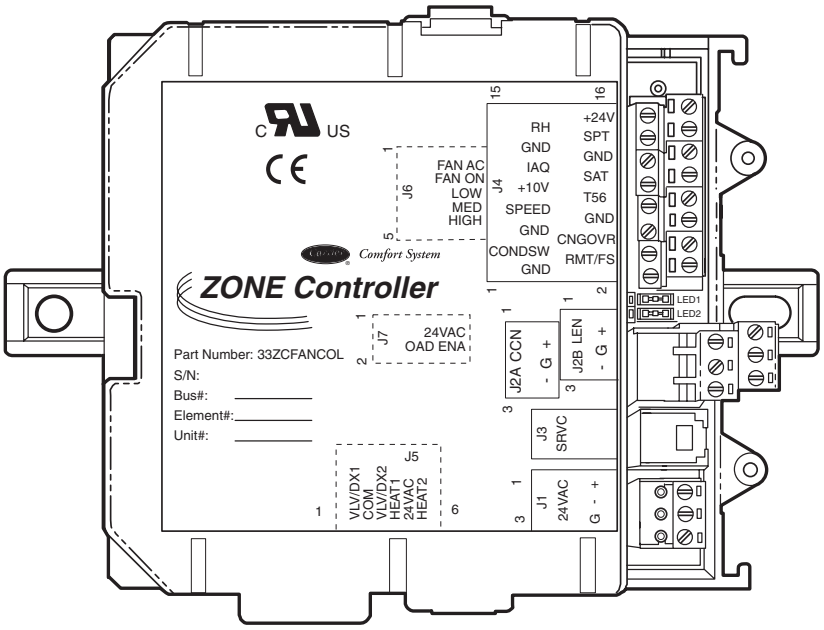
Product Specification

Fan Coil Zone Controller

Part Number 33ZCFANCOL



The Fan Coil Zone Controller is a field retrofit, CCN (Carrier Comfort Network) compatible communicating control for fan coils (specifically designed for applications under 2,000 cfm). The fan coil zone controller can function as either a stand-alone control or as part of the CCN. User interfaces include the CCN Service Tool, ComfortVIEW™, and ComfortWORKS® software. When used as part of the CCN, other devices such as the CCN data transfer, Linkage Thermostat, or Comfort Controller can read data from or write data to the fan coil zone controller.

The 33ZCFANCOL Fan Coil Zone Controller provides the following features and benefits:

- provides 3-speed PID (proportional integral derivative) automatic fan control to minimize fan noise by matching fan speed to load (also providing improved dehumidification during cooling and maximizing energy efficiency)
- uses PID heating and cooling control to maintain space temperature
- provides dehumidification control (requires RH sensor or RH value via network input)
- provides software clock and local occupancy schedule for local occupancy control (requires time broadcaster and hardware clock from another device in the system)
- provides a discrete input for use as a remote occupancy contact input or as a fan status input
- provides optional Linkage Thermostat interface capability
- features supply air temperature limiting and integrated safeties for DX (direct expansion) and electric heat units

- provides changeover control via a 10K ohm surface mounted thermistor temperature sensor or via a forcible CCN software variable
- provides control of two-position outside air damper to maintain minimum quantity of outside air during occupied periods (after completion of warm-up)
- provides CCN Tables and Alarms
- provides diagnostic tests that enable the user to check I/O points and verify their functionality
- features spring return or non-spring modulating water valve capability
- provides optional remote mounted space sensor with set point adjustment, timed override, and CCN service port jack
- controls modulating or two-position chilled water valves or up to two stages of DX cooling to maintain space temperature set point
- controls modulating or two-position hot water/steam valves or up to two stages of electric heat to maintain space temperature set point
- operates the supply fan based on a local or global occupancy schedule or remote timeclock input status
- provides Morning Warm-up or Smart Start cooling to achieve set point by the start of the scheduled occupied time (requires linkage thermostat or the use of the local occupancy schedule)
- provides alarms for analog temperature input(s) out of range
- provides alarm for space temperature deviation from desired set point
- provides Condensate Overflow alarm when condensate pan is full (optional)
- provides alarm for Dirty Filter based on resettable timer
- allows manual and system overrides of selected input/output channels
- supports CCN remote timed override, set point adjustment, and manual fan speed override
- provides Broadcast Acknowledger capability for CCN (configuration)
- conforms to the general requirements for CCN devices

Features/Benefits

Flexibility for every application

The fan coil zone controller is a field retrofit control. The fan coil zone controller maintains precise temperature control in the space by operating the fan, controlling the fan speed, and regulating the temperature of conditioned air into the space.

The fan coil zone controller can support two-position heating and cooling, modulating heating and cooling, 2-stage electric heat and 2 stages of DX cooling.

Carrier Linkage Thermostat compatibility

When connected to a Carrier Linkage Thermostat, the fan coil zone controller can use occupancy schedules, zone temperature, and set points from the thermostat. The fan coil zone controller provides the thermostat with the unit's operating mode and supply air temperature for local display at the thermostat.

When used with the Linkage Thermostat, the fan coil zone controller provides local space temperature sensing, (remote space temperature sensing and averaging with up to 3 optional remote room sensors), occupied and unoccupied heat and cool set points, occupancy scheduling with up to 8 time periods, 18 holiday periods, network time broadcast, occupied set point range limiting, temperature compensated start, and global occupancy. A single Linkage Thermostat will have the ability to interface with up to 8 fan coil controls serving a single zone.

Additional control features

The fan coil zone controller provides additional control features such as Occupied/Unoccupied scheduling initialized via the network. The fan coil zone controller offers override invoked from a wall sensor during unoccupied hours from 1 to 4 hours in 1-hour increments. Optional indoor air quality (IAQ) or relative humidity monitoring is also available. The fan coil zone controller supports tenant billing.

Simple mounting

The fan coil zone controller has an integrated plastic cover which can be easily mounted at the desired location with two sheet metal screws.

Ease of installation

The fan coil zone controller is provided with removable connectors for power and communications. The fan coil zone controller has non-removable screw type connectors for inputs. The removable connectors are designed so that they can be inserted one way so as to prevent installation errors. The fan coil zone controller also provides an RJ-11 modular phone jack for the Network Service Tool connection to the module via the Carrier Comfort Network (CCN) communications.

An optional conduit box cover (Part Number 33ZCCONBOX) provides for field wiring connection via conduit. The conduit box is designed to accept two $^1/_2$-in. (13 mm) EMT conduits.

User interface

The 33ZCFANCOL is designed to allow a service person or building owner to configure and operate the unit through the CCN user interfaces. A user interface is not required for day-to-day operation. All maintenance, configuration, setup, and diagnostic information is available through the Level II communications port to allow data access by an attached computer running Network Service Tool, ComfortVIEW™, or ComfortWORKS® software.

Specifications

Wiring connections

Field wiring is 18 to 22 AWG (American Wire Gage). The fan coil zone controller is a NEC (National Electrical Code) Class 2 rated device.

→ Inputs

- space temperature sensor
- field-installed remote wall sensor set point adjustment
- supply air temperature sensor
- manual 3-speed fan control
- optional IAQ sensor
- optional relative humidity sensor
- changeover sensor
- condensate pan full sensor
- remote timed override input or fan status input

Outputs

- heating
  - modulating (floating) valve
  - two-position valve
  - two-stage electric
- fan start/stop (normally open contact)
- fan speed (low, medium, high)
- outdoor air damper
- cooling
  - modulating (floating) valve
  - two-position valve
  - two-stage DX

Power supply

The power supply is 24 VAC ± 10% at 40 VA (50/60 Hz).

Power consumption

The power requirement sizing allows for accessory water valves and for 3 fan speed relays. Water valves are limited to 10 VA on both two-position and modulating hot water. The fan relays are limited to 3 VA (holding) each.

NOTE: If a water valve or fan contactor exceeds these limits, or contactors are required, then it is recommended a 60 VA transformer be used. The maximum rating for any output is 20 VA.

Hardware (memory)

FLASH EPROM

Specified sensing temperature range

The fan coil zone controller space temperature range is –40 to 245 F (–40 to 118 C). The fan coil zone controller has an allowable control set point range from 40 to 90 F (4 to 32 C) for heating and 45 to 99 F (7 to 37 C) for cooling.

Communications

The number of fan coil zone controllers is limited only by the maximum number of fan coil zone controllers allowed on a CCN system. Bus length may not exceed 4000 ft (1219 m), with no more than 60 devices on any 1000 ft (305 m) section. Optically isolated RS-485 repeaters are required every 1000 ft (305 m).

Dimensions

Height: 5-in. (127 mm)
Width: $6\frac{1}{2}$-in. (165 mm)
Depth: 3-in. (76 mm)

Minimum service dimensions

Height: 7-in. (178 mm)
Width: 9-in. (229 mm)
Depth: 4-in. (102 mm)

Environmental ratings

Operating Temperature: 32 to 140 F (0° to 60 C) at 10 to 90% RH (non-condensing)

Shipping Temperature: –40 to 185 F (–40 to 85 C) at 10 to 90% RH (non-condensing)

Vibration

Performance vibration: 0.014-in. (0.356 mm) peak to peak displacement, 5 to 31 Hz; 0.75 G, 31 to 300 Hz

Corrosion

Office environment. Indoor use only.

Approvals

Listed under UL 873, and UL94-5V (plastic).

Accessories

Conduit box — The 33ZCCONBOX conduit box provides two conduit connections to the fan coil zone controller for installations requiring the use of conduit due to local electrical codes. The conduit box is UL94-5V rated for plenum use.

Supply air temperature sensor — The 33ZCSENSAT supply air temperature sensor is required for all applications. The sensor has an operating range of –40 to 245 F (–40 to 118 C).

Space temperature sensor with override button — The 33ZCT55SPT space temperature sensor with override button is required for all applications. The space temperature sensor monitors room temperature which is used by the fan coil zone controller to determine the temperature of conditioned air that is allowed into the space.

Space temperature sensor with override button and set point adjustment — The 33ZCT56SPT space temperature sensor with override button and set point adjustment can be used in place of the 33ZCT55SPT space temperature sensor if local set point adjustment is required. A space temperature sensor is required for all applications. The space temperature sensor monitors room temperature which is used by the fan coil zone controller to determine the temperature of conditioned air that is allowed into the space. The set point adjustment bar allows up to a ± 15° F (8° C) temperature adjustment by the room occupant.

Accessories (cont)

Space temperature sensor with override button, set point adjustment, and manual fan speed control — The 33ZCT57SPT space temperature sensor with override button, set point adjustment, and manual fan speed control can be used in place of the 33ZCT55SPT space temperature sensor if local set point adjustment and fan speed control are required. A space temperature sensor is required for all applications. The space temperature sensor monitors room temperature which is used by the fan coil zone controller to determine the temperature of conditioned air that is allowed into the space. The set point adjustment bar allows up to a ± 15° F (8° C) temperature adjustment by the room occupant. The manual fan speed control allows the user to set the fan to Auto, Off, High, Medium, or Low.

Relative humidity sensor — The 33AMSENRHS000 relative humidity sensor (indoor space) is required for zone humidity control (dehumidification).

CO_2 sensor — Three different CO_2 sensors are available for monitoring space indoor-air quality.

The 33ZCSENCO2 sensor is an indoor, wall mounted sensor with an LED (light-emitting diode) display. The sensor has an analog output (0 to 10 vdc) over a range of 0 to 2000 ppm. An SPDT contact is provided to close at 1000 ppm with a hysteresis of 50 ppm.

The 33ZCT55CO2 sensor is an indoor, wall mounted sensor without display. The CO_2 sensor also includes a space temperature sensor with override button.

The 33ZCT56CO2 sensor is an indoor, wall mounted sensor without display. The CO_2 sensor also includes a space temperature sensor with override button and temperature offset.

Changeover sensor — The 33ZCSENCHG changeover sensor is used by the fan coil control in 2-pipe applications to determine the temperature of the medium which is supplied to the fan coil by the building piping system. The fan coil zone controller can then determine if it is capable of providing heating or cooling to the space.

Linkage thermostat — The Linkage Thermostat (33CSKITLST-01) is used to control multiple units from a single thermostat. The Linkage Thermostat can control up to 8 units. It is used in place of any space temperature sensor.

Dimensions