



**Johnson
Controls**



PRINCIPALES TERMOSTATOS

THERMOSTATS & CONTROLLERS



BULB THERMOSTATS

A19, A28, A319, A419 SERIES

DESCRIPTION

The **Johnson Controls A19 Series** is a single stage, heating or cooling, SPDT temperature control that uses a liquid-filled sensing element and capillary. The unit has an exposed or concealed set point dial with adjustable differential, and it will switch line voltages. The **A28 Series** is a two stage, heating or cooling, w/2-SPDT temperature control that uses a liquid-filled sensing element and capillary. The unit has an exposed or concealed set point dial with adjustable differential, and it will switch line voltages. The **A319 Series** is a single stage, heating or cooling, SPDT temperature control that uses a Type 21 thermistor sensor. The unit uses a set point dial and operates on 120 VAC or 240 VAC with a wide adjustable differential. A separate LED indicates relay operation.

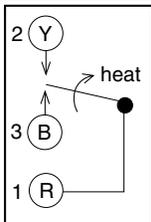
The **A419 Series** is a single stage, heating or cooling, SPDT temperature control that uses a PTC sensor. This unit features a digital display and buttons to adjust the set point differential, setback temperature, anti-short cycle delay, and failsafe control. The unit operates on 120 or 240 VAC and a 3/8" (0.95 cm) display with H/C, °F /°C and setback indication. A separate LED indicates relay operation.



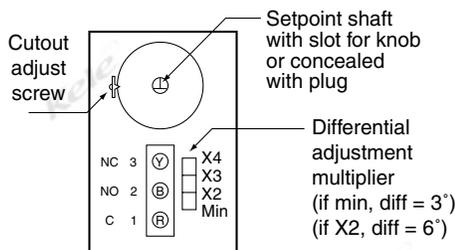
SPECIFICATIONS

	A19/A28	A319	A419
Voltage	None required	120/208/240 VAC 50/60 Hz	
Power	None required	1.8 VA	1.8 VA
Setpoint Adjust	Screwdriver slot or knob (concealed available)	Dial	Buttons and 3/8" display
Sensor	Liquid-filled bulb and capillary	Thermistor	PTC
Ambient Temp	Typical 140°F (60°C), strap-on 290°F (143°C)	-30° to 140°F (-34° to 60°C)	
Differential	x2, x3, x4 multiplier from min differential	1° to 30°F (0.5° to 17°C)	
Dimensions	4.5"H x 2.2"W x 2.0"D (11.43 x 5.59 x 5.08 cm)	5.0"H x 2.4"W x 3.0"D (12.70 x 6.10 x 7.6 cm)	
Approvals	UL Listed File #E6688, CSA	UL Listed File #E27734, CSA	
Weight	1.2 lb (0.55 kg)	1.75 lb (0.75 kg)	
Warranty	1 year	1 year	1 year

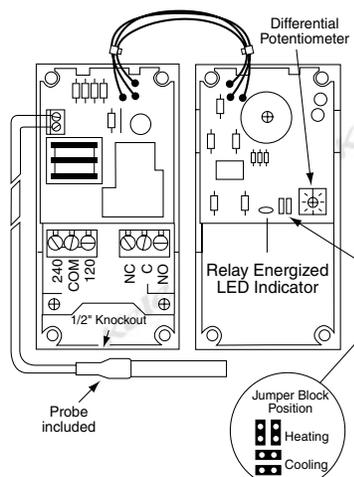
WIRING



Action on increase of temperature



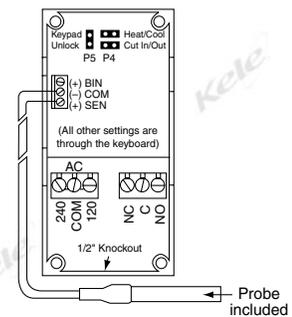
A19 with 1 SPDT Shown Above
A28 has two sets of SPDT contacts
(2nd Contact Actuation per order)



A319

FUNCTION	JUMPER LABEL	SETTING	JUMPER POSITION *
Cooling/ Heating	P4-Heat	Cooling*	Removed
		Heating	Installed
Setpoint	P4-Cut-out	Cut-in*	Removed
		Cut-out	Installed
Keypad Lock	P5-Unlock	Locked	Removed
		Unlocked*	Installed

*Factory settings



A419

THERMOSTATS & CONTROLLERS



BULB THERMOSTATS A19, A28, A319, A419 SERIES

ORDERING INFORMATION

SINGLE-STAGE SPACE AND REMOTE BULB THERMOSTAT										
Model	Switch Action	Range °F (°C)	Diff °F (°C) Adjustable	Bulb and Capillary	Bulb Well # *	Range Adjuster	Electrical Ranges			
							Motor Ratings VAC	120	208	240
A19BAC-1C	SPDT	30 to 110 (-1 to 43)	3.5 fixed (1.9)	1.4" x 2.25" coil	Space Thermostat	Convertible	AC full load amp	16.0	9.2	8.0
*A19ABA-40	SPST ¹	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8" x 4" 6' cap	WEL14A-602R	Screwdriver slot	AC locked rotor amp	96.0	55.2	48.0
A19ABC-4C	SPDT	50 to 130 (10 to 55)	3.5 to 14 (1.9 to 8.0)	3/8" x 5" 8' cap	WEL14A-603R	Knob	Noninductive or resistance load amp (not lamp loads)	22A 120-277 VAC		
A19ABC-24	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8" x 4" 8' cap	WEL14A-602R	Convertible				
A19ABC-36	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8" x 4" 20' cap	WEL14A-602R	Convertible				
*A19ABA-40 contacts open on temperature decrease.										
MANUAL RESET - REMOTE LIQUID BULB THERMOSTAT										
Model	Switch Action	Range °F (°C)	Diff °F (°C) Adjustable	Bulb and Capillary	Bulb Well # *	Range Adjuster	Electrical Ranges			
							Motor Ratings VAC	120	208	240
A19ACA-14	SPST Open Low	-30 to 100 (-34 to 38)	Manual reset	3/8" x 4" 6' cap	WEL14A-602R	Screwdriver slot	AC full load amp	16.0	9.2	8.0
A19ADB-1C	SPST Open High	100 to 240 (38 to 116)	Manual reset	3/8" x 3.5" 6' cap	WEL14A-602R	Knob	AC full load amp	10.0	—	6.0
							AC locked rotor amp	60.0	—	36.0
CHANGEOVER STRAP-ON LIQUID BULB THERMOSTAT (AQUASTAT)										
Model	Switch Action	Range °F (°C)	Diff °F (°C) Fixed	Mounting to Coil	Range Adjuster	Electrical Ranges				
						Motor Ratings VAC	120	240		
A19DAC-1	SPDT	100 to 240 (38 to 116)	10 (5.6)	Direct clamp-on strap	Knob	AC full load amp	10.0	6.0		
						AC locked rotor amp	60.0	36.0		
Note: A19DAC-1 not for use as a limit control										
Pilot duty - 125 VA, 24-600 VAC										
TWO-STAGE SPACE AND REMOTE BULB THERMOSTAT										
Model	Switch Action	Range °F (°C)	Diff °F (°C) Adjustable	Bulb and Capillary	Bulb Well # *	Range Adjuster	Electrical Ranges			
							Motor Ratings VAC	120	208	240
A28AA-4C	2-SPDT	30 to 110 (-1 to 43)	3.5 (1.9) 3 interstage	1.4" x 2.25" 2' coil	Space Thermostat	Convertible	AC full load amp	16.0	9.2	8.0
A28AA-29C	2-SPDT	-30 to 100 (-34 to 38)	5 (2.8) 2 to 7 adj interstage	3/8" x 4" 8' cap	WEL14A-602R	Convertible	AC locked rotor amp	96.0	55.2	48.0
A28MA-2C	2-SPDT	40 to 120 (4 to 49)	5 (2.8) 8 interstage	3/8" x 4" 6' cap	NEMA 3R WEL14A603R	Screwdriver slot	Noninductive or resistance load amp (not lamp loads)	22A 120-277 VAC		
A28AJ18C	2-SPDT	20 to 80 (-7 to 28)	1.5 (0.8) 2 to 7 adj interstage	3/8" x 5" 10' cap	WEL14A-603R	Convertible	Noninductive or resistance load amp (not lamp loads)	10.0	9.2	8.0
SOLID STATE SENSOR THERMOSTAT										
Model	Switch Action	Range °F (°C)	Diff °F (°C) Adjustable	Bulb and Capillary	Range Adjuster	Electrical Ranges				
						Motor Ratings VAC	120	208	240	
A319ABC24-1	SPDT	-20 to 100 (-30 to 38)	1 to 30 (0.5 to 17.0)	Type 21 thermistor included 8' (2.4 m) Lead	Knob	AC full load amp	16.0	9.2	8.0	
A319ABC12-1	SPDT	100 to 220 (38 to 105)	1 to 30 (0.5 to 17.0)	Type 21 thermistor included 8' (2.4 m) Lead	Knob	Noninductive	15.0	10.0	10.0	
A419ABC-1C	SPDT	-30 to 212 (-34 to 100)	1 to 30 (1.0 to 30.0)	PTC sensor included 6.6' (2m) Lead 0.25 diameter	Buttons with digital display	Horsepower	1.0	1.0	0.5	

* Bulb well not supplied

ACCESSORIES

PLT344-1R
SHL10A-603R
TE-6001-1
TE-6001-2
WEL14A-602R
WEL14A-603R

DIN rail end clips
Sun shield for A99 sensor for outdoor sunny locations
Holder for duct sensor
Holder for OSA sensor
4-15/16 COPPER BULB WELL
5-13/16 COPPER BULB WELL

T7200 LCD Thermostat

T7200-TB20-9J00, T7200-TB20-9J0B, T7200-TB21-9JS0, T7200-TF20-9JS0
T7200-TF20-9JS1, T7200-TB21-9JS1

PUBL-8916EN (0620)



Designed to control heating and cooling through air conditioning unit in commercial and residential application

Typical applications include the control of fan coil units, floor heating, packaged terminal air conditioners and combination of heating and cooling equipment. As part of the system, T7200 series thermostat can control two-way or three-way valve and multiple-speed line voltage fan or ECM fan.

T7200 features with large LCD screen that displays the status of work mode (cooling, heating, air venting, floor heating), fan speed, indoor temperature and set point etc.

Features and Benefit

Large backlit LCD

LCD is larger than 40% of front area, provide real time status of the environment with intuitive and clear user interface

New installation method

New method without opening T7200 cover during installation, avoids the risk of components damage by screwdriver

Remote sensor

New models support remote sensor, which has significant improvements to simple AHU and hotel applications. Enhancing the user experience and achieving energy efficiency.

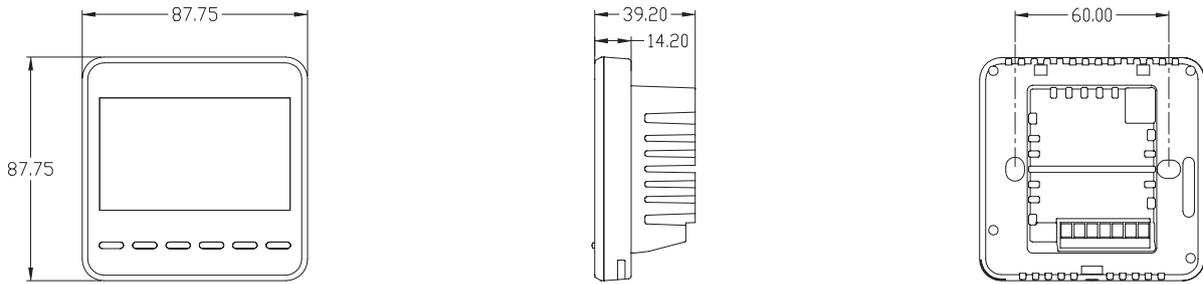
EEPROM storage of data

Thermostat retains the last events and parameter settings after power loss.

Push button for user operation

User can change working mode, temperature set point and fan speed via push buttons, easy for operation

Product dimensions



T7200 series thermostat product number and applications

Product number	Application	Fan control	Valve control	Others control	Input
T7200-TB20-9J00	2-pipe FCU, On/Off valve	3-speed Fan	1 On/Off Valve		
	Floor heating			1 Floor Heating	
T7200-TB20-9J0B (Bulk MOQ36pcs)	2-pipe FCU, On/Off valve	3-speed Fan	1 On/Off Valve		
	Floor heating			1 Floor Heating	
T7200-TF20-9JS0	2-pipe FCU, On/Off valve	3-speed Fan	1 On/Off Valve		1 BI, Occupancy
	4-pipe FCU, On/Off valve	3-speed Fan	2 On/Off Valves		
	2-pipe FCU, 3-wire On/Off valve	3-speed Fan	1 3-wire On/Off Valve		
	2-pipe FCU with floor heating, On/Off valve	3-speed Fan	1 On/Off Valve	1 Floor Heating	
	2-pipe FCU with TiO2/ESP, On/Off valve	3-speed Fan	1 On/Off Valve	1 TiO2/ESP	
	Water source heat pump	3-speed Fan		1 Compressor 1 Revert Valve	
T7200-TB21-9JS0	2-pipe FCU, ECM fan, On/Off valve	ECM fan	1 On/Off Valve		1 BI, Occupancy
	4-pipe FCU, ECM fan, On/Off valve	ECM fan	2 On/Off Valve		
	2-pipe FCU, ECM fan, 3-wire On/Off valve	ECM fan	1 3-wire On/Off Valve		
	2-pipe FCU, ECM fan with TiO2/ESP, On/Off valve	ECM fan	1 On/Off Valve	1 TiO2/ESP	
	2-pipe FCU, ECM fan with floor heating, On/Off valve	ECM fan	1 On/Off Valve	1 Floor Heating	
	Water source heat pump	ECM fan		1 Compressor 1 Revert Valve	
	Single speed AHU	1-speed Fan	1 Proportion Valve	1 On/Off Damper	
	2-pipe FCU, Prop valve	3-speed Fan	1 Proportion Valve		
T7200-TF20-9JS1 (new model)	2-pipe FCU, On/Off valve	3-speed Fan	1 On/Off Valve		1 BI, Occupancy 1 Remote sensor
	4-pipe FCU, On/Off valve	3-speed Fan	2 On/Off Valves		
	2-pipe FCU, 3-wire On/Off valve	3-speed Fan	1 3-wire On/Off Valve		
	2-pipe FCU with floor heating, On/Off valve	3-speed Fan	1 On/Off Valve	1 Floor Heating	
	2-pipe FCU with TiO2/ESP, On/Off valve	3-speed Fan	1 On/Off Valve	1 TiO2/ESP	
	Water source heat pump	3-speed Fan		1 Compressor 1 Revert Valve	
T7200-TB21-9JS1 (new model)	2-pipe FCU, ECM fan, On/Off valve	ECM fan	1 On/Off Valve		1 BI, Occupancy 1 Remote sensor
	4-pipe FCU, ECM fan, On/Off valve	ECM fan	2 On/Off Valve		
	2-pipe FCU, ECM fan, 3-wire On/Off valve	ECM fan	1 3-wire On/Off Valve		
	2-pipe FCU, ECM fan with TiO2/ESP, On/Off valve	ECM fan	1 On/Off Valve	1 TiO2/ESP	
	2-pipe FCU, ECM fan with floor heating, On/Off valve	ECM fan	1 On/Off Valve	1 Floor Heating	
	Water source heat pump	ECM fan		1 Compressor 1 Revert Valve	
	Single speed AHU	1-speed Fan	1 Proportion Valve	1 On/Off Damper	
	2-pipe FCU, Prop valve	3-speed Fan	1 Proportion Valve		

IMPORTANT: The T7200 series LCD thermostat is intended to provide and input to equipment under normal operating conditions. Where failure or malfunction of the thermostat could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the thermostat.

Technical specifications

T7200 series Standalone LCD thermostat

Supply Voltage	100-240 VAC 50/60 Hz
Power consumption	Max. 5VA
Terminations	Screw terminal block
AO output (ECM Fan, Proportion Valve)	0-10VDC output, up to 20mA
Relay output (Fan, Valve, Tio2 and etc.)	relay (SPST) output, 2.2A(I _R), cosφ 0.98; 3.6A (I _X), cosφ 0.98; 5A(Resistive)
BI input	Dry contact signal
Remote sensor	Support JCI 10K NTC type, e.g. TE-636S-1; China 10K NTC type, SA1200-002
Wire size	Screw terminal block: 1.0-1.5mm ² rigid conductor for 5mm connector; 0.14-1.5 mm ² rigid conductor for 3.5mm connector
Mounting	Flush-mounted
Temperature measurement range	0 to 49°C (32 to 99°F)
Temperature accuracy	1°C (2°F)
Default temperature set point range	5.0°C to 35.0°C in 0.5°C increments
Ambient conditions	Operating: 0 to 40°C (32 to 104°F), 10 to 90% RH, noncondensing, 29°C (85°F) maximum dew point
	Storage: -20 to 60°C (-4 to 140°F), 5 to 95% RH, noncondensing
Protection class	IP20
Pollution degree	2
Heat and fire resistance category	D
Temperature for ball pressure test	125°C
Limitation of operating time	Continuous
Product category	Type 1.B P42(74)
Shipping weight	Approx 300g
Compliance	CE mark
	RCM mark, Australia/NZ emissions compliance
	RoHS, REACH, WEEE

Note

1. User can configure one model to different applications by parameter setting
2. I_R is steady-state current of FCU motor, and I_X is transient current of FCU motor
3. T7200-TB20-9J00 and T7200-TB20-9J0B don't have remote sensor input and binary input;
T7200-TF20-9JS0 and T7200-TB21-9JS0 only have binary input
4. T7200-TF20-9JS1 and T7200-TB21-9JS1 have remote sensor input and binary input, remote sensor needs to be ordered separately.

Johnson Controls:

At Johnson Controls, we transform the environments where people live, work, learn and play. From optimizing building performance to improving safety and enhancing comfort, we drive the outcomes that matter most. We deliver our promise in industries such as healthcare, education, data centers and manufacturing. With a global team of 105,000 experts in more than 150 countries and over 130 years of innovation, we are the power behind our customers' mission. Our leading portfolio of building technology and solutions includes some of the most trusted names in the industry, such as Tyco®, York®, Metasys®, Ruskin®, Titus®, Frick®, Penn®, Sabroe®, Simplex®, Ansul® and Grinnell®.

For more information, visit www.johnsoncontrols.com or follow us [@johnsoncontrols](https://twitter.com/johnsoncontrols) on Twitter.

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Zero degrees of difficulty™

Description

KONOzw is the smart thermostat made with you in mind. It seamlessly connects to many smart hubs and blends in or stands out with its interchangeable Décor-snap covers™. KONOzw makes it easier than ever to personalize your comfort, décor, and savings.

System

- Modes: Heat, Cool, Heat & Cool
- Conventional: Forced air, gas, oil & electric furnaces (up to 2h/1c)
- Heat Pumps: With or without Aux/Emergency heat
- Hydronic (hot water) zone valves (2 wire)
- Power: 4 AA alkaline batteries , C-wire (included & provides up to 2 year battery life) or LUX Power Bridge (sold separately)

ZWAVE Plus Profile

- Role Type: Listening Sleeping Slave (LSS)
- Device Type: Thermostat - HVAC
- Security: S2
- OTA Upgrade: Supported
- Supporting Documents:
For additional documentation, command class or gateway support, please contact engineering@luxproducts.com

Accessories*

- Décor-snap™ Covers Available Separately
- Latest available covers can be found at Luxproducts.com/shopcovers



Best at-a-distance display for easy reading

Comfortable wheel interface - access menus, set-up and comfort control

SPECIFICATIONS
(subject to change)

MODEL# KN-ZW-WH1-B04

Dimensions	Height: 4.5" (114.3 mm), Width: 4.5" (114.3 mm), Depth: 1.0" (25.4 mm)
Heat/Cool Terminals	Heat: 2 total (W, Y, G, W2/O/B, C, RH, RC, LPB) Cool: 1 total (Y1)
Electrical Ratings	Voltage Range: 20-30V AC Max Avg. Current Draw: 120mA at 24V AC or 4 x AA alkaline battery Output Rating: @24V a.c. Max. 1.5A, 4.2A resistive load combined load
Temperature Control Range	Control Range: 50F to 90F (10C to 32C) Display Range: 32F to 99F (0C to 37C)
Environmental Limits	Operating Limits: 14F to 122F (-10C to 50C) Storage Limits: -4F to 140F (-20C to 60C) Operating Humidity: 20% to 80% non-condensing Moisture and Dust: Up to IP20
ZWAVE Specifications	ZWAVE Plus Frequency: 908.4 MHz 916 MHz Max Transmission Power = +4dBm
Compatible With	Universal compatibility with forced air, gas, oil and electric furnaces up to 2h/1c, heat pump systems with or without aux/emergency heat and hydronic (hot water) zone valves (2 wire)
Not Compatible With	120V/240V line voltage systems
Packaging	Master Carton: 4 Units
Other Technical	Disconnection Means: Type 1B Pollution Degree: 2 Impulse Voltage: 330V Automatic Action: 100,000 cycles



FCP Series Thermostats

Controlling fan coil units and PTACs is easier than ever



Controlling 2-pipe or 4-pipe fan coil units or PTACs is now simple, cost effective and user friendly. The versatile FCP 7-Day Programmable and FCP Non-Programmable Thermostats can be used as stand-alone devices in a variety of building applications, including hotels, schools and offices. They provide access to parameters such as system mode, fan mode and temperature setpoints.

FCP Thermostats provide on/off control, up to three speeds of fan control, dry contact unoccupied or occupied control, minimum and maximum temperature protection, and key pad lockout. Each one has a large display with an adjustable backlight that enhances visibility. It also has a quick setup menu that makes it easy to commission, operate and optimize user preferences. In addition, both FCP Thermostat models are prewired for fast installation.

What's more, the programmable FCP thermostat is available in a no-fan version. This FCP-NF model is designed primarily for fan coils with independent fans and heat-only applications where no fan is needed. It provides the best market value for single stage heating/cooling applications without fans, and for baseboard and radiant heating systems with remote sensors.

Both FCP 7-Day Programmable and FCP Non-Programmable Thermostats are compatible with the Johnson Controls® 10k ohm NTC Type II and Type III remote sensor (available separately). Plus, each can be equipped with a remote temperature sensor, a remote pipe sensor, and a remote wired occupancy sensor to enable flexible options, including a 2-pipe FCU heat/cool switchover or a pipe sensor for automatic switching.

The power behind **your mission**



Specifications

Specification	Description
Models	Non-programmable: FCP-NA-701-N, FCP-NA-701-B Programmable: FCP-PA-701-N, FCP-PA-701-B, FCP-PA-701-NF
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

Features and benefits

Designed for cost-competitive commercial thermostat market

- Non-programmable and seven-day programmable versions with up to six programmable periods per day
- Works with FCU 2- or 4-pipe or PTAC systems
- A no-fan version is available (FCP-PA-701-NF)
- Branding and non-branding (custom pad printing)
- Large display with adjustable backlight for enhanced visibility
- FCP-PA-701 features battery backup

Easy self-install

- Quick setup menu has a reset installer and user configurations to configure the thermostat easily with 20 preset installations
- Pre-installed lead wires for fast installation
- Remote sensor ready
- Remote temperature
- Remote pipe
- Remote wired occupancy sensor

Highly configurable

- Minimum/maximum temperature protection
- On/off control
- Three speeds of fan control
- Pipe sensor for automatic switching
- Calendar-based for automatic switching without a pipe sensor
- Key pad lockout
- Vacation mode
- Clock (12-hour or 24-hour)
- Automatic smart fan for comfort and energy savings
- Temperature in °F or °C

Note: Tamper-proof models are available on request. Ask your Johnson Controls representative for more details.

Questions?

For more information, visit johnsoncontrols.com or contact your local Johnson Controls representative.

WTL Series Digital Pneumatic Thermostats



Affordable digital control for pneumatic HVAC systems

The power behind **your mission**



Now you can reap all the benefits and efficiencies of direct digital control (DDC) with minimal expense and disruption. WTL Series digital pneumatic thermostats are wireless and self-contained, so there's no need to open walls and ceilings to install wires. That means you can transform your facility into a BAS-connected site quickly, easily, and at a fraction of the cost of a DDC system.

What's more, WTL Series thermostats provide ongoing energy savings of up to 30%, thanks to their scheduling features. They're designed to retrofit existing mechanical pneumatic thermostats from Johnson Controls and most other leading manufacturers, making them ideal for educational, governmental and healthcare facilities.

WTL Series thermostats are available in three configurations, to suit various applications:

- Two pipe, direct/reverse acting, for a heating or cooling only application with a single setpoint
- Two pipe, direct/reverse acting, with a deadband; suitable for heating and cooling applications with discrete heating and cooling setpoints
- Two pipe, direct/reverse acting, for summertime cooling and wintertime heating while maintaining a single setpoint

Key Features

- High reliability
- Remote monitoring and control
- Automatic self-calibration
- Occupancy override notification
- Programmable temperature setbacks
- Integration with any BAS over BACnet IP

Best of all, you'll enjoy the same reliability of a mechanical pneumatic thermostat without any need for periodic re-calibration when you choose a WTL Series digital pneumatic thermostat. So bring your facility into the digital age. **Contact your Johnson Controls representative for details.**

Specification		Description
Operating frequency band		915 MHz LoRa network band
Transmission ranges	Indoor on one floor, maximum	250 ft.
	Indoor over multiple floors, maximum	150 ft.
	Line of sight, maximum	400 ft.
Transmission interval		5 minutes
Battery Life		Minimum of 2 years, with four setpoint changes per day
Operating conditions		32°F to 122°F (0°C to 50°C), 95% RH maximum, noncondensing
Storage conditions		-40°F to 122°F (-40°C to 50°C), 95% RH maximum, noncondensing
Dimensions (H x W x D)		5.6 in. (141 mm) x 4.1 in. (104 mm) x 2.1 in. (53mm)

For more information on the WTL Series, please visit [JohnsonControls.com](https://www.johnsoncontrols.com)

The power behind **your mission**



T9100 High-Resolution Color Touch Screen Digital Room Thermostat with Integral Skyport™ Cloud Services Wi-Fi

Description

The T9100 High-Resolution Color Touch Screen Digital Room Thermostat is a multifunctional device that offers a simple-to-use color touch screen user interface. This stand-alone digital room thermostat, with integral Skyport™ Cloud Services Wi-Fi, is designed to program and configure temperature control of a wide range of heating and cooling equipment in commercial applications. An integral humidity sensor also enables the device to control humidification and dehumidification in addition to room temperature.

The high-resolution color touch screen on the room thermostat doubles as a digital picture frame. This at-a-glance, full-color touch screen allows the user to easily see the room temperature and heating or cooling status. The aesthetically-pleasing touch screen enhances any decor using a number of preset themes. The user can also load up to 100 personalized photos as custom background wallpaper, or configure the photos as a slide show.

The T9100 includes an SD memory card input that reduces configuration time by making inputting and exporting data between digital room thermostats quick and easy. A ColorDisplay Assistant application can be downloaded at no charge from the Johnson Controls® Thermostats homepage to upload photos, configure installation settings, program a time period schedule, and update the digital room thermostat firmware.

Integral runtime graphics available on the T9100 provide energy usage information at the touch of a finger, allowing the user to evaluate energy conservation options. A password protection capability enforces setpoint energy policies by preventing tampering with the digital room thermostat settings in public spaces. Multilingual display options provide a user interface in English, French, and Spanish.

Refer to the *T9100 Commercial Digital Thermostat with Humidity Control and Integral Skyport Cloud Services Wi-Fi Owner's Manual and Installation Instructions (LIT-12012271)* for important commercial product application information.

Features

- **Integral Skyport Cloud Services Wi-Fi**—Provides facility managers and end users with remote access to the digital room thermostat.
- **Seven-Day Programmable Occupancy Schedule with Up to Three Occupied Periods Each Day**—Reduces operating expenses by controlling the room based on occupant schedules.
- **Local Equipment Runtime Trending**—Provides easy access to energy usage information; shows how much energy was used to heat and/or cool over a 7-day period.

T9100 High-Resolution Color Touch Screen Digital Room Thermostat with Integral Skyport Cloud Services Wi-Fi



- **Password Protection Capability**—Enforces setpoint energy policies by preventing tampering with the digital room thermostat settings in public spaces.
- **Multilingual Display Options**—Provide a user interface in English, French, and Spanish.
- **SD Memory Card Input**—Reduces configuration time by making inputting and exporting data between digital room thermostats quick and easy.
- **Configurable Alerts**—Send messages to the digital room thermostat when certain conditions occur, such as when the room temperature exceeds a user-specified value.

Repair Information

If the T9100 High-Resolution Color Touch Screen Digital Room Thermostat fails to operate within its specifications, replace the unit. For a replacement digital room thermostat, contact the nearest Johnson Controls representative.

Selection Chart

Product Code Number	Description
T9100	Commercial high-resolution color touch screen digital room thermostat with humidity control and integral Skyport Cloud Services Wi-Fi
ACC-WALLPLT	Plastic backplate for surface mounting the T9100 High-Resolution Color Touch Screen Digital Room Thermostat
ACC-RSEN	Remote temperature sensor for the T9100 High-Resolution Color Touch Screen Digital Room Thermostat
ACC-RSEN-OVR	Remote temperature sensor with manual override for the T9100 High-Resolution Color Touch Screen Digital Room Thermostat

T9100 High-Resolution Color Touch Screen Digital Room Thermostat with Integral Skyport™ Cloud Services Wi-Fi (Continued)

Technical Specifications

T9100 High-Resolution Color Touch Screen Digital Room Thermostat with Integral Skyport Cloud Services Wi-Fi		
Power Requirements	20 to 30 VAC, 50/60 Hz, 4.8 VA at 24 V nominal	
Output Rating	W1, W2, W3 = 0.2 A maximum, 0.01 A minimum, 3 A inrush, 20 to 30 VAC; Y1, Y2, G = 0.4 A maximum, 0.01 A minimum, 3 A inrush, 20 to 30 VAC	
Local Temperature Sensor Type	10k ohm negative temperature coefficient (NTC) thermistor at 77°F (25°C)	
Remote Temperature Sensor Type	10k ohm NTC thermistor at 77°F (25°C)	
Wire Size	16 AWG (100 ft [30.5 m] maximum) to 24 AWG (36 ft [11 m] maximum)	
Temperature Adjustment Range	35 to 99°F (2 to 37°C)	
Accuracy	35 to 65°F ±3F° (2 to 18°C ±1.8C°), greater than 65 to less than 80°F ±2F° (18 to less than 27°C ±1.2C°); 80 to 99°F ±3F° (27 to 37°C ±1.8C°), greater than 99 to 104°F ±5F° (37 to 40°C ±3C°)	
Humidity Control	±10% RH from 30 to 70% RH, 50 to 90°F (10 to 32°C)	
Deadband	Adjustable 1 to 6 degrees first stage; Adjustable 0 to 10 degrees second and third stages	
Ambient Conditions	Operating	35 to 104°F (2 to 40°C), 5 to 95% RH noncondensing, 86°F (30°C) maximum dew point
	Storage	-22 to 122°F (-30 to 50°C), 5 to 95% RH noncondensing, 86°F (30°C) maximum dew point
Compliance	UL/cUL Listed, File E107041, NEC Class 2	
Dimensions	4 in. H x 5-3/16 in. W x 1-3/32 D (102 mm H x 132 mm W x 28 mm D)	
Shipping Weight	0.75 lb (0.34 kg)	

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TEC3000 Smart Equipment Thermostat Series

Configurable HVAC Thermostat Controller



The power behind **your mission**



TEC3000 Smart Thermostat Series



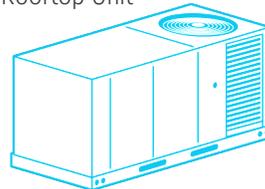
More Control

With the TEC3000 Smart Thermostat Series, you can expect efficient commissioning and innovative application configurations for rooftop, fan coil and heat pump equipment. Available in communicating (wired or wireless) or stand-alone versions, the TEC3000 Series provides control of:

- Local hydronic reheat valves
- Pressure-dependent VAV equipment with or without local reheat
- Two- or four-pipe fan coils
- Cabinet unit heaters
- Zoning equipment using an on/off, floating, or 0 to 10 VDC proportional control input
- Unitary rooftop units with or without economizers and heat pumps

Ideal For

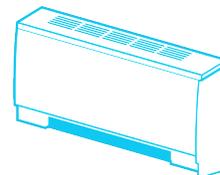
Rooftop Unit



Water Source Heat Pump



Fan Coil



Quick Setup

USB Port Configuration

Set-up and replacement is simple with USB port. All models include a convenient USB port that reduces installation time by allowing simple backup and restoration of features from a USB drive, which enables rapid cloning of configuration between common units.

Clear Communication

Backlit Full-Color Liquid Crystal Display (LCD) and Configurable Touch Screen

All models feature an intuitive color backlit display that makes setup and operation quick and easy. The new display offers real-time control status of the environment in easy-to-read, plain text messages with an adjustable backlight that brightens during user interaction. The configurable touch screen allows you to limit the user interaction with the thermostat controller display based on specific energy policies.

Energy Savings

Programmable Scheduling and Occupancy Sensors

Simple programmable scheduling helps keep occupants comfortable while you save energy. Models with built-in occupancy sensing capability maximize energy savings in high-energy use commercial buildings—such as schools and hotels—during occupied times by using additional standby setpoints.

Multiple Fan Configurations

- **Single-speed**
- **Multi-speed**
(two or three discrete speeds)
- **Variable-speed/EC motors**
(0 to 10 VDC control)

Some models support dehumidification on two-pipe fan coil units with reheat, and four-pipe fan coil units with or without reheat. When no heating is required, the thermostat controller monitors space humidity and activates dehumidification control as necessary. Heat and/or reheat is used as required to maintain the space temperature. For optimal dehumidification performance, use a fan coil unit that has a multi-speed or variable-speed fan.



Available Models

Networked Models

Feature a field-selectable Building Automation System BACnet MS/TP or N2 communication capability that enables remote monitoring and programming for efficient space temperature control.

Wireless Controllers

Pair with Johnson Controls ZFR Pro Series system's wireless gateways and controllers to create a wireless mesh network that allows the exchange of data between the ZFR network and a network engine using standard BACnet/IP communications.

Standalone Controllers

Non-communicating models provide the same applications and control, but are not enabled to communicate over a wired or wireless network.

Technical Features

- **Advanced Ventilation Control Features** optimize occupant health by reducing the concentration of airborne infectious particles.
- **Two Configurable Binary Inputs** provide additional inputs for advanced functions such as remote night setback, service or filter alarms, motion detector, and window status, and configures the application to respond accordingly.
- **Field-Selectable BACnet MS/TP or N2 Networked Communication** simplifies the upgrade from N2 networked communication to BACnet MS/TP networked communication without changing hardware.
- **End-of-Line Switch** simplifies the layout and installation of communication buses.
- **Networked Models Fully Compatible** with any BACnet Building Automation System, including the Johnson Controls building automation portfolio – Metasys®, Facility Explorer® and Verasys®.
- **Onboard Occupancy Sensor** provides energy savings in high-energy usage commercial buildings without additional installation time or cost.
- **On/Off, Floating, Proportional 0 to 10 VDC, and Single- or Two-Stage Control**—offers additional application flexibility by providing more advanced control signals.
- **Integral Humidity Sensor** monitors space humidity and activates dehumidification control on two-pipe fan coil units with reheat and four-pipe fan coil units with or without reheat.
- **Full Line of Remote TE-6300 Series Temperature Sensors** supports a wide range of remote temperature sensing needs from a single supplier.
- **Programmable in 7 languages:** English, Spanish, French, German, Italian, Dutch, and Portuguese
- **Available in 2 colors:** black and white

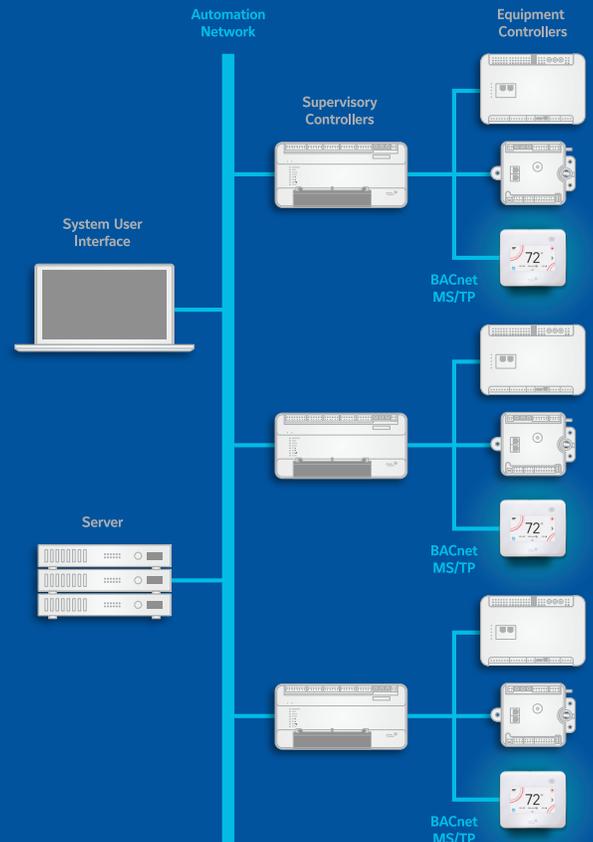
Compatible Accessories For More Control

- Wall Plate Plaque Murale **TEC-WALLPLT**
- Flush-mount temperature sensor **TE-6300F Series**
- Duct-mount temperature sensor **TE-6300M Series**

Fluent in Your Building's Language

The TEC3000 Series communicates directly with your Building Automation System (BAS).

Powerful and precise controls are the backbone of a robust BAS strategy. The TEC3000 Series accurately communicates critical HVAC data to any Johnson Controls Building Automation System (BAS).



Choose 135 years of experience and reliability.

Johnson Controls invented the room thermostat 135 years ago. Since then, we've become a global diversified technology leader in more than 150 countries. We developed the TEC3000 Smart Equipment Thermostat Series in pursuit of our goal to help everyone live more productive, healthier, more enjoyable, and more efficient lives.

T8490 Digital Room Thermostat with Humidity Control Catalog Page

Description

The T8490 Digital Room Thermostat with Humidity Control is a multifunctional device that offers a simple user interface with pushbuttons. This stand-alone digital room thermostat is designed to monitor or program temperature control using the onboard or accessory remote temperature sensors. An integral humidity sensor also enables the device to control humidification, dehumidification, and reheat in addition to room temperature.

The thermostat's simple, at-a-glance screen allows the user to easily see the room temperature and heating or cooling status. The T8490 offers up to four heating and two cooling stages for gas, electric, heat pump, and radiant heat. It is programmable for each day (7-Day), for weekdays plus Saturday and Sunday (5/1/1), or for the same schedule every day (1-Day). For simplicity, it can also operate with no programmed schedule. The thermostat's programmable auxiliary output allows the user to configure the output to be controlled from a variety of sources.

The T8490 is compatible with outdoor sensors, displaying current, high, and low temperatures for the day. The user has the option to display temperatures in either degrees Fahrenheit or degrees Celsius. Setup step instructions on the scrolling display can be set for English, French, or Spanish. The keypad lockout capability enforces setpoint energy policies by preventing tampering with the digital room thermostat settings in public spaces. The thermostat features a dual-setpoint setting and setpoint limiting.

An optional plug-in Skyport™ Wi-Fi module is available as an accessory for the T8490. This module allows the user to monitor and control the thermostat remotely with a mobile device app.

Refer to the *T8490 Commercial Digital Thermostat with Humidity Control Owner's Manual and Installation Instructions (LIT-12012478)* for important commercial product application information.

Features

- **Up to Four Heating and Two Cooling Stages**—Save time and effort by standardizing operating procedures and minimizing inventory with this one flexible thermostat.
- **Programmable (7-Day, 5/1/1, or 1-Day) Occupancy Schedule with up to Three Occupied Periods Each Day**—Reduces operating expenses by controlling the room based on occupant schedules.
- **Humidity Sensor**—Enables the device to control humidification, dehumidification, and reheat equipment.
- **Configurable Alerts**—Send messages to the digital room

Selection Chart

Product Code Number	Description
T8490	Digital Room Thermostat with Humidity Control
ACC-E-WIFI	Wi-Fi Module for the T8490 Digital Room Thermostat
ACC-E-WALLPLT	Plastic Backplate for Surface Mounting the T8490 Digital Room Thermostat
ACC-RSEN	Remote Temperature Sensor
ACC-RSEN-OVR	Remote Temperature Sensor with Manual Override

T8490 Digital Room Thermostat with Humidity Control



- thermostat when certain conditions occur, such as equipment runtime and service alerts for filters, UV lamps, and humidifiers.
- **Keypad Lockout**—Enforces setpoint energy policies by preventing tampering with the digital room thermostat settings in public spaces.
 - **Multilingual Display Options**—Provide a user interface in English, French, or Spanish.
 - **Skyport Cloud Services (with Accessory Wi-Fi Module Sold Separately)**—Provides facility managers and end users with remote access to the digital room thermostat. Complies with California Building Code, Title 24, Joint Appendix 5 (JA5) for Occupant Controlled Smart Thermostat (OCST).

Repair Information

If the T8490 Series Digital Room Thermostat with Humidity Control fails to operate within its specifications, replace the unit. For a replacement thermostat, contact the nearest Johnson Controls® representative.

T8490 Digital Room Thermostat with Humidity Control Catalog Page (Continued)

Technical Specifications

T8490 Digital Room Thermostat with Humidity Control	
Power Requirements	20 to 30 VAC, 50/60 Hz, 3.0 VA at 24 V nominal
Output Rating	W1, W2, W3 = 0.2 A maximum, 0.01 A minimum, 3 A inrush, 20 to 30 VAC; Y1, Y2, G = 0.4 A maximum, 0.01 A minimum, 3 A inrush, 20 to 30 VAC; HUM, DEHUM, AUX = 0.1 A maximum, 0.01 A minimum, 3 A inrush, 20 to 30 VAC
Local Temperature Sensor Type	Thermistor, NTC 10K at 77°F (25°C)
Remote Temperature Sensor Type	Thermistor, NTC 10K at 77°F (25°C)
Wire Size	16 AWG (100 ft [30.5 m] maximum) to 24 AWG (36 ft [11 m] maximum)
Temperature Adjustment Range	35 to 99°F (2 to 37°C)
Accuracy	35 to 65°F ±3F° (2 to 18°C ±1.8C°), greater than 65 to less than 80°F ±2F° (18 to less than 27°C ±1.2C°); 80 to 99°F ±3F° (27 to 37°C ±1.8C°), greater than 99 to 104°F ±5F° (37 to 40°C ±3C°)
Humidity Control	±10% RH from 30 to 70% RH, 50 to 90°F (10 to 32°C)
Deadband	Adjustable 1 to 6 degrees first stage; Adjustable 0 to 10 degrees second and third stages
Ambient Conditions	Operating
	Storage
Compliance	UL/cUL listed, file E107041, NEC Class 2
Dimensions	4.4 in. H x 5.2 in. W x 1.0 D (112 mm H x 132 mm W x 25 mm D)
Shipping Weight	0.75 lb (0.34 kg)

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