

SE8300 Series Installation Guide

24 Vac Low Voltage

Commercial and Hotel/Lodging HVAC Fan Coil Applications



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INSTALLATION

Preparation

- Remove the security screw on the bottom of the Terminal Equipment Controller cover.
- Open unit by pulling on bottom side of the Terminal Equipment Controller (Fig. 1).
- Read FCC ID and IC label installed in cover before installing any wireless product.
- Ensure correct side of base faces up.

Location

1. Do not install on outside wall.
2. Do not install in areas with direct heat source.
3. Do not install near any air discharge grill.
4. Do not install in areas exposed to direct sunlight.
5. Ensure Controller has sufficient air circulation.
6. Ensure wall surface is flat and clean.

Installation

1. Pull cables 15 cm (6") out from wall.
2. Align base and mark location of two mounting holes on wall.
3. Install anchors in wall.
4. Insert cable in central hole of base.
5. Insert screws in mounting holes on each side of base.
6. Strip each wire 1/4" (0.6 cm) from end.
7. Insert each wire according to wiring chart (next page).
8. Gently push excess wiring back into hole.
9. Gently align cover to top of base and snap in place from bottom.
10. Install security screw.

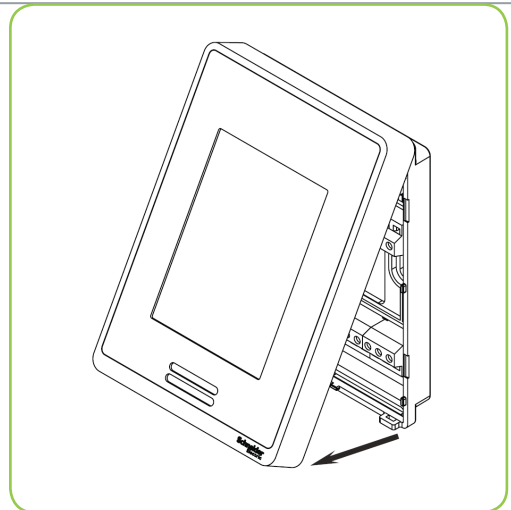


Figure-1 Open the cover

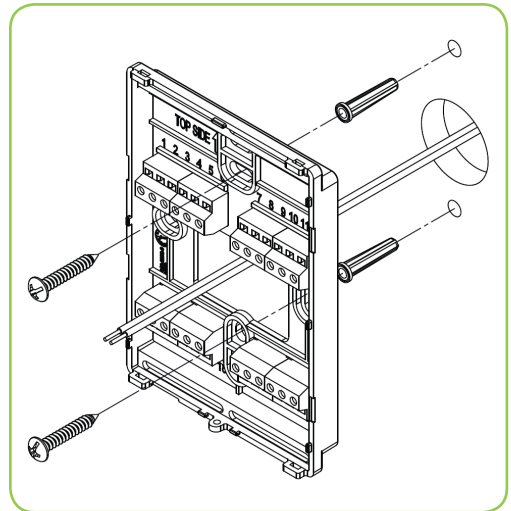


Figure-2 Install the base

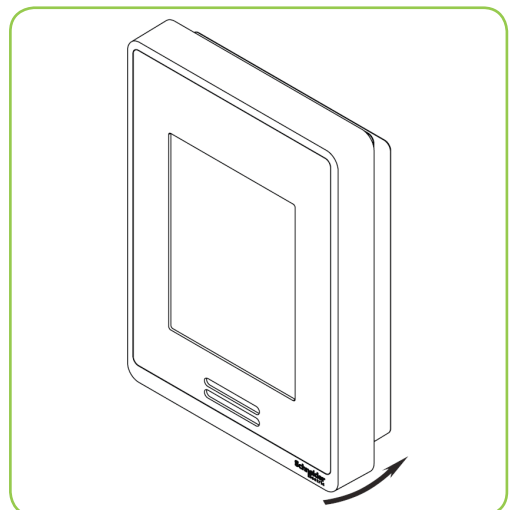


Figure-3 Reinstall cover



- If replacing an existing Line Voltage FCU Controller, label wires before removal of Controller.
- Electronic controls are static sensitive devices. Discharge yourself correctly before manipulating and installing Controller.
- A short circuit or wrong wiring may permanently damage Controller or equipment.
- All SER8300 ® series controls are designed for use as operating controls only and are not safety devices. Tampering with the devices or unintended application of the devices will result in a void of warranty.
- This transmitter must be installed to provide a separation distance of at least 4in (20cm) from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

CONFIGURABLE BI/UI UNIVERSAL INPUTS OVERVIEW

Universal input #16 can be configured for the following binary functions:

1. **(None):** No function will be associated with the input
2. **(Rem NSB):** remote NSB timer clock input. The scheduling will now be set as per the binary input. It provides low cost setback operation via a dry contact.

Contact opened = Occupied

Contact closed = Unoccupied

3. **(Motion NO) and (Motion NC):** Advanced PIR occupancy functions using a normally open (NO) or normally closed (NC) remote PIR motion sensor. Occupancy mode is now set as per applied PIR function and configuration. Application information and examples are available on document: APP-PIR-SE8xxx. This document will provide the installers and system designers with detailed examples on applications, parameter configuration information, sequence of operation, troubleshooting and diagnostic help required for the proper usage of the onboard PIR sensor.

4. **(Window) EMS:** Forces the system to disable any current heating or cooling action by the Terminal Equipment Controller. The mode stays the same and the current setpoints are the same occupied setpoints. Only the outputs are disabled. There is a Door/Window alarm displayed on the Terminal Equipment Controller to indicate to the local tenant that the door/window needs to be closed for cooling or heating to resume. Use NC contact.

Contact opened = System disabled with local Window alarm

Contact closed = System enabled

Universal input #17 can be configured for the following binary functions:

1. **(None):** No function will be associated with the input
2. **(Door Dry) Door contact & Motion detector:** This configuration is only functional if binary input #1 is set to Motion NO or Motion NC or an onboard PIR sensor is used. With this sequence enabled, the occupancy is now dictated through those 2 inputs. Any motion detected will set the zone to occupied status. The zone will remain permanently in occupied mode until the door contact switch opens momentarily. The Terminal Equipment Controller will then go in stand-by mode. If more movements are detected, the occupied mode will resume. While the door is opened, any movements detected by the remote PIR sensor or the onboard PIR sensor will be ignored. Use a Normally Closed contact switching device.

Contact opened = Door opened

Contact closed = Door closed

3. **(RemOVR):** temporary occupancy remote override contact. This function disables the central button override function on the Terminal Equipment Controller. The override function is now controlled by a manual remote momentarily closed contact. When configured in this mode, the input operates in a toggle mode. It is now possible to toggle between unoccupied & occupied setpoints for the amount of time set by parameter (TOccTime)

temporary occupancy time.

4. **(Filter):** a backlit flashing Filter alarm will be displayed on the Terminal Equipment Controller LCD screen when the input is energized. It can be tied to a differential pressure switch that monitor filters

Contact opened = No alarm

Contact closed = Alarm displayed

5. **(Service):** a backlit flashing Service alarm will be displayed on the Terminal Equipment Controller LCD screen when the input is energized. It can be tied in to the AC unit control card, which provides an alarm in case of malfunction.

Contact opened = No alarm

Contact closed = Alarm displayed

Universal input #19 can be configured for the following functions:

1. **(None):** No function will be associated with the input
2. **(COC/NH) Change over dry contact.**
Normally Heat: Used for hot / cold air / water change over switching in 2 pipe systems.

Contact closed = Cold air/water present

Contact opened = Hot air/water present

Only used and valid if system is setup as 2.0. Parameter (Out1Conf) set as 2.0.

3. **(COC/NC) Change over dry contact.**
Normally Cool: Used for hot / cold air / water change over switching in 2 pipe systems.

Contact closed = Hot air/water present

Contact opened = Cold air/water present

Only used and valid if system is setup as 2.0. Parameter (Out1Conf) set as 2.0.

4. **(COS) Change over analog sensor:** Used for hot / cold air / water change over switching in 2 pipe systems.

Only used and valid if system is setup as 2.0. Parameter (Out1Conf) set as 2.0.

If temperature is > 77 °F = Hot air / water present

If temperature is < 75 °F = Cold air / water present

TERMINAL IDENTIFICATION & FUNCTION

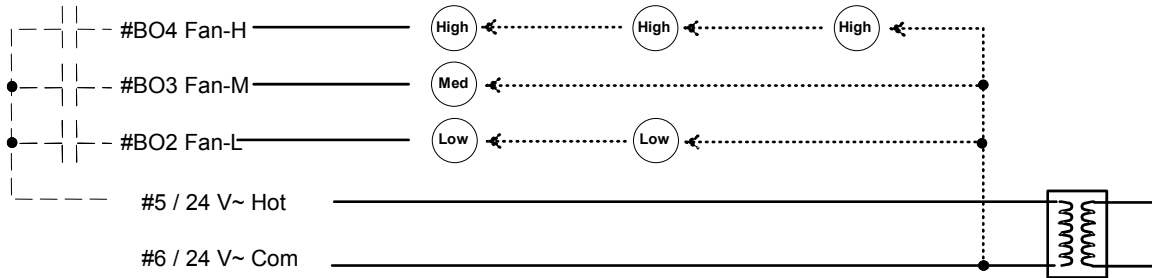
Terminal identification

| SE83xxU Description / Application | Used in applications | | |
|--------------------------------------|---------------------------|-------------------------|-----------------------|
| | 2 & 4 Pipe | 2 & 4 Pipe | 2 & 4 Pipe |
| | Control Type = On/Off | Control Type = Floating | Control Type = Analog |
| Internal Temperature | X | X | X |
| Internal Humidity | Model Dependent | Model Dependent | Model Dependent |
| | | | |
| 1- BO1 | <i>Not used</i> | <i>Not used</i> | <i>Not used</i> |
| 2- BO2 | Fan-L | Fan-L | Fan-L |
| 3- BO3 | Fan-M | Fan-M | Fan-M |
| 4- BO4 | Fan-H | Fan-H | Fan-H |
| 5- RC / 24 V~ Hot | 24 V~ Hot | 24 V~ Hot | 24 V~ Hot |
| 6- C / 24 V~ Com | 24 V~ Com | 24 V~ Com | 24 V~ Com |
| | | | |
| 7- RH | Aux Heat | Aux Heat | Aux Heat |
| 8- BO8 | Aux Heat | Aux Heat | Aux Heat |
| 9- UO9 | Normally Close Cool Valve | Close Cool Valve | <i>Not used</i> |
| 10- UO10 | Normally Close Heat Valve | Close Heat Valve | <i>Not used</i> |
| 11- UO11 | Normally Open Cool Valve | Open Cool Valve | Analog Heat valve |
| 12- UO12 | Normally Open Heat Valve | Open Heat Valve | Analog Cool Valve |
| | | | |
| 13- RS485 + | BACnet MS-TP + | BACnet MS-TP + | BACnet MS-TP + |
| 14- RS485 - | BACnet MS-TP - | BACnet MS-TP - | BACnet MS-TP - |
| 15- RS485 Ref | BACnet MS-TP Ref | BACnet MS-TP Ref | BACnet MS-TP Ref |
| 16- UI16 | UI16 Function | UI16 Function | UI16 Function |
| 17- UI17 | UI17 Function | UI17 Function | UI17 Function |
| 18 Scom | Scom | Scom | Scom |
| | | | |
| 19- UI19 | UI19 Function | UI19 Function | UI19 Function |
| 20- UI20 | Remote Room Sensor | Remote Room Sensor | Remote Room Sensor |
| 21 Scom | Scom | Scom | Scom |
| 22- UI22 | Remote Supply Sensor | Remote Supply Sensor | Remote Supply Sensor |
| 23- UI23 | <i>Not used</i> | <i>Not used</i> | <i>Not used</i> |
| 24- UI24 | <i>Not used</i> | <i>Not used</i> | <i>Not used</i> |

Wiring

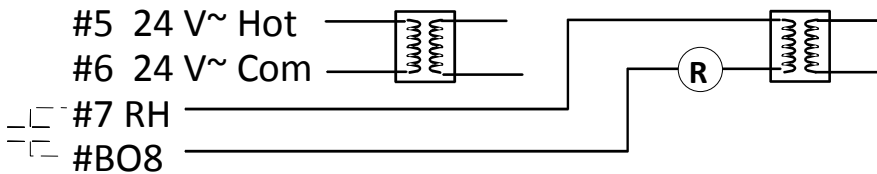
Power & Fan (All models)

- 24 V~ transformer relay
- 3 speed 2 speed Single speed

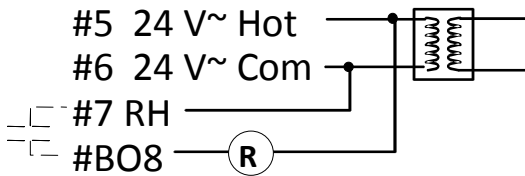


BO8 Auxiliary output wiring

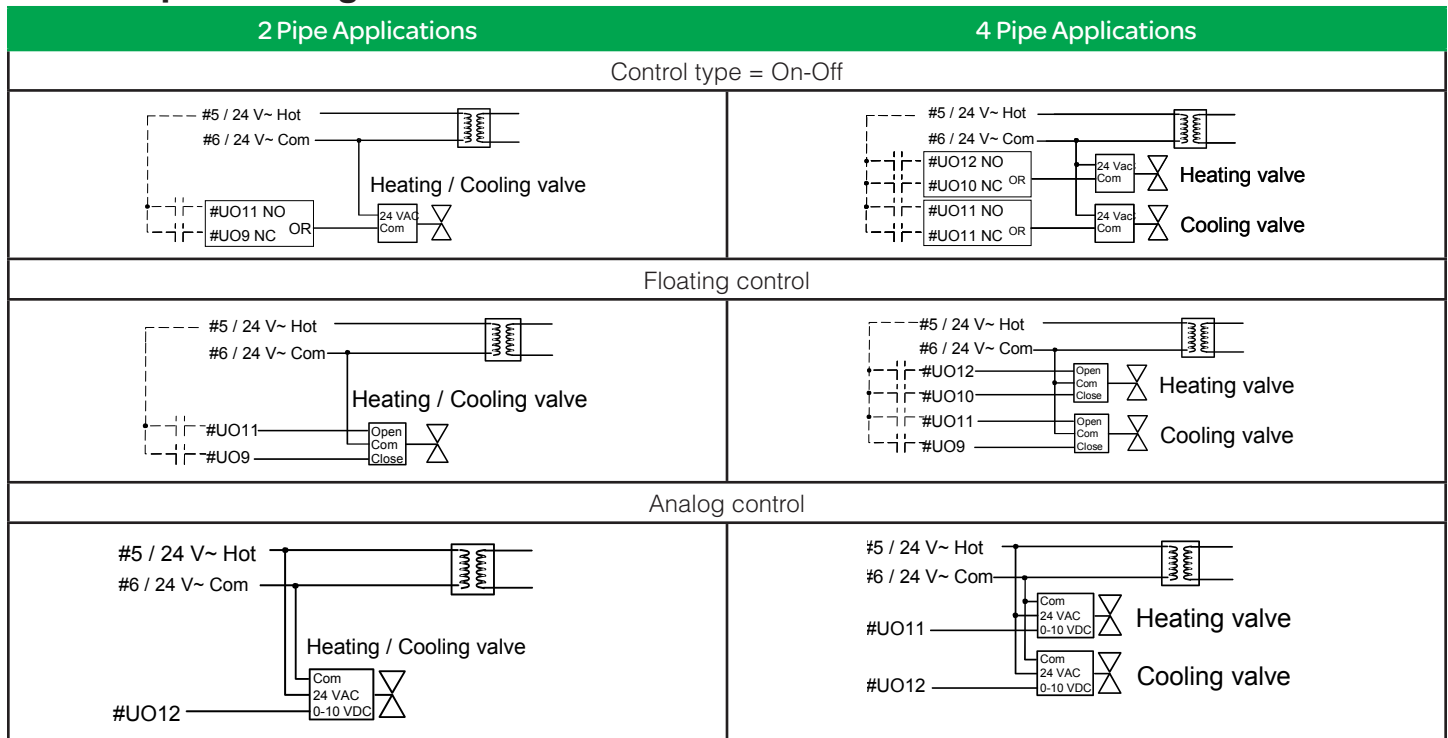
- Dry contact to end device 24 V~ maximum



- 24 VAC power to relay



Main outputs wiring



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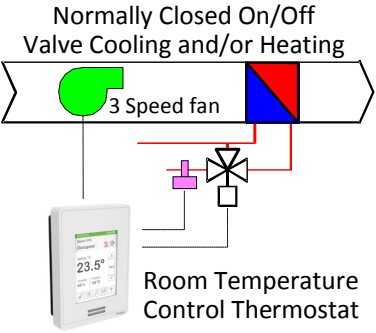
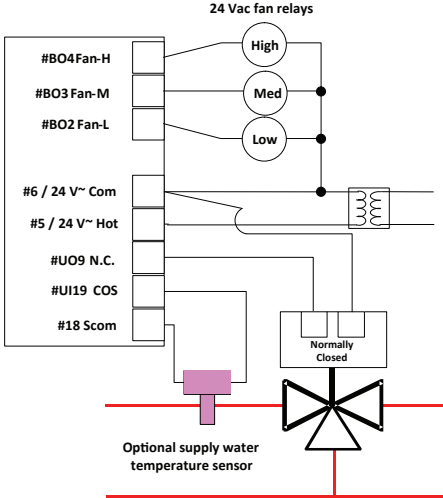
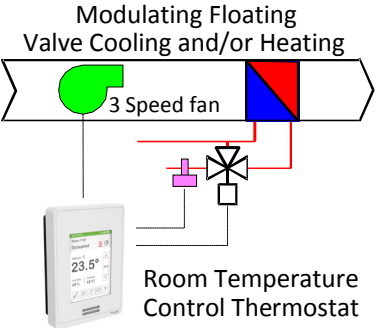
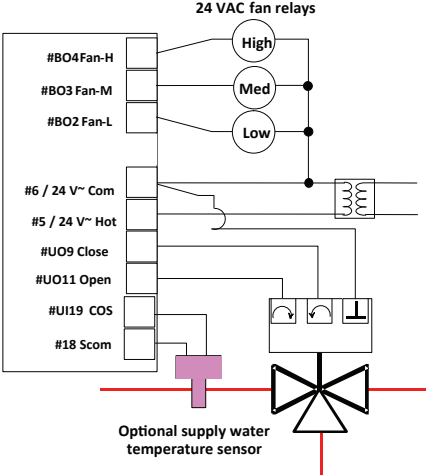
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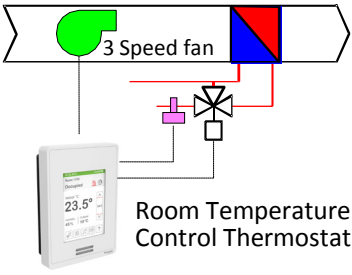
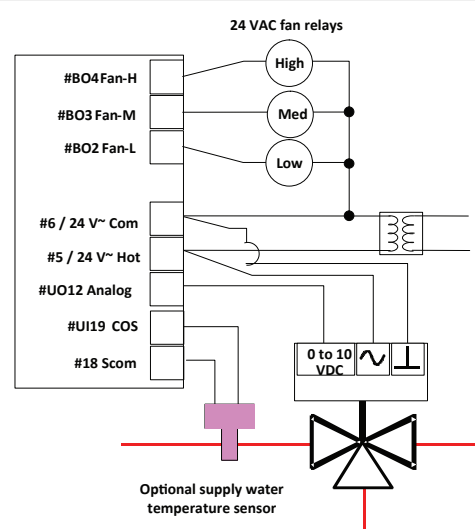
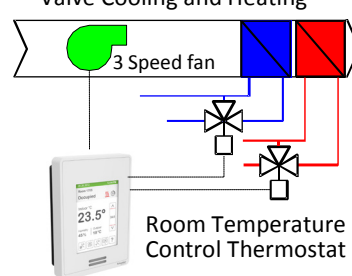
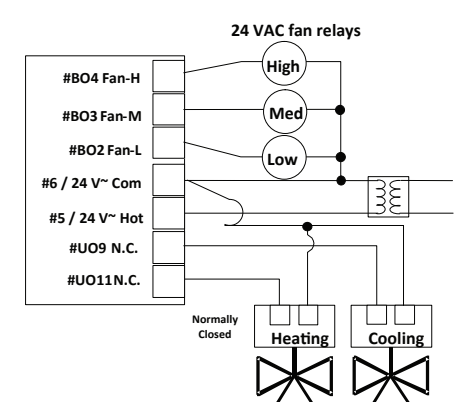
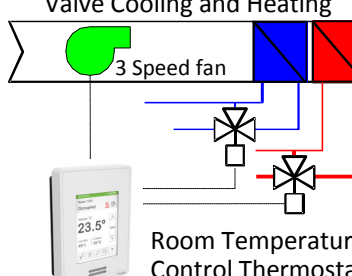
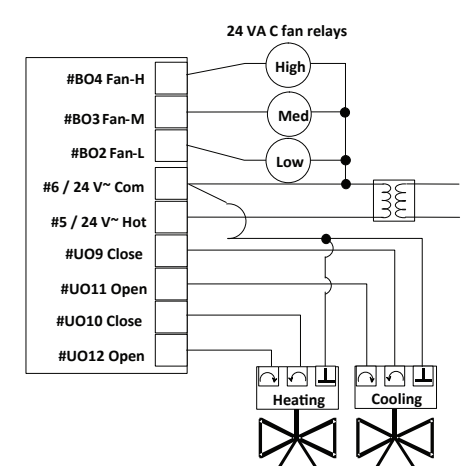
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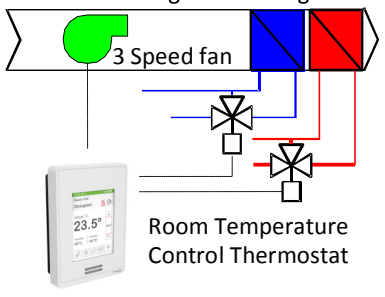
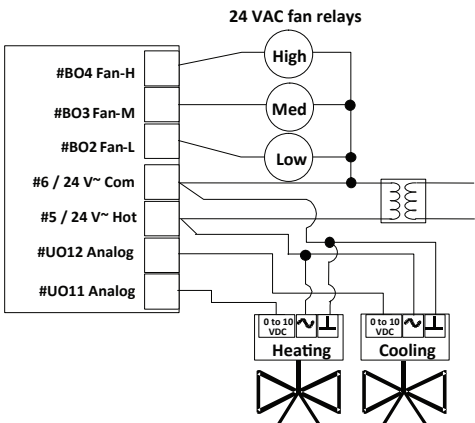
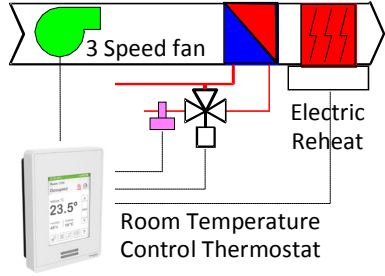
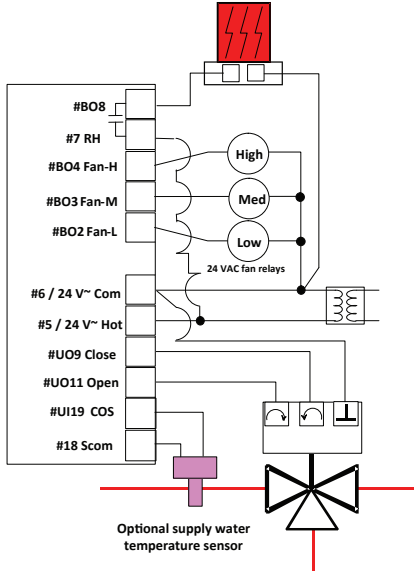
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February 2014

TYPICAL APPLICATIONS

| Schematic | Wiring | Settings |
|---|--|--|
| 2 pipe system cooling and/or heating Control type = On / Off | | |
| <p>Normally Closed On/Off Valve Cooling and/or Heating</p>  <p>Room Temperature Control Thermostat</p> |  <p>24 Vac fan relays</p> <p>Optional supply water temperature sensor</p> | <p>Mandatory</p> <ul style="list-style-type: none"> • Pipe no = 2 pipes • CntrlTyp = On/Off • Fan Menu = 0 (L-M-H) • FL time = N/A <p>If cooling only set::</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only <p>If heating only set:</p> <ul style="list-style-type: none"> • SeqOpera = 1 Heating only <p>If heat / cool auto-changeover with a local water temperature sensor set:</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only • UI3 = COS |
| 2 pipe system cooling and/or heating Control type = Floating | | |
| <p>Modulating Floating Valve Cooling and/or Heating</p>  <p>Room Temperature Control Thermostat</p> |  <p>24 VAC fan relays</p> <p>Optional supply water temperature sensor</p> | <p>Mandatory</p> <ul style="list-style-type: none"> • Pipe no = 2 pipes • CntrlTyp = Floating • Fan Menu = 0 (L-M-H) • FL time = as per actuator <p>If cooling only set:</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only <p>If heating only set:</p> <ul style="list-style-type: none"> • SeqOpera = 1 Heating only <p>If heat / cool auto-changeover with a local water temperature sensor set:</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only • UI3 = COS |

| Schematic | Wiring | Settings |
|--|---|--|
| <p align="center">2 pipe system cooling and/or heating Control type = Analog</p> | | |
| <p align="center">Modulating Analog Valve Cooling and/or Heating</p>  <p align="center">Room Temperature Control Thermostat</p> |  <p align="center">Optional supply water temperature sensor</p> | <p>Mandatory</p> <ul style="list-style-type: none"> • Pipe no = 2 pipes • CntrlTyp = Analog • Fan Menu = 0 (L-M-H) • RA/DA = as per actuator <p>If cooling only set:</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only <p>If heating only set:</p> <ul style="list-style-type: none"> • SeqOpera = 1 Heating only <p>If heat / cool auto-changeover with a local water temperature sensor set:</p> <ul style="list-style-type: none"> • SeqOpera = 0 Cooling only • UI3 = COS |
| <p align="center">4 pipe system cooling and heating Control type = On / Off</p> | | |
| <p align="center">Normally Closed On/Off Valve Cooling and Heating</p>  <p align="center">Room Temperature Control Thermostat</p> |  <p align="center">Normally Closed</p> | <p>Mandatory</p> <ul style="list-style-type: none"> • Pipe no = 4 pipes • CntrlTyp = On/Off • Fan Menu = 0 (L-M-H) • SeqOpera = 4 Cool/Heat |
| <p align="center">4 pipe system cooling and heating Control type = Floating</p> | | |
| <p align="center">Modulating Floating Valve Cooling and Heating</p>  <p align="center">Room Temperature Control Thermostat</p> |  | <p>Mandatory</p> <ul style="list-style-type: none"> • Pipe no = 4 pipes • CntrlTyp = Floating • Fan Menu = 0 (L-M-H) • FL time = as per actuator • SeqOpera = 4 Cool/Heat |

| Schematic | Wiring | Settings |
|--|--|--|
| <p align="center">4 pipe system cooling and heating Control type = Analog</p> | | |
| <p align="center">Modulating Analog Valve Cooling and Heating</p>  <p align="center">Room Temperature Control Thermostat</p> | <p align="center">24 VAC fan relays</p>  | <p>Mandatory</p> <ul style="list-style-type: none"> • Pipe no = 4 pipes • CntrlTyp = Analog • Fan Menu = 0 (L-M-H) • RA/DA = as per actuator • SeqOpera = 4 Cool/Heat |
| <p align="center">2 pipe system cooling or heating with reheat Control type = Floating</p> | | |
| <p align="center">Modulating Floating Valve Cooling and/or Heating</p>  <p align="center">Room Temperature Control Thermostat</p> |  | <p>Mandatory</p> <ul style="list-style-type: none"> • Pipe no = 2 pipes • CntrlTyp = Floating • Fan Menu = 0 (L-M-H) • FL time = as per actuator • SeqOpera = 2 Cool/Reheat • UI3 = COS |

REMOTE SENSOR ACCESSORIES

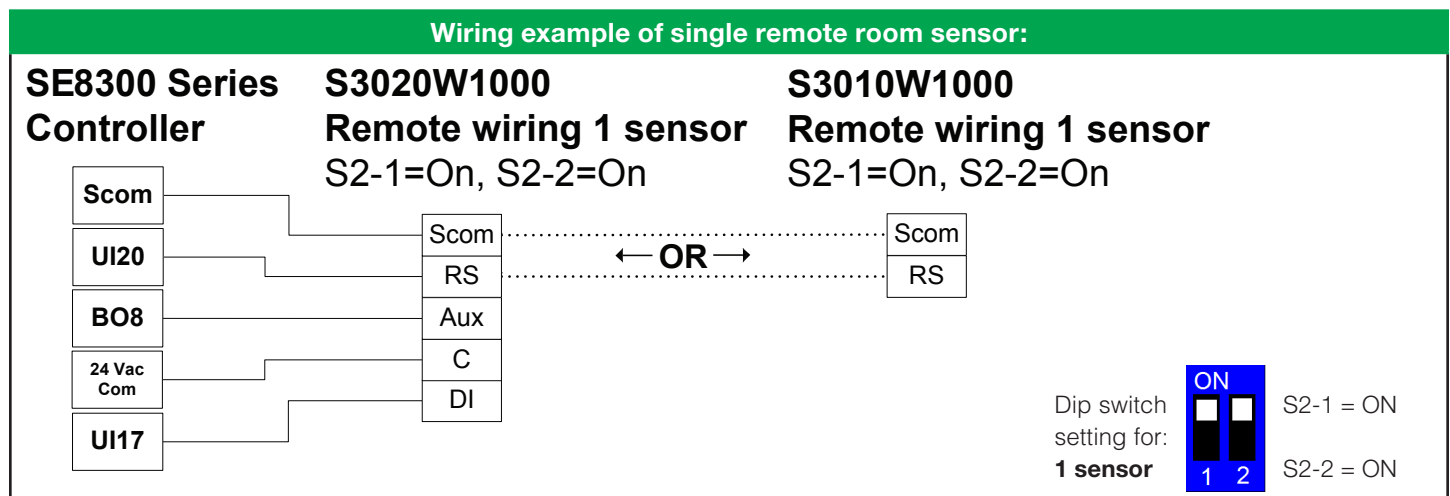
| Model no. | Description |
|------------|---|
| S3010W1000 | Wall mounted temperature sensor |
| S3020W1000 | Wall mounted temperature sensor with override button and occupancy status LED |
| S2060A1000 | Averaging temperature sensor |
| S2000D1000 | Duct mounted temperature sensor |

Note:
If one or multiple sensor(s) is/are connected into the RS terminal, the internal temperature sensor is automatically disabled. Disconnecting the sensor(s) in RS terminal will re-activate the internal sensor.

Remote mount temperature sensors inputs use 10K type 2 NTC thermistors.

Features:

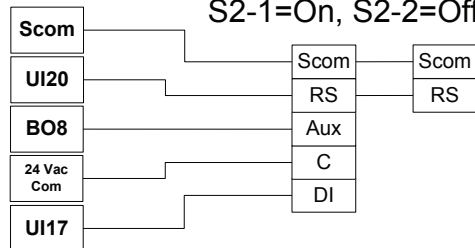
- Each sensor can be configured for various averaging combinations
- Optional occupancy led
- Optional override key



Wiring examples of 2 remote room sensors for averaging applications:

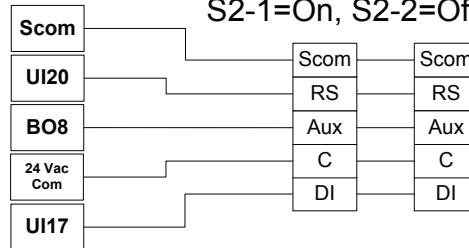
SE8300 Series Controller 1 x S3010W1000 and 1 x S3020W1000 Remote wiring 2 sensors

S2-1=On, S2-2=Off



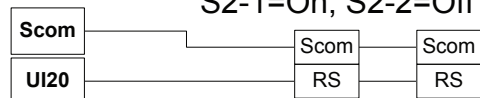
SE8300 Series Controller 2 x S3020W1000 Remote wiring 2 sensors

S2-1=On, S2-2=Off



SE8300 Series Controller 2 x S3010W1000 Remote wiring 2 sensors

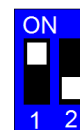
S2-1=On, S2-2=Off



Notes for averaging applications:

- S3010W1000 and S3020W1000 can be mixed matched.
- S3010W1000 and S3020W1000 are to be wired in parallel.
- Respect the dip switch setting in each remote sensor.

Dip switch setting for:
2 sensors

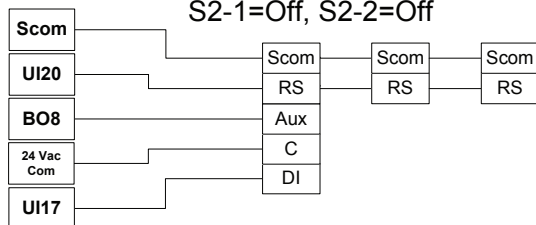


S2-1 = ON
S2-2 = OFF

Wiring examples of 3 remote room sensors for averaging applications:

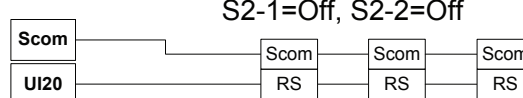
SE8300 Series Controller 2 x S3010W1000 and 1 x S3020W1000 Remote wiring 3 sensors

S2-1=Off, S2-2=Off



SE8300 Series Controller 3 x S3010W1000 Remote wiring 3 sensors

S2-1=Off, S2-2=Off



Dip switch setting for:
3 sensors



S2-1 = OFF
S2-2 = OFF

Temperature vs. resistance chart for 10 Kohm NTC thermistor (R25°C = 10KΩ±3%, B25/85°C = 3975K±1.5%)

| °C | °F | Kohm |
|-----|-----|----------|
| -40 | -40 | 324.3197 |
| -35 | -31 | 234.4009 |
| -30 | -22 | 171.3474 |
| -25 | -13 | 126.6109 |

| °C | °F | Kohm |
|-----|----|---------|
| -20 | -4 | 94.5149 |
| -15 | 5 | 71.2430 |
| -10 | 14 | 54.1988 |
| -5 | 23 | 41.5956 |

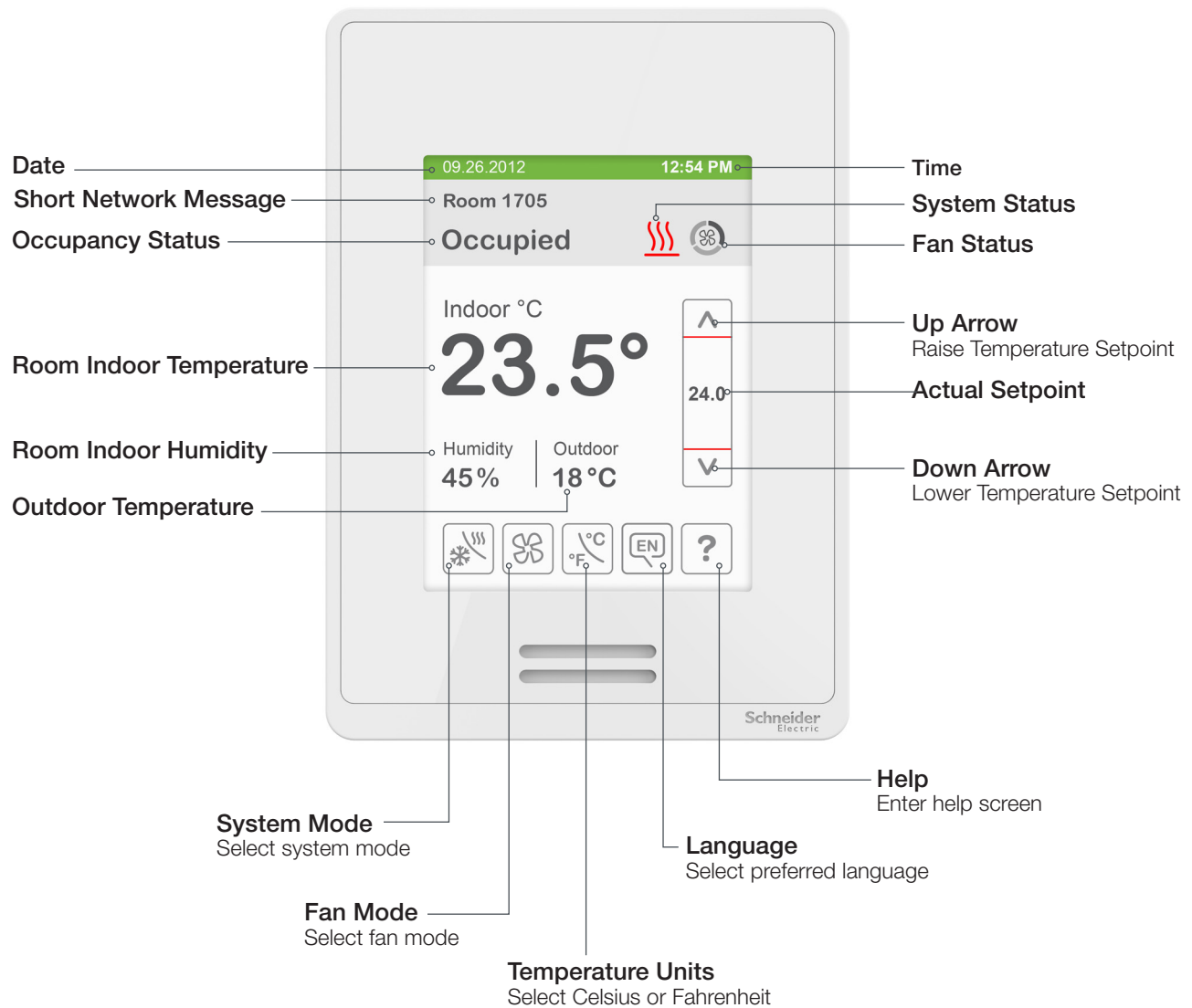
| °C | °F | Kohm |
|----|----|---------|
| 0 | 32 | 32.1910 |
| 5 | 41 | 25.1119 |
| 10 | 50 | 19.7390 |
| 15 | 59 | 15.6286 |

| °C | °F | Kohm |
|----|----|---------|
| 20 | 68 | 12.4601 |
| 25 | 77 | 10.0000 |
| 30 | 86 | 8.0694 |
| 35 | 95 | 6.5499 |

| °C | °F | Kohm |
|----|-----|--------|
| 40 | 104 | 5.3467 |
| 45 | 113 | 4.3881 |
| 50 | 122 | 3.6202 |
| 55 | 131 | 3.0016 |

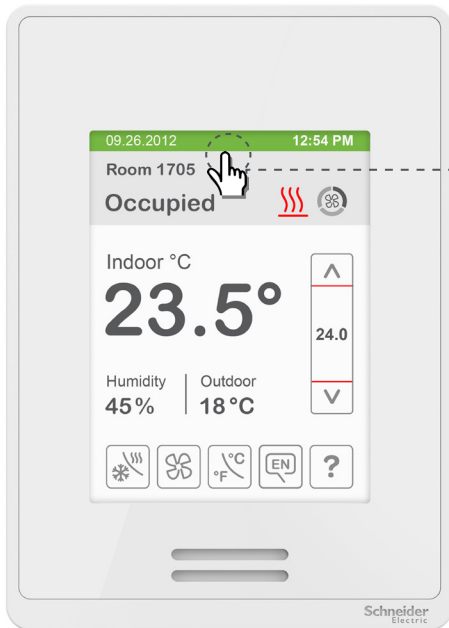
HOME SCREEN DISPLAY

Hospitality User Interface Shown



Note: User HMI is configurable and allows display functions such as Date, Time, Humidity, Outdoor Temperature, Setpoint, and others to be enabled or disabled by setting various parameters.

HOW TO ENTER SET-UP SCREEN



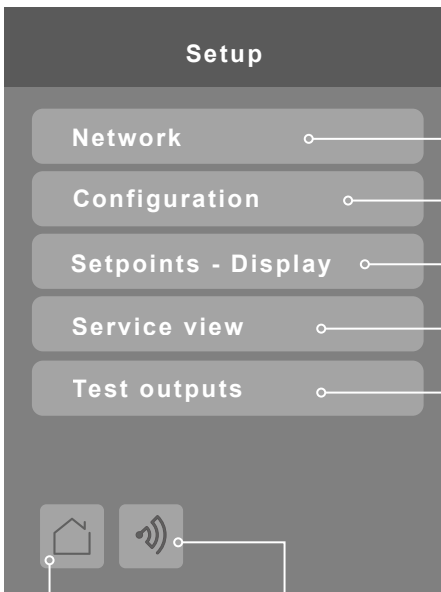
Touch and hold this point for 3 seconds to enter set-up mode

Note: If a configuration/installer password is activated to prevent unauthorised access to the configuration menu parameters, a password entry prompt shows to prevent access to device configuration components.

For more information on using and configuring the functions of the HMI, refer to the following document:

**SE8300 Series
Terminal Equipment Controller
User Interface Guide**

SET-UP SCREEN DISPLAY



Note: The "Network" button does not show if no BACnet® or ZigBee® card is installed.

Enter BACnet® & ZigBee® network settings

Enter parameter configuration menu

Enter setpoint & display settings

Enter status and service view

Enter output testing mode

Return to home screen

Discover Mode The Controller becomes discoverable on the wireless ZigBee® network for 1 minute (this button is hidden if ZigBee® settings are not configured)

General Note:

