Room Controller
SE8600 Rooftop Unit, Heat Pump, and Indoor Air Quality Controller

Programmable and application specific room controller with customizable covers and screen colors. The SE8600 is a rooftop, heat pump and indoor air quality room controller suitable for commercial and high end hospitality markets.

Schneider Electric

SE8600 RTU HP IAQ Room Controller Features

The perfect balance between simplicity and sophistication. Select from a wide variety of casings, fascias, and 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.

Introduction

Smart energy management has never been easier than with the SE8600 room controllers for Rooftop Units, Indoor Air Quality, and Heat Pump 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 SE8600 room controllers are both application-specific AND programmable. This enables the modification of pre-configured control sequences, or the creation of entirely new control sequences for HVAC, lighting and other applications. The SE8600 room controllers provide exceptional control of staged heating and cooling equipment such as packaged roof-top units. 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 SE8600 room controller offers a customizable user experience with selection of languages, temperature scales, buttons, and screen colors. Using the Uploader SE8000 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 SE8600 room controller is integrated via a BACnet MS/TP system.

Selectable languages

Select from the following 20 languages: English, French, Spanish, Chinese, Russian, Arabic, Czech, Danish, Dutch, Finnish, German, Hungarian, Indonesian, Italian, Norwegian, Polish, Portuguese, Slovak, Swedish and Turkish.

Optional passive infrared (PIR) motion sensor

All models can be equipped with a discrete optional passive infrared (PIR) motion sensor. With the embedded sensor, the SE8600 room controller uses advanced occupancy routines to generate automatic energy savings during occupied and unoccupied periods without sacrificing occupant comfort.

AT A GLANCE

Custom design

- Color touch screen interface
- 2 casing options
- Multiple fascia options
- 5 selectable screen color schemes
- Supports the upload of a custom standby screen
- Supports the display of custom messages when integrated via BACnet MS/TP
- English, French, Spanish, Chinese, Russian and other selectable languages
- Interchange between °C/°F
- Universal inputs and outputs including:
  - CO2 sensor input
  - Fresh air station input
- Configurable Economizer
- Configurable Scheduler

Options and accessories

- On-board occupancy sensor (optional)
- RH sensor with dehumidification control (optional)
- Can be used with ZigBee Pro wireless sensors
- Free downloadable Uploader SE8000 tool for the upload of Lua Scripts, standby screen images, and firmware upgrades, using a USB/Micro-USB cable
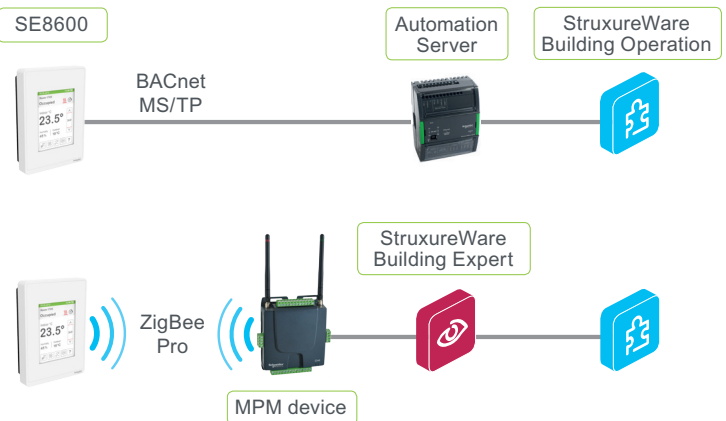
SE8600 RTU HP IAQ Room Controller Features

Product highlights
- Suitable for both commercial and hospitality markets and systems.
- Customizable color digital touch screen interface with multi-language support.
- Fully programmable control sequences using scripting.
- On board configuration interface utility.
- Configurable sequence of operations.
- Configurable Economizer.
- Configurable Scheduler.
- Change of value (COV) function for BMS integration.
- Humidity sensor with on-board dehumidification strategy (model dependent).
- Universal inputs and outputs including a CO2 sensor input, and a Fresh air station input.
- Optional passive infrared (PIR) occupancy sensor.
- Advanced occupancy functions for commercial and lodging applications.
- Optional wireless motion sensors, door and window switches (with optional ZigBee Pro® card) available.

Supported Networking Protocols
- BACnet MS/TP (B) (selectable)
- Modbus (B) (selectable)
- ZigBee Pro wireless mesh network (P) (optional)

Integration to Schneider Electric Systems
- SE8600 can be integrated to SmartStruxure™ Lite, SmartStruxure, and other Schneider Electric systems.
- Wireless integration to MPM devices (P)
- Wireless integration to BACnet IP, oBIX and EWS via MPM devices (P)
- Direct wired integration to BACnet MS/TP (B)
- Direct wired integration to Modbus (B)

INTEGRATION

SE8600 — BACnet MS/TP — Automation Server — StruxureWare Building Operation

SE8600 — ZigBee Pro — MPM device — StruxureWare Building Expert

CUSTOM STANDBY SCREEN & MESSAGES

> Custom standby screen

> Custom BACnet MS/TP messages

Architects and designers can match their decor
- Select from 2 casings and multiple fascias.
- Five screen colors are also selectable through the interface.
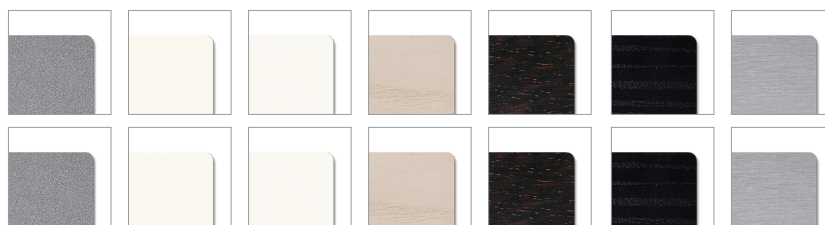
> 5 configurable screen color schemes

> Multiple fascias

	Silver finish	White	Glossy white	Light tan wood	Dark brown wood	Dark black wood	Brushed steel finish

> 2 casings

White

Silver

SE8600 RTU HP IAQ Room Controller Features

Programming the SE8600 with Lua

The SE8600 room controllers are programmable using the open 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 SE8600 room controllers use of an open language enables interopreability with all systems.

Programming with BMS integration

When integrated into a BACnet MS/TP building management system, the SE8600 room controller offers 10 Program BACnet objects able to contain 480 characters each. No special software, license or tool is required.

- BACnet MS/TP integration into BMS
- 10 Program BACnet objects (Lua scripts)
- Each object can contain 480 characters max.

Programming without integration

When there is no BACnet MS/TP integration, a Lua script can be uploaded directly into the SE8600 room controler using the Uploader SE8000 tool. Unlike the 10 PG objects used when the unit is integrated via BACnet MS/TP, there is only one script, which can contain up to 16KB.

- No BACnet MS/TP integration
- 1 Lua script of 16KB (max)
- Uploader SE8000: upload scripts using this PC software tool and a USB/Micro-USB cable

Applications for HVAC and beyond

Programming can be used to go beyond the pre-configured control sequences of the SE8000 room controller 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 enables you to take advantage of the extra inputs and outputs of the SE8000 room controller to manage other devices, such as sensors and relays.
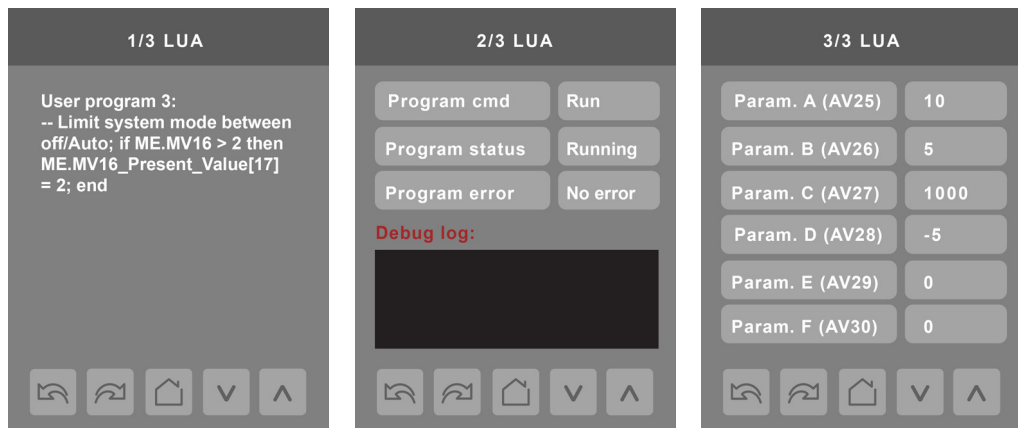
Uploader SE8000

Lua scripts, standby screen images and firmware upgrades can be loaded into the SE8600 room controller using the Uploader SE8000 tool and a USB/Micro-USB cable.

> PG objects of the SE8600 room controller viewed through a BMS
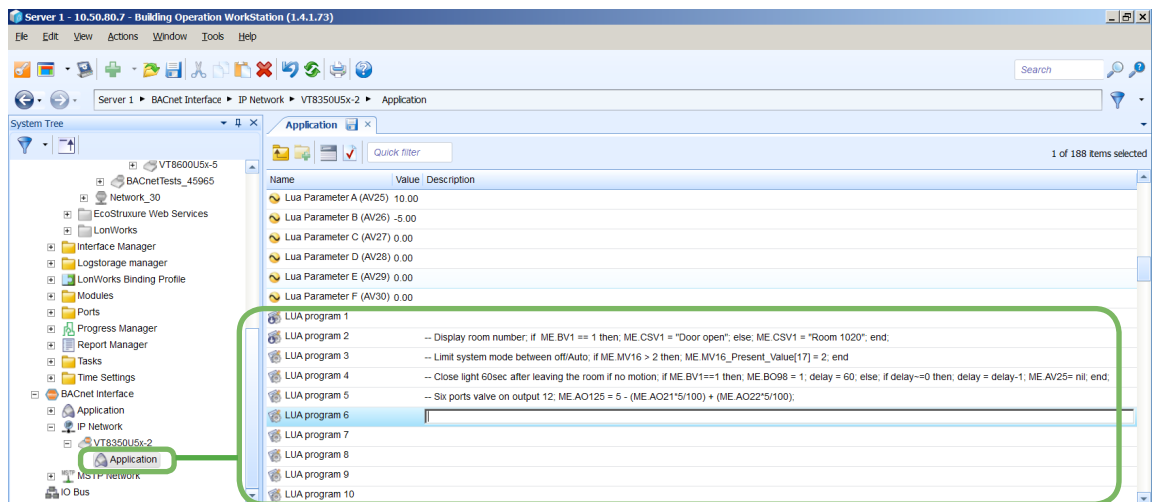
> PG objects of the SE8600 room controller viewed through its touch-screen display

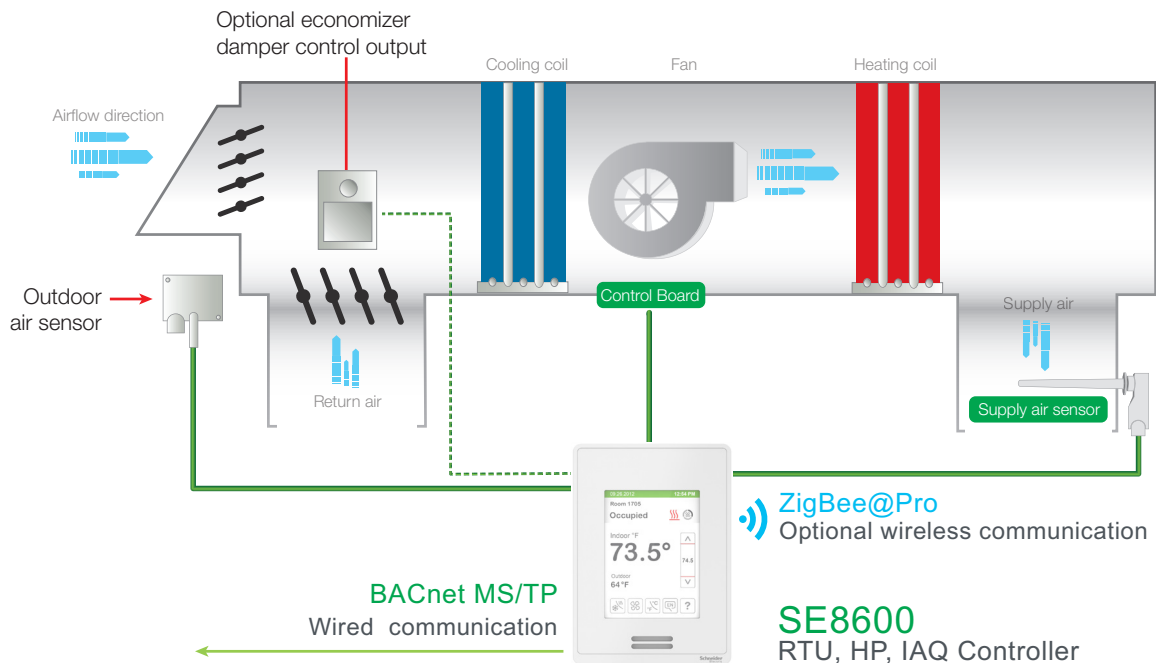# SE8600 RTU HP IAQ Room Controller Features

Roof Top Units

The SE8600 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
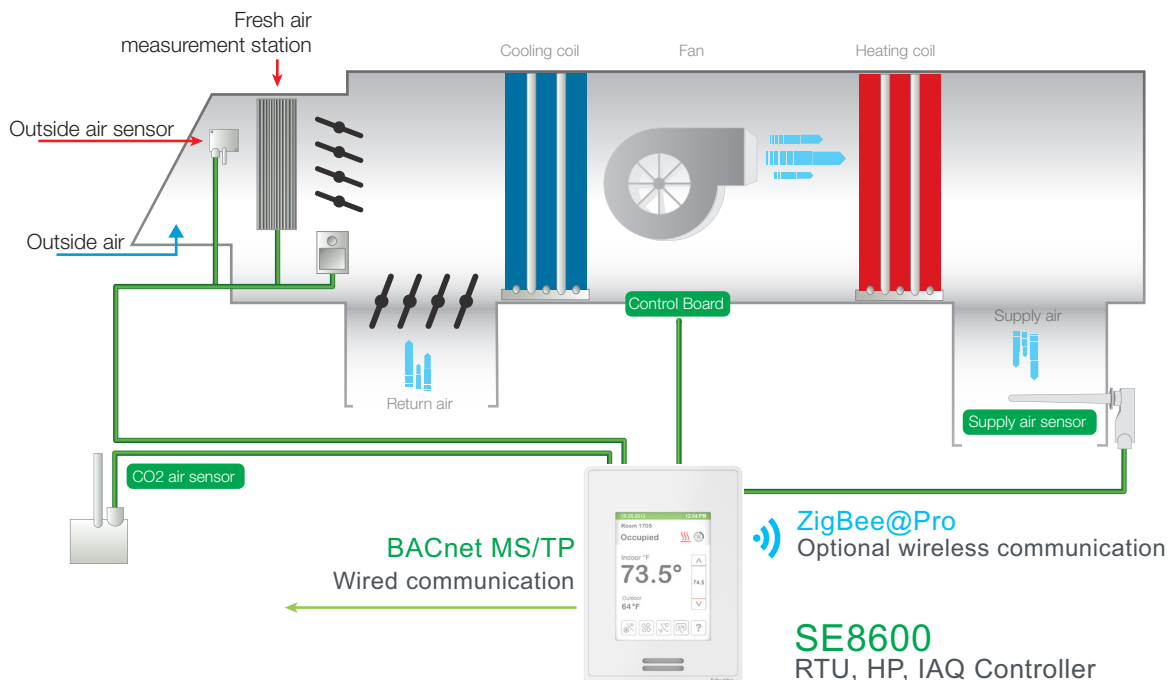- Modulating heat / 2 Cooling stages

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 SE8600 room controller, along with a CO2 sensor, is a cost-effective solution capable of controlling economiser free cooling, and demand-based ventilation strategies, while providing a fresh air measurement input. When integrated to a building management system, the room controller can monitor and verify the CO2 and fresh air levels, ensuring optimal air quality and energy efficiency.

TYPICAL ROOFTOP UNIT APPLICATION

Optional economizer damper control output

Cooling coil

Fan

Heating coil

Airflow direction

Outdoor air sensor

Return air

Control Board

Supply air

Supply air sensor

Room 1705
Occupied
Indoor °F
73.5°
74.6
Outdoor
64°F

ZigBee@Pro
Optional wireless communication

BACnet MS/TP
Wired communication

SE8600
RTU, HP, IAQ Controller

TYPICAL INDOOR AIR QUALITY APPLICATION

Fresh air measurement station

Cooling coil

Fan

Heating coil

Outside air sensor

Outside air

Return air

Control Board

Supply air

Supply air sensor

CO2 air sensor

Room 1705
Occupied
Indoor °F
73.5°
74.6
Outdoor
64°F

ZigBee@Pro
Optional wireless communication

BACnet MS/TP
Wired communication
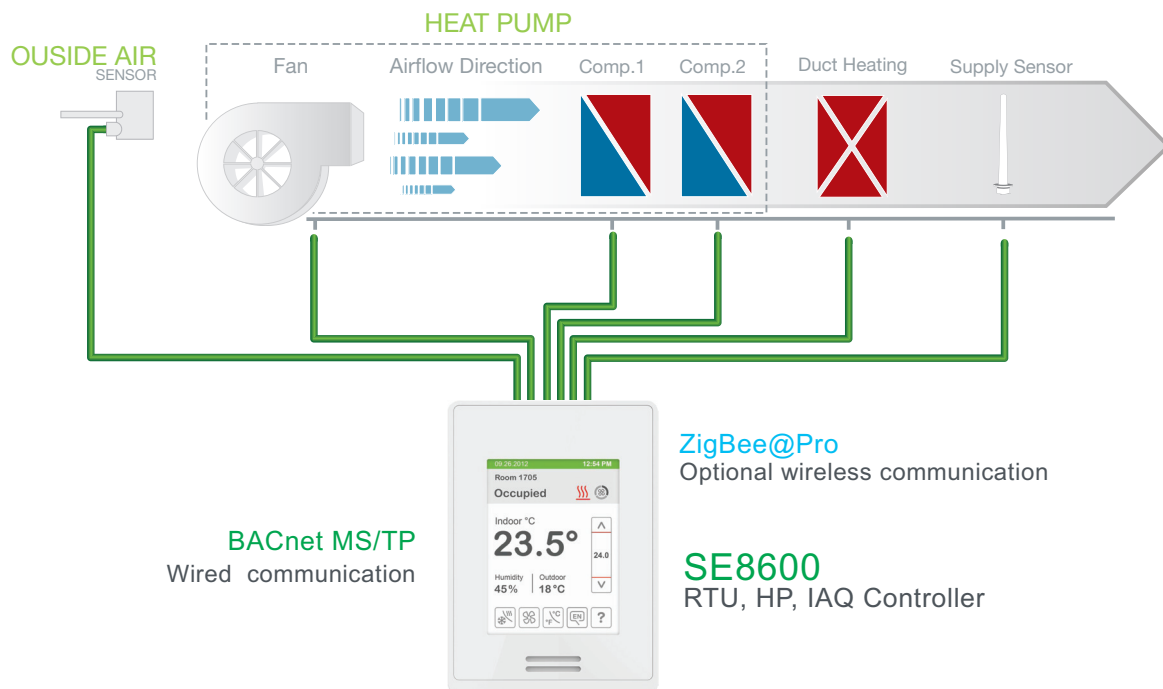
SE8600
RTU, HP, IAQ Controller

SE8600 RTU HP IAQ Room Controller Features

Heat Pump

- Selectable single or dual stage compressor stages.
- High balance point: Locks out auxiliary heating when 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 auxiliary heating.
- 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.

TYPICAL HEAT PUMP APPLICATION

HEAT PUMP

OUSIDE AIR SENSOR

| Fan | Airflow Direction | Comp.1 | Comp.2 | Duct Heating | Supply Sensor |

BACnet MS/TP
Wired communication

Room 1705
Occupied
Indoor °C
23.5°
24.0
Humidity 45% | Outdoor 18 °C

ZigBee@Pro
Optional wireless communication

SE8600
RTU, HP, IAQ Controller

SE8600 RTU HP IAQ Room Controller Specifications

Specifications

SE8600

Dimensions
12cm/4.72in (H) x 8.6cm/3.38in (W) x 2.5cm/1in (D)

Power Requirements
Input: 24Vac ±15%, 50/60Hz
Device consumption: 6 VA
Maximum rating: 100 VA, 4.17 A

Output Ratings
Maximum total output: 94 VA

Relay rating: 28 Vac 50/60Hz, 1.0 Amp., in-rush = 3.0 Amps; pins 1, 2, 3, 4, 5, 8, 9

Digital optomos output rating: 28 Vac 50/60Hz, 0.3 Amp., in-rush = 1.5 Amps; pins 9, 10, 11, 12

Analog: 0 - 10 Vdc in 2 kilo-ohm resistance minimum load (maximum 5 mA); pins 9, 10, 11, 12

Operating Conditions
0 °C - 50 °C (32 °F - 122 °F)
0% - 75% R.H. non-condensing

Storage Conditions
-30 °C - 50 °C (-22 °F - 122 °F)
0% - 75% R.H. non-condensing

Temperature Sensor
Local 10 K NTC type 2 thermistor

Temperature Sensor Resolution
± 0.1 °C (± 0.2 °F)

Temperature Control Accuracy
±0.5 ° C (± 0.9 °F)@ 21 °C (70 °F) typical calibrated

Humidity Sensor and Calibration
Single point calibrated bulk polymer type sensor

Humidity Sensor Precision
Reading range from 10-90 % R.H. non-condensing
10 to 20% precision: 10%
20% to 80% precision: 5%
80% to 90% precision: 10%

Humidity Sensor Stability
Less than 1.0 % yearly (typical drift)

Dehumidification Setpoint Range
30% - 95% R.H.

Occ, Stand-By and Unocc Cooling Setpoint Range
12.0 - 37.5 °C (54 - 100 °F)

Occ, Stand-By and Unocc Heating Setpoint Range
4.5 °C - 32 °C (40 °F - 90 °F)

Room and Outdoor Air Temperature Display Range
-40 °C - 50 °C (-40 °F - 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 to Common

Binary Inputs
Dry contact across terminals UI 16, UI 17 and UI 19 to Common

Remote Temperature Sensor Requirements
10 K NTC type 2 thermistor

Wire Gauge
Power supply: 18 gauge or larger,
Communications: 24 gauge or larger

Approximate Shipping Weight
0.34 kg (0.75 lb)

Safety Standards All Models
LVD Directive 2006/95/EC
EN 60950-1:2006/A2:2013UL 873
CSA C22.2 No. 24-93

EMC Standards All Models
EMC Directive 2004/108/EC
 IEC 61326-1:2005
FCC 15 Subpart B
ICES-003

Radio Standards (Wireless Models)
R&TTE Directive 1999/5/EC
 ETSI EN 300 328 V1.8.1
 ETSI EN 301 489-1 V1.9.2
 ETSI EN 301 328 V1.8.1
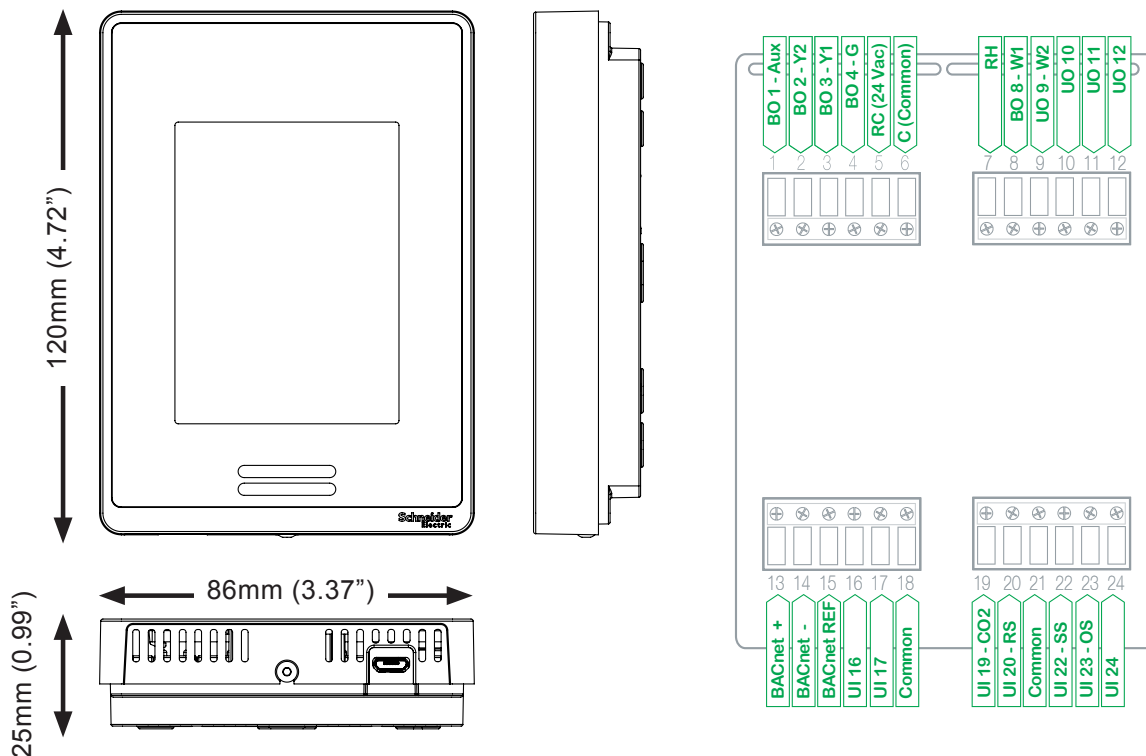FCC 15 Subpart C
RSS 210

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 UNDESIRED OPERATION.

Check with your local government for instruction on disposal of these products.

THIS PRODUCT FOR COMMERCIAL USE ONLY

Dimensions

120mm (4.72")
86mm (3.37")
25mm (0.99")

1	2	3	4	5	6		7	8	9	10	11	12
BO 1 - Aux	BO 2 - Y2	BO 3 - Y1	BO 4 - G	RC (24 Vac)	C (Common)		RH	BO 8 - W1	UO 9 - W2	UO 10	UO 11	UO 12

13	14	15	16	17	18		19	20	21	22	23	24
BACnet +	BACnet -	BACnet REF	UI 16	UI 17	Common		UI 19 - CO2	UI 20 - RS	Common	UI 22 - SS	UI 23 - OS	UI 24

SE8600 RTU HP IAQ Room Controller Ordering Information

Ordering information

SE86 5 0 **U** 5 **B** 0 0

RH sensor and control
-00 = No RH sensor or control
-50 = RH sensor with
     dehumidification control

Compatibility
-U = Universal outputs

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

ZigBee® Pro communication module
(ordered separately)
VCM8000V5045P

Network
-B = BACnet® MS/TP
*(ZigBee Pro communication
module available separately)*

Casing and fascia
-00 = Silver/Silver
-11 = White/White
(Replacement fascias available separately)

Replacement fascias (ordered separately)
FAS-00   Silver
FAS-01   White
FAS-03   Glossy translucent white
FAS-05   Light tan wood
FAS-06   Dark brown wood
FAS-07   Dark black wood
FAS-10   Brushed steel finish

Part numbers

SE8600 part numbers	RH sensor & control	PIR motion sensor	Silver casing & fascia	White casing & fascia
SE8600U0B00			x	
SE8650U0B00	x		x	
SE8600U5B00		x	x	
SE8650U5B00	x	x	x	
SE8600U0B11				x
SE8650U0B11	x			x
SE8600U5B11		x		x
SE8650U5B11	x	x		x

Part numbers

Communication modules and Fascias

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