

# TRC6500

## Viconics Room Controller Rooftop Unit, Heat Pump & Indoor Air Quality

### Specification Sheet

#### Introduction

The all-in-one Viconics Room Controller TRC6500 is a rooftop, heat pump, and indoor air quality 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
- 22 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 CO<sub>2</sub> 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



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Smart energy management has never been easier than with the Viconics Room Controller for rooftop unit, heat pump and indoor air quality. 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.

## 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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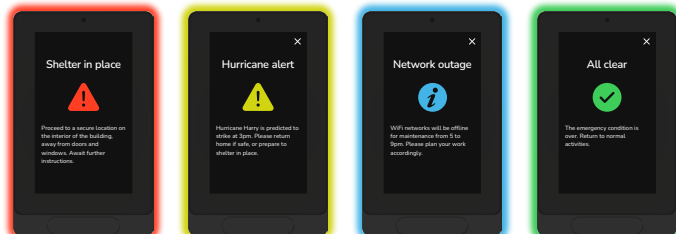
## Custom Match Styling to Decor

- 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
- 22 selectable languages
- Customized home screens for specific use cases



## 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.



## 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.

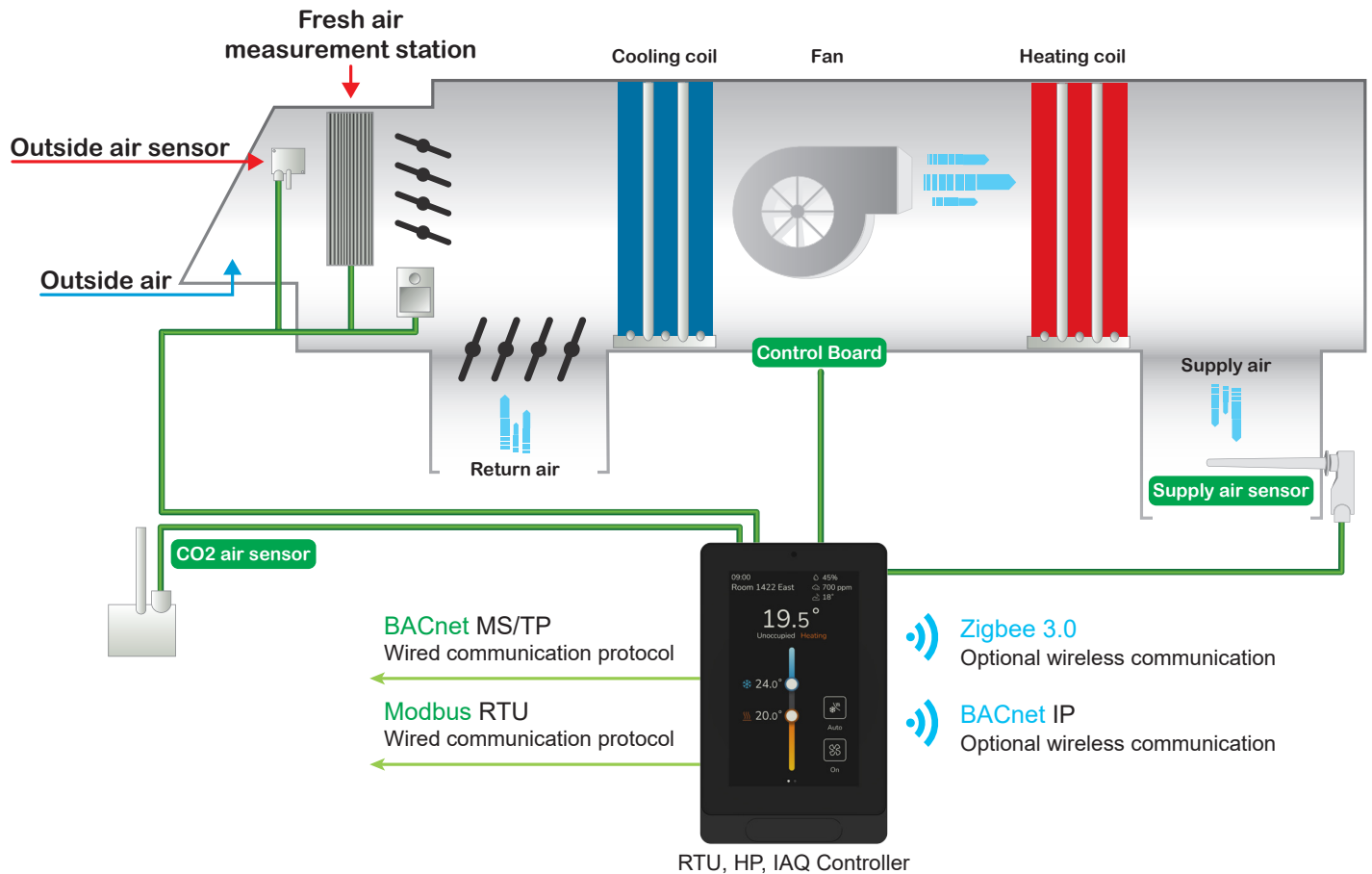


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## Applications

### Indoor Air Quality

Indoor air quality is increasingly becoming a major concern to businesses, building managers, tenants, and employees because of its direct impact on the comfort, well-being, and productivity of the building's occupants. The Viconics Room Controller, along with a CO<sub>2</sub> sensor (remote or installed on the controller), is a cost-effective solution capable of controlling economizer-free cooling, and demand-based ventilation strategies, while providing a fresh air measurement input. When integrated into a building management system, the Room Controller can monitor and verify the CO<sub>2</sub> and fresh air levels, ensuring optimal air quality and energy efficiency.



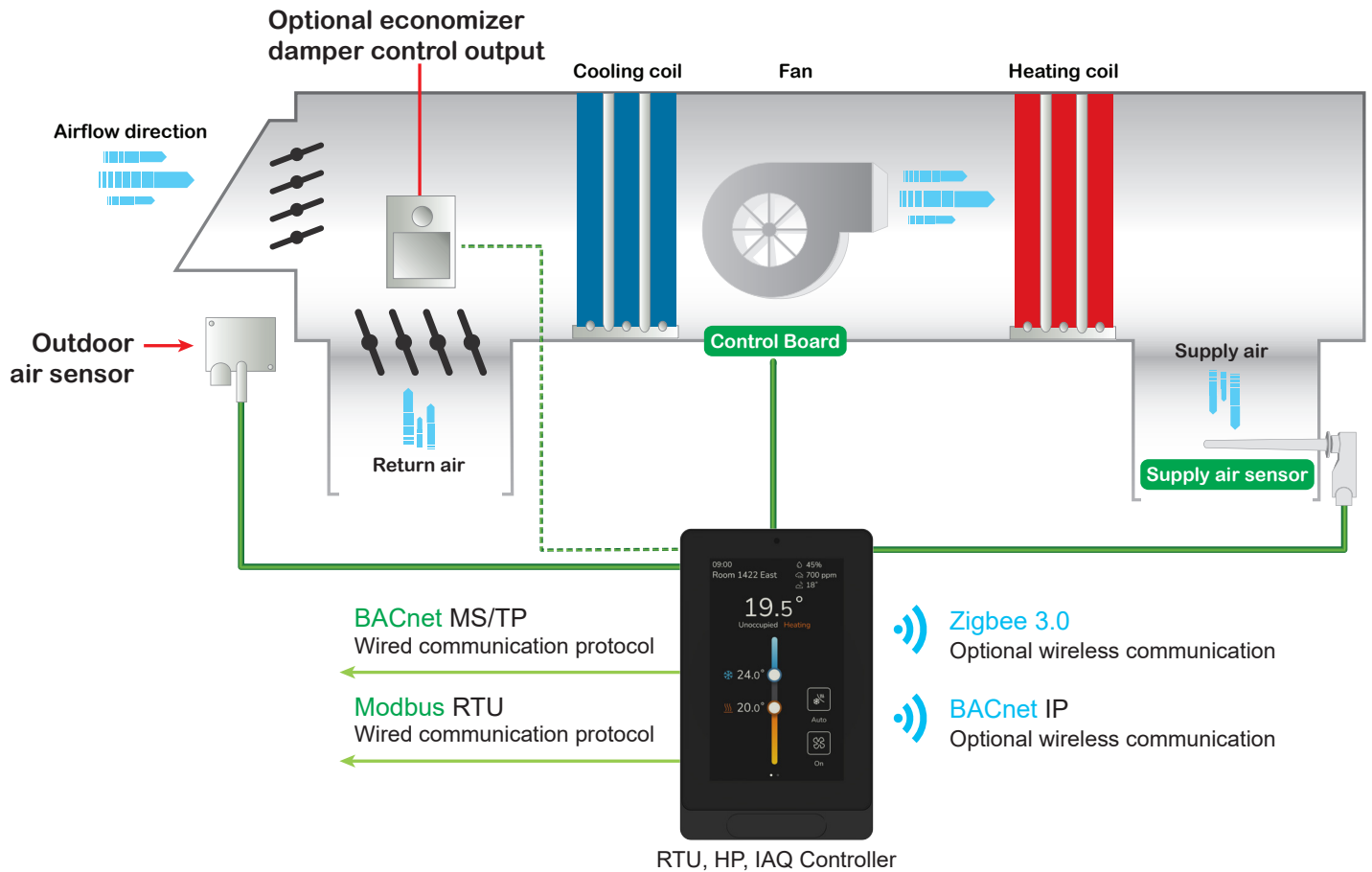
For more information on the possible applications for the TRC6500, refer to the Application Guide.

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## Rooftop Units

The Viconics Room Controller can be configured to manage different types of staged equipment, such as the following:

- 1 Heating stage / 1 Cooling stage
- 2 Heating stages / 2 Cooling stages
- 3 Heating stages / 2 Cooling stages
- Modulating heat / 2 Cooling stages

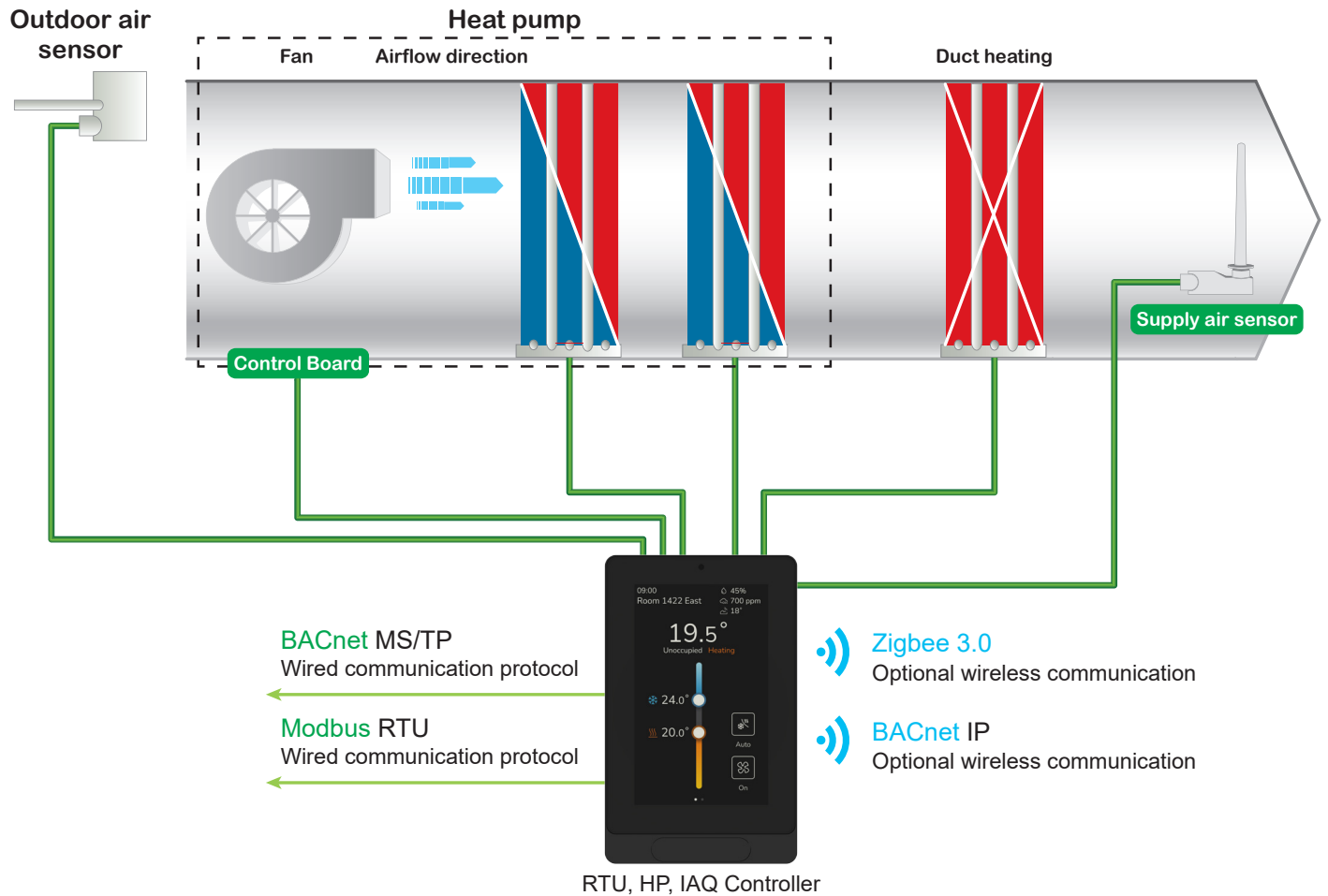


For more information on the possible applications for the TRC6500, refer to the Application Guide.

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## Heat Pump

- Selectable single or dual-stage compressor stages
- High balance point: Locks out auxiliary heating when the outside air temperature is above this value
- Low balance point: Locks out heat pump compressor operation when outside air temperature is below this value
- Comfort/economy mode: In economy mode, heat pump use is maximized before turning on the auxiliary heat source
- Compressor/auxiliary interlock: Adds flexibility by locking out heat pump operation during auxiliary heating to prevent high-pressure trip when the coil is downstream of the auxiliary heat source



For more information on the possible applications for the TRC6500, refer to the Application Guide.

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## Part Numbers

The rooftop unit, heat pump and indoor air quality Viconics Room Controller comes with the following part numbers:

| Part Number     | BACnet/MSTP<br>or Modbus RTU | RF<br>(Wi-Fi + Zigbee) | RH<br>Sensor | Passive<br>IR Sensor | Proximity<br>Sensor | Halo<br>Light | Color | Region              |
|-----------------|------------------------------|------------------------|--------------|----------------------|---------------------|---------------|-------|---------------------|
| TRC6500B11X-VC  | ●                            |                        | ●            | ●                    |                     |               | White | Global              |
| TRC6500B11W-VC  | ●                            | ●                      | ●            | ●                    | ●                   | ●             | White | Global (except NAM) |
| TRC6500B11WA-VC | ●                            | ●                      | ●            | ●                    | ●                   | ●             | White | North America       |
| TRC6500B00X-VC  | ●                            |                        | ●            | ●                    |                     |               | Black | Global              |
| TRC6500B00W-VC  | ●                            | ●                      | ●            | ●                    | ●                   | ●             | Black | Global (except NAM) |
| TRC6500B00WA-VC | ●                            | ●                      | ●            | ●                    | ●                   | ●             | Black | North America       |

## Specifications

| Electrical                                     |                                                                                                                                                                                                               |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input                                          | 24 Vac $\pm 15\%$ recommended, Absolute Max 29.5 Vac, 50/60 Hz or 24 Vdc $\pm 15\%$                                                                                                                           |
| Peak device consumption                        | Up to 6 VA with CO <sub>2</sub> sensor Plus Output Load (max total 94 VA)                                                                                                                                     |
| Transformer maximum rating                     | 100 VA, 4.17 A, Class 2                                                                                                                                                                                       |
| Output ratings                                 | <b>5 Digital Outputs (Electronic Relays):</b><br>24 Vac or 24 Vdc $\pm 15\%$ , 50/60 Hz, 1.0 Amp.<br><b>4 Universal Outputs (Electronic Relays or Analog Outputs – Configurable):</b><br>0 - 10 Vdc, 5 mA max |
| Digital outputs                                | 5 (D1 - D5)                                                                                                                                                                                                   |
| Universal outputs                              | (Selectable: Digital outputs or Analog outputs)<br>4 (A1/D6- A4/D9)                                                                                                                                           |
| Universal inputs                               | 8 (U1- U8)                                                                                                                                                                                                    |
| Real-time clock                                | 7-day internal battery backup                                                                                                                                                                                 |
| UL file number                                 | E527425                                                                                                                                                                                                       |
| 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                  | $\pm 0.1\text{ °C}$ ( $\pm 0.2\text{ °F}$ )                                                                                                                                                                   |
| Temperature control accuracy                   | $\pm 0.5\text{ °C}$ ( $\pm 0.9\text{ °F}$ ) @ 21 °C (70 °F) typical                                                                                                                                           |
| Humidity sensor accuracy                       | Reading ranges from 10 - 90 % R.H. non-condensing<br>10 to 20% precision: 10%<br>20 to 70% precision: 5%<br>70 to 90% precision: 10%                                                                          |
| Humidity sensor stability                      | Less than 0.25 % yearly (typical drift)                                                                                                                                                                       |

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|                                                                                                                                                                                                        |                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Occupancy sensor                                                                                                                                                                                       | Minimum of n angular degrees up to a distance of 8 m (26.25 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 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<br>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                                                                                                                                                                                      | Arabic, Chinese (Simplified), Czech, Danish, Dutch, English (Default), Finnish, French, German, Hebrew, Hungarian, Indonesian, Italian, Japanese, Norwegian, Polish, Portuguese, Russian, Slovak, Spanish, Swedish, Turkish |
| Brightness control                                                                                                                                                                                     | 400 cd/m2, 16 levels                                                                                                                                                                                                        |
| LED lifetime <sup>a</sup>                                                                                                                                                                              | 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  
UL E527425 – Plastics for Additive Manufacturing

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 62479 – Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)  
BS/EN 302 502

| UK<br>CA | UK Representative                                                                   | Manufacturer                                                                                 |
|----------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
|          | Schneider Electric Limited<br>Stafford Park 5<br>Telford, TF3 3BL<br>United Kingdom | Schneider Electric Industries SAS<br>35 rue Joseph Monier<br>Rueil Malmaison 92500<br>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.

[www.viconics.com](http://www.viconics.com)

