

TRC3500

Viconics Room Controller Low-Voltage Fan Coil Unit & Zone Control

Specification Sheet

Introduction

The all-in-one Viconics Room Controller TRC3500 is a low-voltage fan coil unit and zone control Room Controller, suitable for commercial and high-end hospitality markets. It is an application-specific and programmable Room Controller with different color and screen theme options.

A perfect balance of simplicity and sophistication. Select a black or white theme for the screen. Display custom standby images on the screen to reinforce your brand and provide a more enjoyable occupant experience.

Features

- Dynamic HVAC optimization with AI Eco Mode
- Equipped with an embedded Passive Infrared Sensor (PIR) for a configurable occupancy detection
- Automatic energy savings
- Configurable for °C/°F temperature measurement
- 23 selectable languages
- Available in 2 casing color options: white and black
- Optional halo LED backlight that reflects the mode of operation or notification on the wall behind the device
- Configurable proportional band for room temperature control
- Fully programmable control sequences using Lua scripting
- Configurable Scheduler
- Change of Value (COV) function for building management system integration
- Universal inputs and outputs including a CO₂ sensor input, and a fresh air station input
- Humidity sensor with onboard dehumidification sequence
- Light sensor screen brightness adjustment according to ambient lighting for an optimal user experience
- Optional proximity sensor to turn on the screen using a hand gesture without touching the device
- Designed to comply with the BACnet B-ASC (Application-Specific Controller) profile
- Wired BACnet™ MS/TP, wired Modbus RTU or optional wireless BACnet/IP over Wi-Fi connectivity
- Optional wireless Zigbee™ 3.0 connectivity to a portfolio of wireless Zigbee sensors
- Real-time clock with a 7-day internal battery backup
- Control lights and blinds with the touchscreen user interface
- Support optional Courtesy buttons: Do Not Disturb and Make Up Room
- Notify occupants of events with full-screen alert messages
- Supports California Title 24, Part 6 compliance, including OCST applications



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Smart energy management has never been easier than with the Viconics Room Controller for fan coil unit applications. Designed for new construction and retrofit projects, the Viconics Room Controller dramatically decreases project delivery costs by reducing installation, configuration, and commissioning time. No complex software or tools are required to customize functionality to meet the applications requirements. The Room Controllers provide all the advanced features and monitoring functions required by modern building automation systems in a simple compact enclosure.

Dynamic HVAC optimization with AI Eco Mode

Automatically optimize energy consumption while maintaining comfort through advanced thermal, energy, and comfort modeling. Unlike traditional systems with fixed schedules, the Viconics Room Controller can dynamically adapt to changing conditions with self-regulating set points. AI logic can continuously analyze factors like indoor temperature, outdoor weather conditions, and humidity levels to make real-time adjustments to HVAC setpoints. Occupants can easily enable AI Eco Mode through an intuitive touchscreen interface, making it accessible for everyone.



AI Eco Mode is optimizing your space for energy and comfort.

Application Specific & Programmable

The Viconics Room Controller is both application-specific AND programmable. This enables the modification of pre-configured control sequences, or the creation of entirely new control sequences for fan coil applications. Their configurable control sequences, and scheduler functionalities deliver all the flexibility necessary for optimal applications.

Scalable Capabilities Controller

Up to 17 I/Os (Inputs and Outputs) with universal I/O support to cover any kind of application in any room, from standard to advanced functionality. This provides the flexibility to tackle any type of energy efficiency application.

Easy to Use

The commissioning flow has been completely redesigned to make commissioning the product hassle and fault-free, while increasing the speed of loading sites.

Touchscreen with Customizable User Experience

The screen of the Viconics Room Controller offers a customizable user experience with a selection of languages, temperature scales, buttons, and screen themes. With the Uploader Tool or via BACnet, the screen also supports the upload of an image or logo that can be used as the standby screen of the device.

Passive Infrared Motion Sensor

All models are equipped with a discrete passive infrared (PIR) motion sensor as a standard feature. With this sensor, the Viconics Room Controller uses advanced occupancy routines and optional additional Lua scripts to generate automatic energy savings during occupied and unoccupied periods without sacrificing comfort. It can have adjustable sensitivity with up to an 8 m (26.25 ft) detection range.



In addition to the standard PIR sensor, the device can have an optional proximity sensor, detecting hand gestures on the short range that will turn on the screen when the device is on standby.

Automatic Demand Response

The Automatic Demand Respond (ADR) implements the load shedding and pricing applications compatible with regulations for Occupant Controlled Smart Thermostats. The application requires a BACnet command from interfacing equipment to turn on/off the Load Shedding feature. Messaging and confirmations are performed by adjoining equipment having Internet connectivity and then providing the Viconics Room Controller with the BACnet or Modbus command message.

California Title 24 Support

The Viconics Room Controller, when operating with firmware version 3.0 or later, supports compliance with California Title 24, Part 6 Building Energy Efficiency Standards, including Occupant Controlled Smart Thermostat (OCST) applications. Compliance depends on system design, installation, configuration, commissioning, and applicable code requirements.

Zigbee Wireless Sensors

The RF Viconics Room Controller versions support the pairing of several Zigbee wireless sensors. Users will be able to use those wireless sensors to design a fully wireless ecosystem, which will enhance saving and improve operation while maintaining guest comfort and health. All of this done with less effort and reduced costs of installation making it ideal for retrofit jobs.

Communication & Connectivity

Ready for networking communication with a building management system using BACnet (MS/TP, or IP via Wi-Fi), or Modbus RTU (RS-485), as needed.

Integration to Building Management Systems

The Viconics Room Controller can be seamlessly integrated with the following:

- EcoStruxure Building Operation
- Most third-party building management systems that support open protocols
- Direct wired integration to BACnet MS/TP or Modbus RTU
- Wireless integration to BACnet IP via Wi-Fi
- Firmware upgrades over-the wire (BACnet MS/TP) or over-the-air (BACnet IP via Wi-Fi) for easy upgrades in large installations in EcoStruxure Building Operation

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Custom Match Styling to Decor

- 2 color casing options (white and black)
- LED-backlit LCD touchscreen with customizable standby screens
- Optional halo LED backlight that reflects on the wall behind the device
- 23 selectable languages
- Customized home screens for specific use cases



Lights and Blinds Control

The Viconics Room Controller provides an easy to access touchscreen interface where the occupants can control the lights and blinds in the room. The light and blind screens are accessed by swiping left on the home screen, and can control up to 8 lights and 8 blinds.



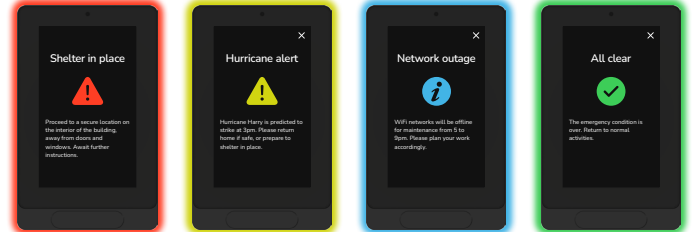
Courtesy Buttons

Located on the home screen, the Do Not Disturb (DND) and Make Up Room (MUR) buttons provide an easy to access interface where the occupants can send a courtesy request to the service staff.



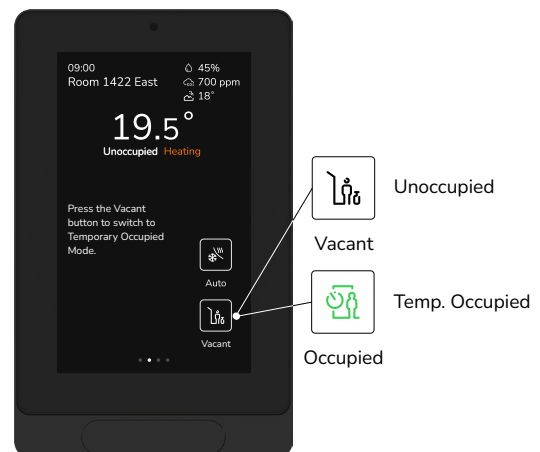
Alerts

Alerts are full-screen messages that are used to notify occupants of an event or information requiring their immediate attention. There are four alert modes, prioritized by severity level and color. The occupant's attention is drawn further to the alerts by the screen increasing to maximum brightness, and for Viconics Room Controllers with the optional halo LED backlight, using the halo as a visual cue.



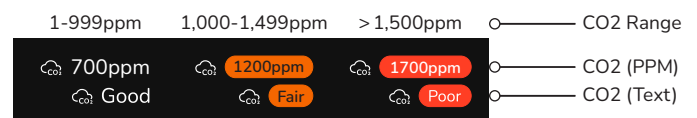
Temporary Occupancy Mode

To improve occupant comfort, Temporary Occupancy Mode provides a way for an occupant to override unoccupied mode. Pressing the Vacant button will switch the system to occupied mode and the setpoint settings will be displayed for occupant adjustment.



CO2 Level Colorful Notification

The CO2 level has a colorful notification functionality to show indoor air quality, with an option to show CO2 level in parts per million (PPM) or with text (Good, Fair, Poor). The optional halo LED backlight is also used as a visual cue during fair and poor CO2 levels by pulsing the halo brightness.



Zero Friction Commissioning Tool

A function of the EcoStruxure Building Commission App, deploy at scale by cloning settings across multiple devices. The tool uses NFC to tap-and-configure user settings, device information, location, and BACnet/Modbus/WiFi networks. Scan devices before installation and power-up. Available for Android and iOS (Apple) phones and tablets, and for PCs using Windows OS through the Microsoft Store.

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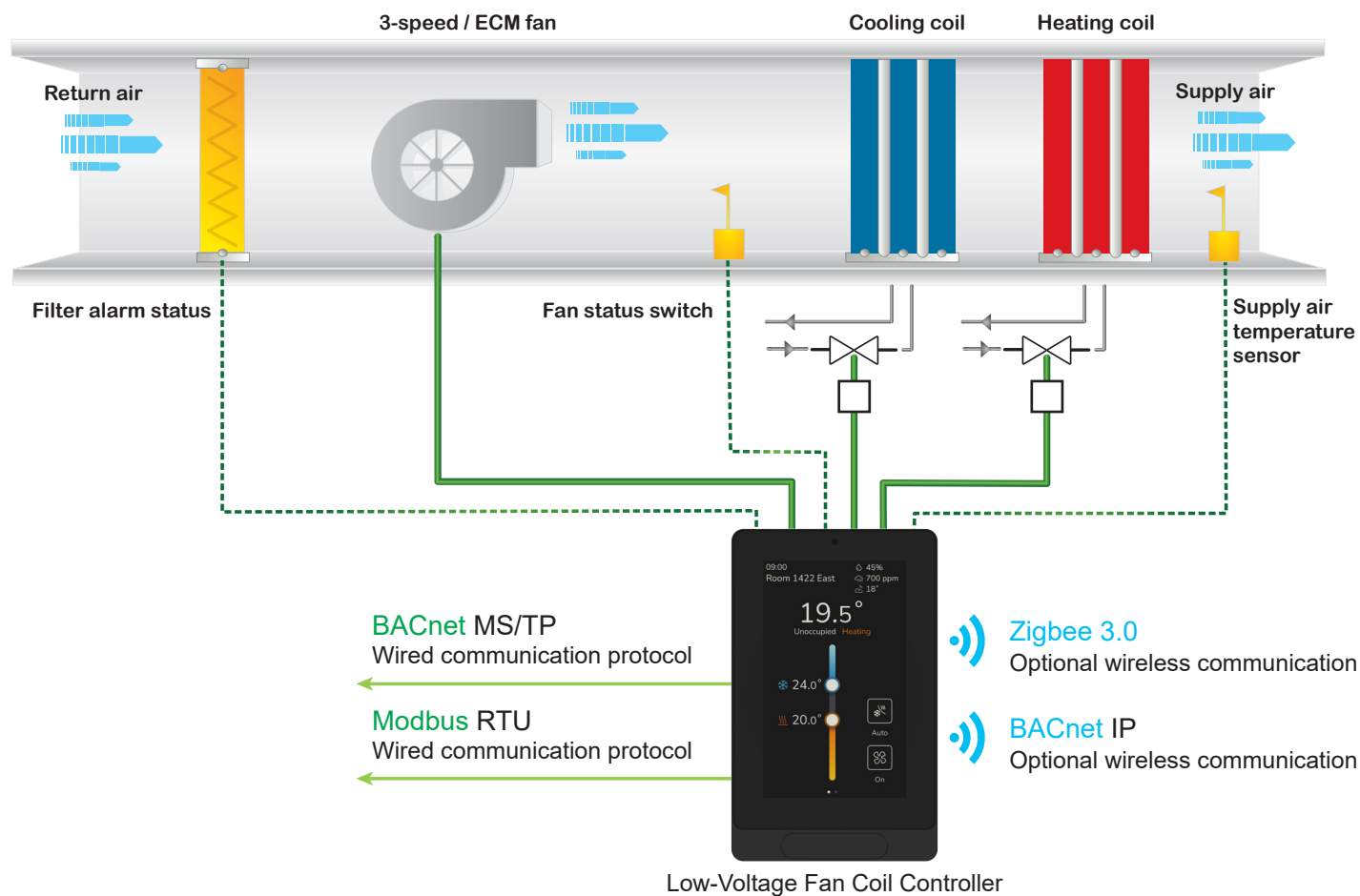
Applications

2 or 4 Pipe Low-Voltage Fan Coil

The Viconics Room Controller can also be used as a Zone Controller to control ON/OFF, floating, or 0 to 10 Vdc heating or cooling terminal equipment such as valves, and other end devices.

The following are typical Zone Controller applications:

- 3 speed or ECM fan
- 2 or 4 pipe FCU with reheat
- Fin-tube radiators
- Cabinet heaters
- Radiant panel heaters
- Electric re-heat zones
- Terminal reheat



For more information on the possible applications for the TRC3500, refer to the Application Guide.

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Part Numbers

The low-voltage fan coil unit and zone control Viconics Room Controller comes with the following part numbers:

Part Number	BACnet/MSTP or Modbus RTU	RF (Wi-Fi + Zigbee)	RH Sensor	Passive IR Sensor	Proximity Sensor	Halo Light	Color	Region
TRC3500B11X-VC	●		●	●			White	Global
TRC3500B11W-VC	●	●	●	●	●	●	White	Global (except NAM)
TRC3500B11WA-VC	●	●	●	●	●	●	White	North America
TRC3500B00X-VC	●		●	●			Black	Global
TRC3500B00W-VC	●	●	●	●	●	●	Black	Global (except NAM)
TRC3500B00WA-VC	●	●	●	●	●	●	Black	North America

Specifications

Electrical	
Input	24 Vac ±15 % recommended, Absolute Max 29.5 Vac, 50/60 Hz or 24 Vdc ±15 %
Peak device consumption	Up to 6 VA with CO ₂ sensor Plus Output Load (max total 94 VA)
Transformer maximum rating	100 VA, 4.17 A, Class 2
Output ratings	5 Digital Outputs (Electronic Relays): 24 Vac or 24 Vdc ±15%, 50/60 Hz, 1.0 Amp. 4 Universal Outputs (Electronic Relays or Analog Outputs – Configurable): 0 - 10 Vdc, 5 mA max
Digital outputs	5 (D1 - D5)
Universal outputs	(Selectable: Digital outputs or Analog outputs) 4 (A1/D6- A4/D9)
Universal inputs	8 (U1- U8)
Real-time clock	7-day internal battery backup
UL file number	E537455
Environment	
Environmental conditions	Indoor use only
Ambient temperature, operating	0 to 50 °C (32 to 122 °F)
Humidity, operating	0 to 95 % RH non-condensing
Ambient temperature, storage	-30 to 50 °C (-22 to 122 °F)
Humidity, storage	0 to 95 % RH non-condensing
Dehumidification setpoint range	30 to 95% R.H.
Occ, unocc and standby cooling setpoint range	12 to 37.5 °C (54 to 100 °F)
Occ, unocc and standby heating setpoint range	4.5 to 32 °C (40 to 90 °F)
Room and outdoor air temperature display range	-40 to 50 °C (-40 to 122 °F)
Proportional band for room temperature control	Cooling and Heating: Default: 1.8°C (3.2°F)
Sensors	
Local and remote temperature sensor	10,000 ohm Type 2 NTC Thermistor
Temperature sensor resolution	± 0.1 °C (± 0.2 °F)
Temperature control accuracy	±0.5 °C (± 0.9 °F) @ 21 °C (70 °F) typical
Humidity sensor accuracy	Reading ranges from 10 - 90 % R.H. non-condensing 10 to 20% precision: 10% 20 to 70% precision: 5% 70 to 90% precision: 10%
Humidity sensor stability	Less than 0.25 % yearly (typical drift)

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Occupancy sensor	Minimum of 60 angular degrees up to a distance of 8 m (26.25 ft), and 120 angular degrees up to a distance of 6 m (19.69 ft) based on a clear line of sight
Antenna (RF version only)	
Maximum gain	2 dBi
Radiation pattern	Omni-Directional
Impedance	50 Ohm
Connector type	U.FL
Wi-Fi interface	2.4GHz/5GHz a/b/g/n/ac module
Antenna type	Omni-Directional, internal
FCC ID	VPYLB2AE
IC ID	772C-LB2AE
Mechanical	
Dimensions	132.8 L x 82.5 W x 27.9 H mm (5.2 L x 3.2 W x 1.1 H in)
Weight	241.4 g (0.5 lb)
LED indicator	Optional Halo (RGB)
Material	
Wire gauge	Power supply: 18 AWG Communications: 22-24 AWG
Enclosure	Polycarbonate
Display	Glass
Glass hardness	≥7H
Ingress protection rating	IP 20
Plastic flame rating	UL94 V-0
FCC ID	2BATG-SXWTRC
IC ID	30486-SXWTRC
Pollution degree	2
Color	White or Black
Surface finish	Matte
Display	
Display resolution	800 x 480 pixels (WVGA)
Display aspect ratio	16:10
Display size	109.2 mm (4.3 in)
Display type	Capacitive 226 Pixels per Inch (PPI)
Color	16 million colors
Display languages	English (Default), French, Spanish, Chinese (Simplified), Russian, Arabic, Czech, Danish, Dutch, Finnish, German, Hebrew, Hungarian, Indonesian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Slovak, Swedish, Turkish
Brightness control	400 cd/m ² , 16 levels
LED lifetime ^a	50,000 hours.
a) The LED lifetime is defined as the time when the LED continues to operate at the ambient temperature 25 °C +/- 2 °C (77 °F +/- 3.6 °F) until the brightness is reduced to 25% of its original value	
Installation	
Placement	Wall mounted in rooms and open spaces, ideally 1.5 meters (5 feet) above the floor surface

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Regulatory Notices



Federal Communications Commission

FCC Rules and Regulations CFR 47:

Part 15, Subpart B, Class B – EMC Radiated and Conducted Emissions for Residential User

Part 15, Subpart C – Intentional Radiators

RSS-247 – Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

FCC ID – 2BATG-SXWTRC

IC – 30486-SXWTRC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.



UL 60730-1 – Standard for Safety Automatic Electrical Controls

UL 60730-2-9 – Particular Requirements for Temperature Sensing Controls

UL 60730-2-13 – Particular Requirements for Humidity Sensing Controls

Listed products for the United States and Canada, Open Class Energy Management Equipment.



UK Conformity Assessed

BS/EN 60730-1 – Standard for Safety Automatic Electrical Controls

BS/EN 60730-2-9 – Particular Requirements for Temperature Sensing Controls

BS/EN 60730-2-13 – Particular Requirements for Humidity Sensing Controls

BS/EN 302 502



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France



International Electrotechnical Commission

IEC 60068-2-27 – Environmental Testing, Test Ea and Guidance: Shock

IEC 60068-2-6 – Environmental testing, Test Fc: Vibration (sinusoidal)



ICES-003, Issue 7, Class B – EMC Radiated and Conducted Emissions for Residential Users



CE - Compliance to European Union (EU)

2014/30/EU – Electromagnetic Compatibility Directive

2014/53/EU – Radio Equipment Directive

EN 60730-1 – Standard for Safety Automatic Electrical Controls

EN 60730-2-9 – Particular Requirements for Temperature Sensing Controls

EN 60730-2-13 – Particular Requirements for Humidity Sensing Controls

ETSI EN 300 328 – EMC standard for radio equipment and services - Part 17:

Specific conditions for Broadband Data Transmission Systems - Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

ETSI EN 301 489-1 – ElectroMagnetic Compatibility (EMC) Standard for Radio Equipment and Services, General Requirements

ETSI EN 301 489-3 – Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

ETSI EN 301 489-17 – Specific Conditions for Broadband Data Transmission Systems

ETSI EN 301 893 – Harmonized European standard which applies to 5 GHz Wireless Access Systems (WAS), including RLAN (Radio Local Area Networks) equipment used in wireless local area networks for high-speed data communication

ETSI EN 302 502 – Wireless Access Systems (WAS); 5,8 GHz fixed broadband data transmitting systems; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

This equipment complies with the rules, of the Official Journal of the European Union, for governing the Self Declaration of the CE Marking for the European Union as specified in the above directive(s).



CAN/CSA-E60730-1 – Automatic Electrical Controls, General Requirements

CAN/CSA-E60730-2-9 – Particular Requirements for Temperature Sensing Controls



This equipment and its packaging carry the waste of electrical and electronic equipment (WEEE) label, in compliance with European Union (EU) Directive 2012/19/EU, governing the disposal and recycling of electrical and electronic equipment in the European community.

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