Overview and Identification

The Decora Style Room Unit fits inside a Decora Style Wall Plate. It features measurement and display of local temperature with optional pushbutton setpoint adjustment.

The room temperature is shown on an easy-to-read LCD display in either °F or °C (field selectable via front pushbuttons for setpoint models). The display can also be configured to show only the setpoint.

Besides the standard wall plate cover, the unit is also available with two styles of decorative wall plate covers: the "Curved" style or "Dentil" style.

The sensor, selected at time of order, can be any BAPI passive sensor. The sensor and setpoint outputs can be configured for "common ground" or "differential" controller inputs, and the setpoint is available as a resistance or a 0 to 5V output. The temperature display can be offset in the field as needed.
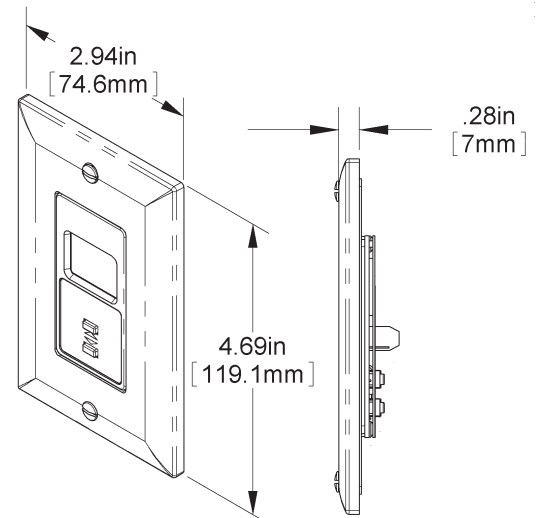

Fig 1: Decora Style Room Unit with Standard Wall Plate Cover

Mounting

BAPI recommends that the Decora Style Room Unit only be installed into a 2 X4 inch electrical box. Insulate the Decora Style Room Unit from conduit drafts by filling the junction box with fiberglass or polyester fill insulation. Do not pack the material into the junction box; leave it loose.

1. Pull the wire through the wall and out of the junction box, leaving about six inches free.

2. Place the insulation into the junction box.

3. Terminate the unit according to the guidelines in **Termination** on page 2.

4. Secure the sensor to the junction box using the #6-32 x 1/2 inch mounting screws provided.

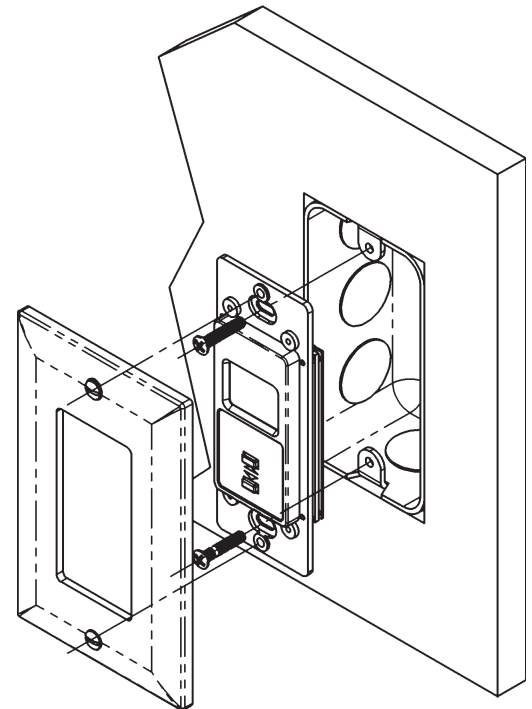5. Secure the Decora trim plate to the sensor with the provided screws.

Fig 2: Decora Style Room Unit Mounting

Note: *Some plastic junction boxes do not have openings large enough to accept the Decora style room unit. Check your junction boxes for proper fit before installing.*

Specifications subject to change without notice.

Termination

BAPI recommends using twisted pair of at least 22AWG and sealant filled connectors for all wire connections. Larger gauge wire may be required for long runs. All wiring must comply with the National Electric Code (NEC) and local codes.

Do NOT run this device's wiring in the same conduit as AC power wiring of NEC class 1, NEC class 2, NEC class 3 or with wiring used to supply highly inductive loads such as motors, contactors and relays. BAPI's tests show that fluctuating and inaccurate signal levels are possible when AC power wiring is present in the same conduit as the signal lines. If you are experiencing any of these difficulties, please contact your BAPI representative.
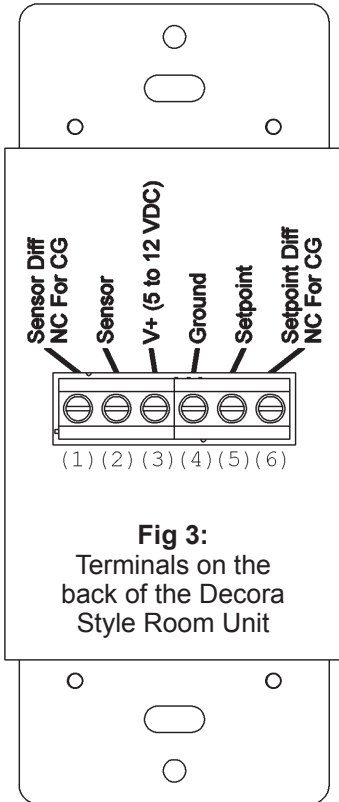
Fig 3:
Terminals on the back of the Decora Style Room Unit

Terminal	Function - For All Units
(3) V+	5 to 12 VDC Power
(4) Ground	Connect to Ground, Common or GND

Terminal	Function - For Common Ground Units
(1) Sensor Diff	Not Used on Common Ground Units
(2) Sensor	Temperature Output, Resistive, Connect to Controller Analog Input (Reference to Ground)
(5) Setpoint	Setpoint Output, Resistive, Connect to Controller Analog Input (Reference to Ground)
(6) Setpnt Diff	Not Used on Common Ground Units

Terminal	Function - For Differential Ground Units
(1) Sensor Diff	Sensor Differential Temperature Output (-), Resistive Connect to controller Analog Input.
(2) Sensor	Sensor Temperature Output (+), Resistive Connect to Controller Analog Input
(5) Setpoint	Setpoint Output (+), Resistive, Connect to Controller Analog Input
(6) Setpnt Diff	Setpoint Differential Output (-), Resistive Connect to Controller Analog Input

Note: Terminal Reference ID's in (Parentheses) are not on the product.

Front Panel Adjustments

Setpoint Adjustment - The Decora Style Unit normally displays the temperature. To see the current setpoint, press and release either "up" or "down" button. A small square will appear in the lower left of the display and the setpoint will be shown. Press the "up" or "down" button to change the setpoint. After about 10 seconds, the display will switch back to the temperature (with the new setpoint stored). The setpoint will hold through power outages.

Temperature Offset - The temperature display may be offset to match the temperature measured by the controller. Press both "up" and "down" buttons for 2 seconds. A small square will appear in the lower left of the display and a single digit will display. Press the "up" or "down" button to set the temperature display offset by ±10°. After about 10 seconds, the display will switch back to the temperature (with the new offset stored). The offset will hold through power outages.

Display Options - The unit's display may be changed from room temperature Fahrenheit (F), room temperature Celsius (C), Setpoint Only Fahrenheit (SF) or Setpoint Only Celsius (SC). Press in both "up" and "down" buttons for 4 seconds. A small square will appear in the lower left of the display and "F", "C", "SF" or "SC" will display. Press the "up" or "down" button to toggle between the modes. After about 10 seconds, the unit will leave the program mode and switch to the display that you've selected. The display selection will hold through power outages.

Up Button

Down Button
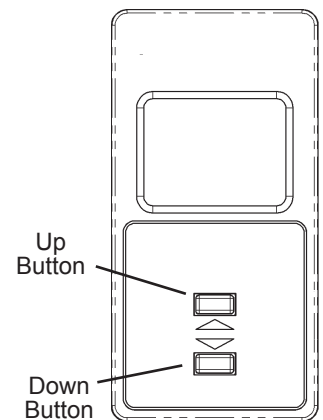
Fig 4:
Front of Decora Style Room Unit

Specifications subject to change without notice.

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Diagnostics

The Display Is Not Working:
Check that the correct power is being supplied by measuring the DC voltage between the power terminals #3 (V+) and #4 (Ground). The power should be 5 to 12 VDC. Also check for proper polarity between the power terminals with (V+) at 5 to 12 VDC, and (Ground) as ground or common.

Inaccurate Temperature Sensor Reading:
Power down the unit and disconnect the wires from Terminals #2 and #4 on Common Ground Units (Terminals #1 and #2 for Differential Ground Units). Measure the room temperature at the Decora sensor's location using an accurate temperature standard. Measure the temperature sensor's resistance with an ohmmeter across terminals #2 and #4 on Common Ground Units (Terminals #1 and #2 for Differential Ground Units). Compare this resistance to the appropriate temperature sensor's Output Table on the BAPI website (www.bapihvac.com; click on the button labeled "Sensor Specs"). If the measured resistance is different from the Output Table by more than 5%, call BAPI technical support.

If the sensor's resistance matches the Output Table as described above, then check the wiring between the sensor and the controller. With the interconnecting wires disconnected at both ends, measure the resistance from wire-to-wire with a multimeter. The meter should read greater than 10 Meg-ohms, open or OL depending on the meter you have. Short the interconnecting wires together at one end. Go to the other end and measure the resistance from wire-to-wire with a multimeter. The meter should read less than 10 ohms (22 gauge or larger, 250 feet or less). If either test fails, replace the wire.

Note: Temperature errors can also be caused by drafts coming through the junction box behind the sensor. Seal the junction box as described in the Mounting section on page 1. Mounting the Decora Style Sensor on an outside wall, above radiator, directly below a vent, or in direct sunlight is not recommended.

Inaccurate or No Setpoint Output
Disconnect the setpoint wires from terminals #4 and #5 on Common Ground Units (Terminals #5 and #6 for Differential Ground Units). Apply power to the Decora Style Sensor and measure the setpoint output from Terminals #4 and #5 on Common Ground Units (Terminals #5 and #6 for Differential Ground Units). The Setpoint Output is printed on the label at back of the unit and can be either a resistance or a voltage of 0 to 5V or 0 to 10V. Compare the measured reading to the setpoint information on the label. If the measured reading is different from the label, call BAPI technical support.

If the measured Setpoint Output reading matches the label as described in the previous paragraph, then check the wiring between the sensor and the controller as described in the "Inaccurate Temperature Sensor Reading" section above.

Specifications

Power: 5 to 12 VDC, ±5%

Notes of Power:
Unit must be powered by at least 7 VDC to have the 0 to 5 Volt Setpoint Output Range Option

Unit must be powered by at least 12 VDC to have the 0 to 10 Volt Setpoint Output Range Option

Power Consumption: 0.5 mA max.

Sensing Element: Thermistor or RTD

Wiring: 2 to 3 pair of 16 to 22AWG

Mounting: 2" by 4" J-box (screws provided)

Environmental Operation Range:
32 to 122°F (0 to 50°C)
0 to 95%RH, non-condensing

Material: ABS Plastic

Material Rating: UL94, V-0

LCD Display Range: 32 to 99°F, (0 to 35°C)

LCD Digits: 2 Digit; no decimal

LCD Height: 0.5" high

LCD Units: °F or °C at start-up

Specifications subject to change without notice.

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