

# VT8000 Room Controllers

## VT8350 Specification Sheet

### Low Voltage Fan Coil Unit (FCU) and Zone Control

Firmware release version 2.4

Application specific and programmable Room Controller with customizable screen colors. The VT8350 is a low voltage fan coil and zone Room Controller with a mixed voltage relay pack option. Suitable for commercial and high end hospitality markets.



### Product at a glance

The perfect balance between simplicity and sophistication. Select from a wide variety of configurable screen colors to match decor. Display your own logo and custom messages on screen to reinforce your brand and provide a more enjoyable occupant experience.

- **Interface:** touch screen interface.
- **Aesthetics:** up to ten selectable screen colors.
- **Flexible:** supports upload of custom standby screen image and Lua scripts.
- **Conformity:** conforms to ASHRAE specifications for Green Building Standards and applicable safety, EMC and radio standards.
- **Protocols:** wired BACnet MS/TP or wireless BACnet IP, Modbus RTU, wireless Zigbee Pro, BACnet/IP and email notification via Wi-Fi (requires a Wi-Fi module).
- **Peripherals:** easy to install Zigbee Pro, CO2 sensor or Wi-Fi plug-in modules.
- **Sensors:** CO2, occupancy, motion, light, temperature, relative humidity and water leak sensors.
- **Integration:** wireless connection to Multi-Purpose Manager (MPM).
- **Automatic Demand Response:** load shedding application for demand response.
- **Power:** VC1300/VC2300 mixed voltage relay pack to interface with line-voltage fan coil or other low voltage application.

### Benefits

All models can be equipped with a discrete optional Passive Infrared (PIR) motion sensor. With the embedded motion sensor, the VT8350 uses advanced occupancy routines to generate automatic energy savings during occupied and unoccupied periods without sacrificing comfort.

- Generate automatic energy savings
- Display custom logo
- Interchange between °C/°F
- Suitable for commercial/hospitality markets
- 22 selectable languages



# VT8350 Overview

## Introduction

Smart energy management has never been easier than with the VT8350 Room Controllers for fan coil unit applications. Designed for new construction and retrofit projects, the Room Controllers dramatically decrease project delivery costs by reducing installation, configuration and commissioning time. No complex software or tools are required to customize functionality to meet your applications requirements. The Room Controllers provide all the advanced features and monitoring functions required by modern building automation systems in a simple compact enclosure.

## Application Specific and Programmable

The VT8350 Room Controllers, part of the VT8000 family, are 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, economizer and scheduler functionalities deliver all the flexibility necessary for optimal indoor air quality applications.

## Touch Screen with Customizable User Experience

The touch screen of the VT8350 Room Controller offers a customizable user experience with selection of languages, temperature scales, buttons, and screen colors. Using the 8000 Uploader Tool, it also supports the upload of an image or logo that becomes the default standby screen of the device. Custom messages can also be displayed on-screen using BACnet® objects when the VT8350 is integrated via a BACnet MS/TP, BACnet IP or Modbus RTU system.

### CUSTOM STANDBY SCREEN AND MESSAGES

> Custom  
standby  
screen



> Custom BACnet  
MS/TP or Modbus  
messages



## Optional Passive Infrared Motion Sensor

All models are available with a discrete optional passive infrared (PIR) motion sensor. With this sensor, the VT8350 Room Controller uses advanced occupancy routines and optional additional Lua scripts to generate automatic energy savings during occupied and unoccupied periods without sacrificing comfort.

## Automatic Demand Response

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

## Zigbee Wireless Sensors

The VT8350 Room Controllers support pairing of a number of Zigbee wireless sensors. Facility managers benefit from being able to monitor critical areas and be informed of events of concern in a timely manner which facilitates the maintenance of a safe and efficient operation.

# VT8350 Features

## Product Highlights

The VT8350 Room Controller has the following high level functionality:

- Customizable color digital touch screen interface with multi-language support
- Fully programmable control sequences using scripting
- On board configuration interface utility
- Configurable fan sequence of operation
- Configurable scheduler
- Change of Value (COV) function for BMS integration
- Humidity sensor with on-board dehumidification strategy
- Optional PIR occupancy sensor
- Advanced occupancy and scheduling functions for commercial and lodging applications
- Optional wireless door and window switches (via optional Zigbee Pro) available
- Optional or embedded on-board Zigbee Pro module

## Communication & Connectivity

The VT8350 Room Controller is ready for networked communication with a Building Management system using BACnet™ (MS/TP on board, or IP via Wi-Fi), Zigbee™ Pro, or Modbus RTU (RS-485), as needed.

## Integration to Building Management Systems (BMS)

The VT8350 Room Controller can be seamlessly integrated with the following:

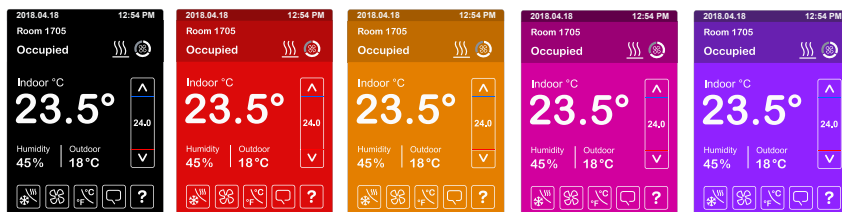
- EcoStruxure™ Building Expert™, EcoStruxure Building Operation and other Schneider Electric systems
- Most third party BMS
- Direct wired integration to BACnet MS/TP and Modbus
- Wireless integration to BACnet IP, Open Building Information Exchange (oBIX) and EcoStruxure Web Services (EWS) via MPM devices
- Wireless integration to BACnet IP via Wi-Fi (requires a Wi-Fi module)

## Custom Match Styling to Decor

- LED-backlit LCD touch screen
- 10 color options for LCD screen
- 22 selectable languages
- Over 12 screens are available for Commercial and Hospitality use cases



10 selectable screen colors



# VT8350 Applications

## Mixed Voltage Applications

The VT8350 Room Controller can be used for mixed-voltage applications by incorporating a VC1300 (110-120 VAC) or VC2300 (220-240 VAC) mixed-voltage relay. For relay pack features, consult the VC1300/VC2300 specification sheet.

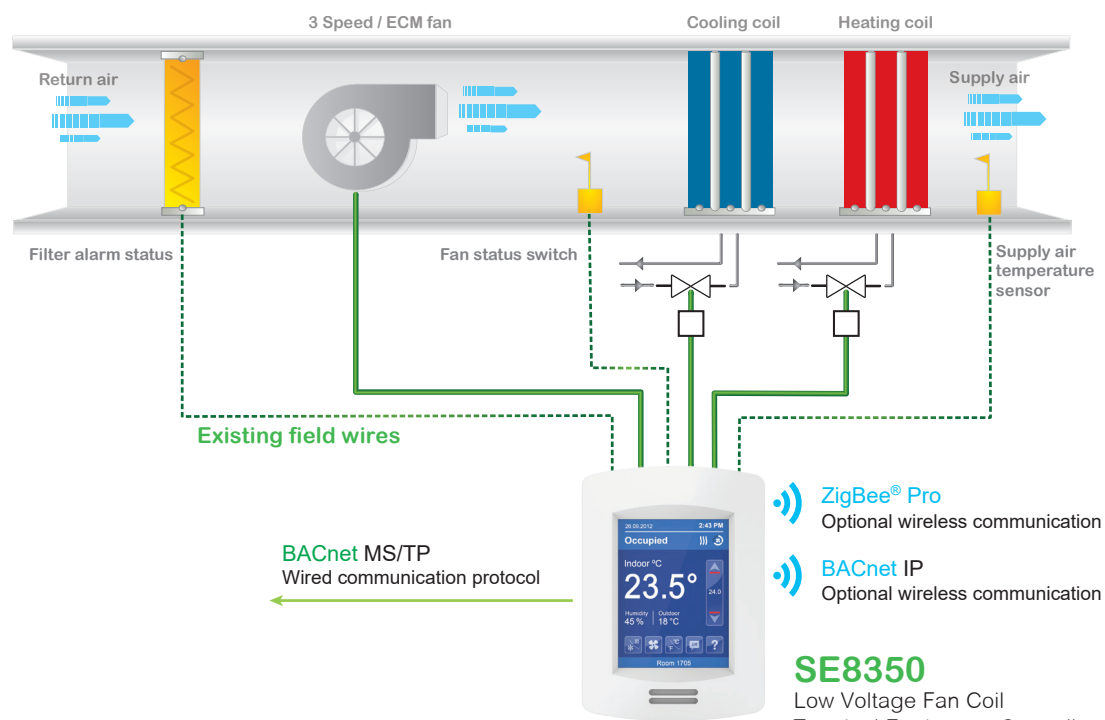
## VT8350 as a Zone Controller

The VT8350 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.

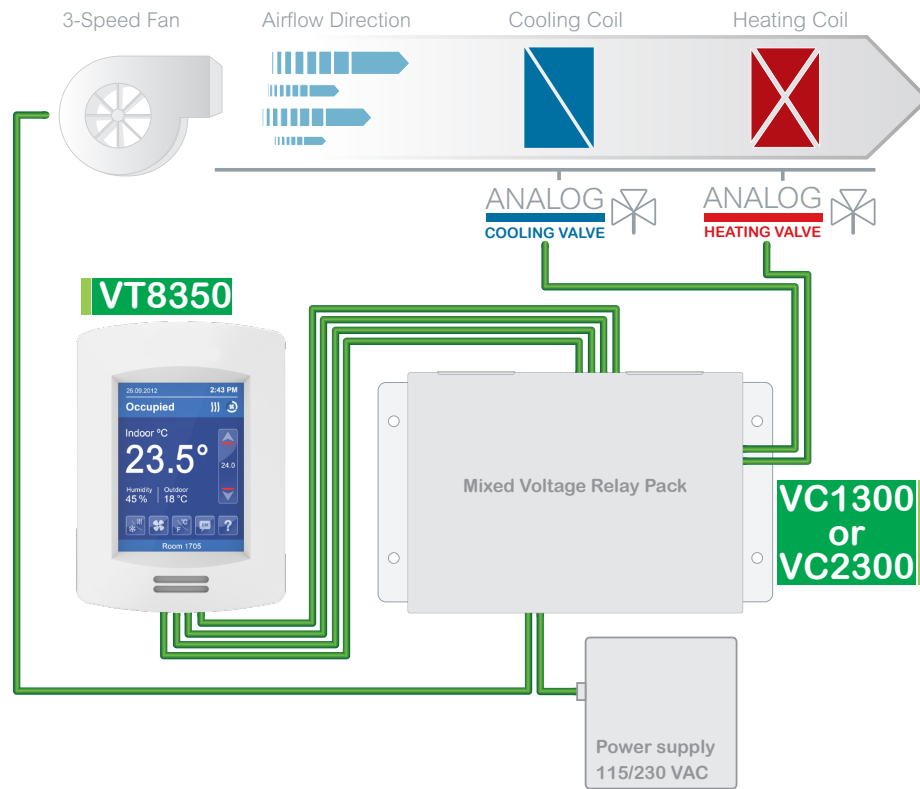
The following are typical Zone Controller applications:

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

## Typical 2 or 4 Pipe Low Voltage Fan Coil Application



## Typical Mixed Voltage Relay Pack Application



# VT8350 Programming

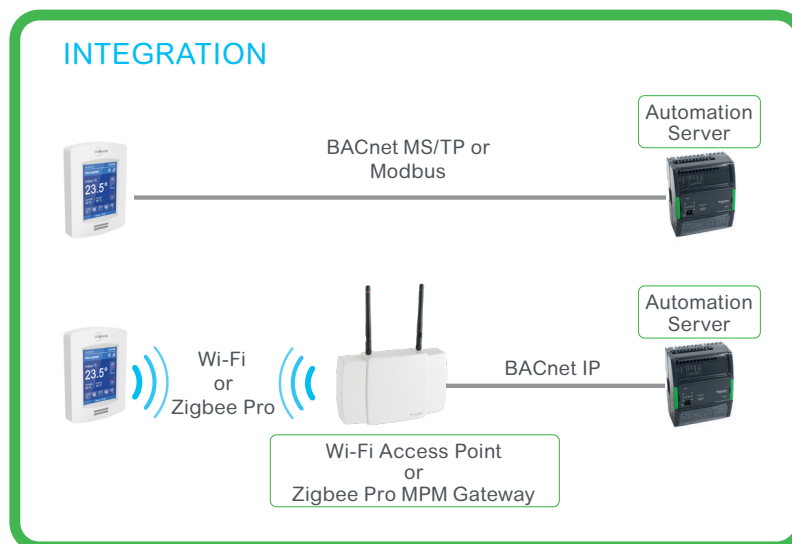
## Programming with Lua: HVAC Applications and Beyond

The VT8350 Room Controllers are programmable using the open source programming language Lua. Although building management systems often use open protocols and standards, their program BACnet objects and scripting features remain proprietary and incompatible with third party devices. The VT8350's use of an open language enables operability with all systems.

Programming can be used to go beyond the pre-configured control sequences of the VT8350 to create customized HVAC applications. It can also be used to comply with specific project requirements and manage other applications, such as lighting and other equipment. Using Lua scripts also enables you to take advantage of the extra inputs and outputs of the VT8350 to manage other devices, such as sensors and relays.

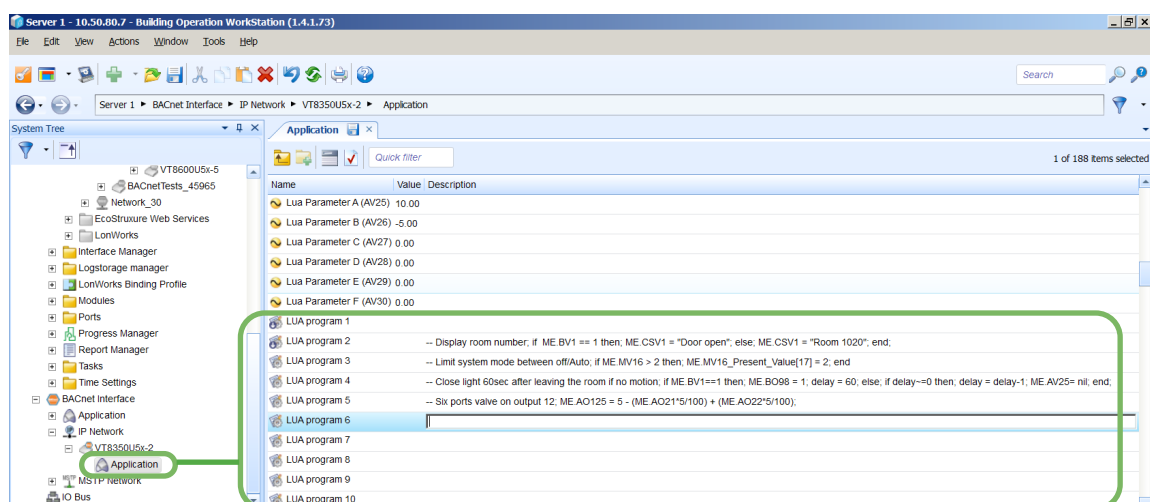
## Loading Lua via BMS

When integrated into a BACnet MS/TP or IP building management system, the VT8350 allows 10 Program BACnet objects able to contain 480 characters each. No special software, license or tool is required.



## Viewing Objects in EcoStruxure Building Operation

All PG Objects of the VT8350 Room Controller can easily be viewed through a Building Management System.



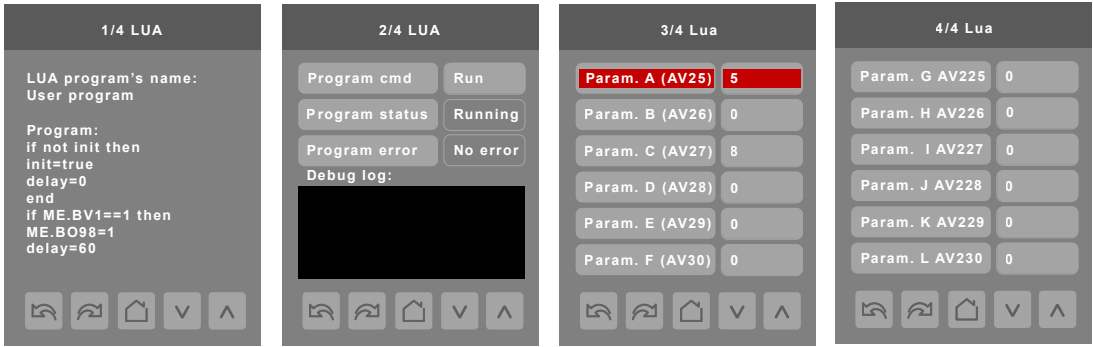
Loading Lua via USB

When there is no BACnet MS/TP, BACnet IP or Modbus integration, a Lua script can be uploaded directly into the VT8350 unit using the 8000 Uploader Tool. Unlike the 10 PG objects used when the unit is integrated via BACnet MS/TP or Modbus, there is only one script, which can contain up to 80kBytes. In addition to Lua scripts, standby screen images and firmware upgrades can also be loaded into the VT8350 using the 8000 Uploader Tool.

Viewing the Lua Status via VT8350 Touch Screen

As shown on the screen captures below, we can:

- View the first few lines of the Lua script (to facilitate identification of which script is running).
- View the program status and any error information.
- Start or stop the script.
- View the status of 12 objects provided for general use by Lua scripts.




# Specifications

## Main Specifications

Item	Description
Dimensions	12cm/4.72in (H) x 8.6cm/3.38in (W) x 2.5cm/1in (D)
Power Requirements	Input: 24VAC $\pm 15\%$ recommended, Absolute Max 29.5VAC, 50/60Hz or 24Vdc $\pm 15\%$ Peak device consumption: up to 6VA with CO2 sensor or Wi-Fi module Plus Output Load (max total 94VA) Transformer maximum rating: 100VA, 4.17 A
Output Ratings	<b>5 DO (Electronic Relays):</b> 24VAC or 24Vdc $\pm 15\%$ , 50/60Hz, 1.0 Amp., in-rush = 3.0 Amps (< 100 ms) <b>4 UO (Electronic Relays or Analog Outputs – Configurable):</b> 0 - 10 Vdc, 5mA maximum, (2 kilo-ohm resistance) Configurable Output Analog/Electronic Relay
Operating Conditions	0 °C to 50 °C (32 °F to 122 °F) 0% to 95% R.H. non-condensing
Storage Conditions	-30 °C to 50 °C (-22 °F to 122 °F) 0% to 95% R.H. non-condensing
Temperature Sensor	Local 10 K NTC type 2 thermistor
Temperature Sensor Resolution	$\pm 0.1$ °C ( $\pm 0.2$ °F)
Temperature Control Accuracy	$\pm 0.5$ °C ( $\pm 0.9$ °F) @ 21 °C (70 °F) typical
Humidity Sensor Precision	Reading range 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)
Dehumidification Setpoint Range	30% to 95% R.H.
Occ, Unocc and Standby Cooling Setpoint Range	12.0 °C to 37.5 °C (54 °F to 100 °F)
Occ, Unocc and Standby Heating Setpoint Range	4.5 °C to 32 °C (40 °F to 90 °F)
Room and Outdoor Air Temperature Display Range	-40 °C to 50 °C (-40 °F to 122 °F)
Proportional Band for Room Temperature Control	Cooling and Heating: Default: 1.8°C (3.2°F)
Analog Inputs	Modulating 0-10 VDC across UI19, UI24 to Common
Binary Inputs	Dry contact across terminals UI16, UI17 to Common
Remote Temperature Sensor	10 K NTC type 2 thermistor UI20, UI22, UI23
Wire Gauge	Power supply: 16 or 18 gauge Communications: 22 gauge typical, 24 gauge minimum
Shipping Weight	0.34 kg (0.75 lb)

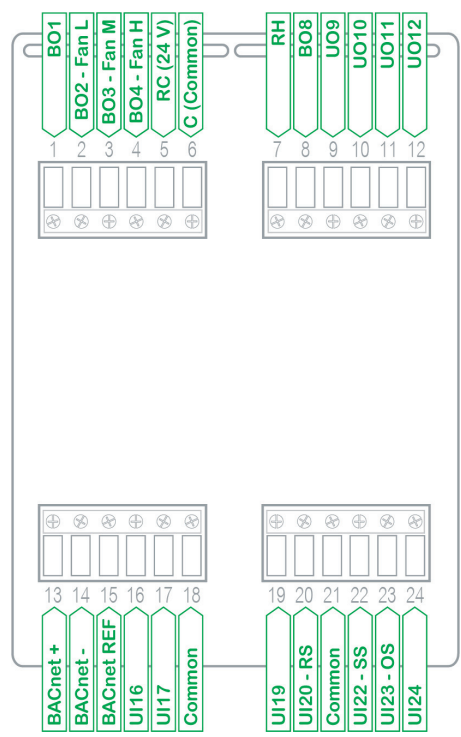
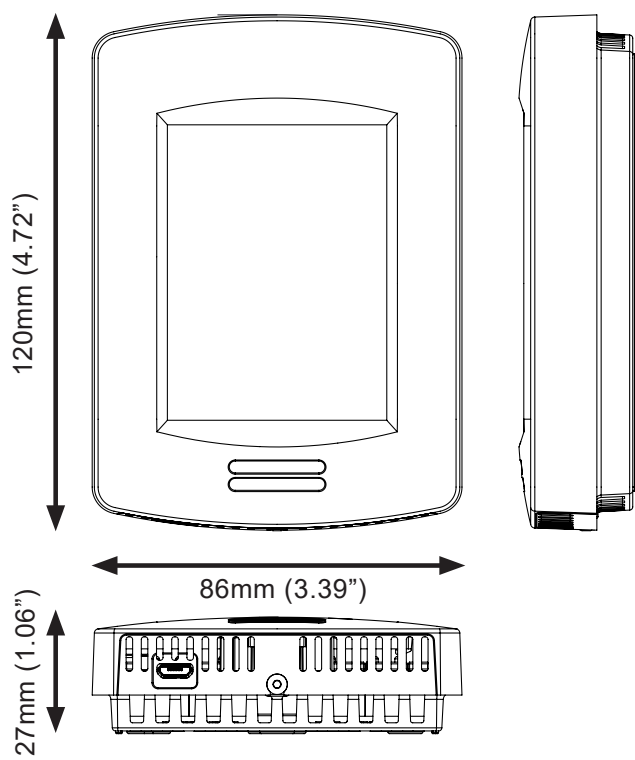


## Safety and Certifications

EMC/ Safety Standards	Radio Standards (For models with Zigbee Radio)
EMC Directive 2014/30/EU	RED 2014/53/EU
FCC 15B Class B	ETSI EN 300 328
ICES-003 Class B	ETSI EN 301 489-1
EN 60730-1	ETSI EN 301 489-17
EN 60730-2-9	FCC Part 15C
EN 60730-2-13	RSS-247
UL 60730-1	
CAN/CSA-E60730-1	
UL 60730-2-9	
CAN/CSA-E60730-2-9	
UL 60730-2-13	
<p>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 , AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.</p> <p>THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.</p> <p>This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:</p> <p>Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help.</p> <p>This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device. In order to comply with FCC/ISED RF Exposure requirements, this device must be installed to provide at least 20 cm separation from the human body at all times.</p> <p>Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : 1) l'appareil ne doit pas produire de brouillage; 2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.</p> <p>Afin de se conformer aux exigences d'exposition RF FCC/ISED, cet appareil doit être installé pour fournir au moins 20 cm de séparation du corps humain en tout temps.</p>	
 <p>Check with your local government for instruction on disposal of this product.</p>	



# Dimensions



# Ordering Information

VT8350U5500BP

**PIR motion sensor**  
-0 = No PIR  
-5 = PIR on board

**ZigBee Pro**  
-P = on board  
-Blank = not on board

There is one location in the back of the device where you can install a plug-in module. This can be either a ZigBee® Pro wireless plug-in module (PN VCM8000V5045P), a CO2 sensor plug-in module (PN VCM8001V5045) or a Wi-Fi plug-in module (PN VCM8002V5031). ONLY ONE DEVICE CAN BE INSTALLED AT A TIME.

Part numbers

VT8350 part numbers	RH sensor	PIR motion sensor	Zigbee built-in
VT8350U5000B	x		
VT8350U5500B	x	x	
VT8350U5500BP	x	x	x

Part numbers

**Communication modules**  
Consult their respective  
datasheets for the latest  
available part numbers and  
features