4FCU
22	2-pipe FCU with aux heat available (available only if system type = 2FCU)	Yes No	No
23	Available modes	**2FCU without aux heat:** 04: heat and cool without auto **2FCU with aux heat:** 03: heat and cool with auto 04: heat and cool without auto **4FCU, HP, or H-C:** 01: heat only 02: cool only 03: heat and cool with auto 04 : heat and cool without auto	2FCU without aux: 04 2FCU with aux: 03 4FCU, HP, or H-C: 03
24	HP valve type (unavailable if system type = HP)	B: B valve O: O valve	B
25	Remote sensor location	0: in room 1: in duct	0
26	Remote sensor type	0: type II 1: type III	0
27	Pipe sensor type	0: type II 1: type III	0

Table 6: System configuration settings (part 2 of 2)

Menu item	Description	Setting options	Default
28	Pipe state – calendar	ON OFF	OFF
29	Heat to cool day (unavailable if pipe state – calendar = OFF)	1-Mar to 31-May	15-Apr
30	Cool to heat day (unavailable if pipe state – calendar = OFF)	1-Sep to 30-Nov	15-Oct
31	Pipe state (unavailable if system type ≠ 2FCU or if pipe sensor = true or if pipe state – calendar = ON)	0: heat 1: cool	0
32	Heat to cool threshold (unavailable if system type ≠ 2FCU or if pipe sensor = false)	50°F - 72°F (10°C - 22°C)	60°F (16°C)
33	Cool to heat threshold (unavailable if system type ≠ 2FC or if pipe sensor = false)	55°F - 90°F (13°C - 32°C)	80°F (27°C)
34	Purge frequency (unavailable if system type ≠ 2FC or if pipe sensor = false)	0: Never 1: 2 hours 2: 24 hours	With pipe sensor: 1 Without pipe sensor: 0

Programmable mode (FCP-PA-701 only)

The programmable mode is available only on the FCP-PA-701 model. In the programmable mode menu you can adjust time of day, date, schedule for heat, and schedule for cool.

To enable the programmable mode, complete the following steps:
1. Press **Mode** to set the thermostat to OFF mode.
2. Press and hold **Mode** and **Fan** for 5 seconds to access the advanced settings menu.
3. Press **Up** to navigate to User Preference Settings, then press **Mode** to enter the menu.
4. Press **Mode** to navigate to 10.
5. Use the **Up** and **Down** buttons to set the programmable mode to ON and press **Mode** to confirm the change.

To access the programmable mode, press **Mode** to set the thermostat to OFF mode, then press and hold **Mode** and **Up** for 5 seconds.

Setting the time and date

To set the time and date, complete the following steps:
1. In the progrmmable mode, press **Mode** to access the Set Time menu.
2. In the Set Time menu, press **Mode** to scroll through the menu and press **Up** or **Down** to change the options.
3. After each change, press **Mode** to confirm the change.
4. After you set all the options in the Set Clock menu, press **Mode** to continue to set the schedule, or press **Fan** to exit the menu and retun to the home screen.

Setting the heat and cool schedule

You can program a schedule for up to seven consecutive days. Each day can consist of a maximum of six periods. You can change the start times for each period by increments of 15 minutes.

To set the heat and cool schedule, complete the following steps:
1. In the programmable mode, press **Up** or **Down** to navigate to the heat icon, then press **Mode** to access the menu.
2. Press **Up** or **Down** to select the day of the week you want to schedule, then press **Mode** to confirm the selection.
3. Press **Mode** to navigate to the following setting and press **Up** or **Down** to set the required period and temperature. Repeat this step until you set all the schedule settings.
4. Press **Mode** to save the settings and return to Set Sche menu.
5. Press **Up** or **Down** to navigate to the cool icon and press **Mode** to access the menu.
6. Repeat Step 3 and Step 4 until you set all the schedule settings.

Remote sensor

The system configuration summary indicates if a remote sensor is installed. Access the advanced settings menu to see your system configuration summary.

You can adjust the values of the temperature offset to calibrate the remote sensor temperature.

To calibrate the remote sensor, complete the following steps:
1. Press **Mode** to set the thermostat to OFF mode.
2. Press and hold **Mode** and **Fan** for 5 seconds to access the advanced settings menu.
3. Press **Up** to navigate to User Preference Settings, then press **Mode** to enter the menu.
4. Press **Mode** to navigate to 03.
5. Use the **Up** and **Down** buttons to change the option, then press **Mode** to confirm the change.
6. Press **Mode** at the end of the advanced settings menu to return to the home screen.

Pipe sensor

The system configuration summary indicates if a pipe sensor is installed. Access the advanced settings menu to see your system configuration summary.

You can adjust the values of the temperature offset to calibrate the pipe sensor temperature.
To calibrate the pipe sensor, complete the following steps:
1. Press **Mode** to set the thermostat to OFF mode.
2. Press and hold **Mode** and **Fan** for 5 seconds to access the advanced settings menu.
3. Press **Up** to navigate to User Preference Settings, then press **Mode** to enter the menu.
4. Press **Mode** to navigate to 04.
5. Use the **Up** and **Down** buttons to change the option, then press **Mode** to confirm the change.
6. Press **Mode** at the end of the advanced settings menu to return to the home screen.

Troubleshooting

The following table lists common errors.

Table 7: Common errors (part 1 of 2)

Error code	Description	Solution
ER:01	ERROR_AIR_ SENSOR_OPEN	• Check if the built-in temperature sensor is disconnected from the thermostat circuit board or damaged. • Contact technical support.
ER:02	ERROR_AIR_ SENSOR_SHORT	• Check if the built-in temperature sensor is short circuited or damaged. • Contact technical support.
ER:03	ERROR_AIR_ SENSOR_HI	Built-in temperature sensor detected a too high temperature. • Check if the thermostat wiring is connected correctly to the FCU or PTAC. • Contact technical support.
ER:04	ERROR_AIR_ SENSOR_LO	Built-in temperature sensor detected a too low temperature. • Check if the thermostat wiring is connected correctly to the FCU or PTAC. • Contact technical support.
ER:05	ERROR_REMOTE_ SENSOR_OPEN	• Verify if the remote temperature sensor is disconnected from the thermostat terminals RS and SC. If yes, re-wire the remote sensor correctly and then power cycle the thermostat. • Verify if the remote sensor is malfunctioned or damaged. • Contact technical support.
ER:06	ERROR_REMOTE_ SENSOR_SHORT	• Verify the remote temperature sensor wiring and check if thermostat terminals RS and SC are shorted. If yes, re-wire the remote sensor correctly and then power cycle the thermostat. • Verify if the remote sensor is malfunctioned or damaged. • Contact technical support.
ER:07	ERROR_REMOTE_ SENSOR_HI	Remote sensor detected a too high temperature. • Check if the thermostat wiring is connected correctly to the FCU or PTAC. • Verify if the remote sensor is installed correctly in the room or duct. • Contact technical support.
ER:08	ERROR_REMOTE_ SENSOR_LO	Remote sensor detected a too low temperature. • Check if the thermostat wiring is connected correctly to the FCU or PTAC. • Verify if the remote sensor is installed correctly in the room or duct. • Contact technical support.
ER:09	ERROR_PIPE_ SENSOR_OPEN	• Check if the pipe temperature sensor wiring is disconnected from thermostat terminals PS and SC. If yes, re-wire the pipe sensor correctly and then power cycle the thermostat. • Verify if the pipe sensor is malfunctioned or damaged. • Contact technical support.
ER:10	ERROR_PIPE_ SENSOR_SHORT	• Verify the pipe temperature sensor wiring and check if thermostat terminals PS and SC are shorted. If yes, re-wire the pipe sensor correctly and then power cycle the thermostat. • Verify if the pipe sensor is malfunctioned or damaged. • Contact technical support.
ER:11	ERROR_PIPE_ SENSOR_HI	Pipe sensor detected a too high temperature. • Verify if the pipe sensor is installed correctly in the pipe. • Contact technical support.

Table 7: Common errors (part 2 of 2)

Error code	Description	Solution
ER:12	ERROR_PIPE_SENSOR_LO	Pipe sensor detected a too low temperature. • Verify if the pipe sensor is installed correctly in the pipe. • Contact technical support.

■ Technical specifications

Table 8: FCP technical specifications

Specification		Description
Models		Non-programmable: FCP-NA-701-N, FCP-NA-701-B Programmable: FCP-PA-701-N, FCP-PA-701-B
Power requirements		20 VAC to 30 VAC, 60 Hz, max. 3 A (3 VA at 24 V nominal)
Output rating	Valve and fan outputs	1 A maximum per each relay channel (Max. relays ON combination: 3 relays), 20 VAC to 30 VAC
Analog inputs	Remote sensor	10K ohm at 77°F (25°C) NTC sensor
	Pipe sensor	10K ohm at 77°F (25°C) NTC sensor
	Set back	NC/NO dry contact switch
Local temperature sensor type		NTC temperature sensor, accurate to ±1°F (±0.6°C) at 77°F (25°C)
Remote temperature sensor type		NTC temperature sensor, accurate to ±2°F (±1.2°C) at 70°F (21°C)
Wire size		18 AWG (100 ft [30.5 m] maximum) to 24 AWG (36 ft [11 m] maximum)
Temperature adjustment range	Heat mode	45°F to 90°F (7°C to 32°C)
	Cool mode	60°F to 95°F (15°C to 35°C)
Accuracy	Local temperature sensor	±1°F (+/-0.6°C)
	Remote temperature sensor	±2°F (±1.2°C) at 70°F (21°C)
	Remote pipe sensor	±5°F (±3.0°C)
Deadband		2°F to 5°F (1°C to 3°C)
Ambient conditions	Operating	14°F to 122°F (-10°C to 50°C); 5% RH to 90% RH, noncondensing
	Storage	-4°F to 140°F (-20°C to 60°C); 5% RH to 90% RH, noncondensing
Disconnection means		Type 1B
Pollution degree		2
Rated impulse voltage		330 V
Automatic Action		100,000 cycles
Ratings for supply and loading		20 VAC to 30 VAC
Dimensions H x W x D		3.27 in. x 3.94 in. x 0.98 in. (83 mm x 100 mm x 25 mm)
Shipping weight		Product with packing and accessories: 10.1 oz (285 g) Thermostat only: 4.9 oz (138 g) Trim plate: 1.2 oz (33 g)
Compliance		ETL/cETL Listed, Mexico NOM Conforms to UL STD. 60730-1 & 60730-2-9 Certified to CSA STD. E60730-1 & E60730-2-9

Johnson Controls