

RLA162.5U Room Temperature Controller



Product Description

Room temperature controller for basic ventilation, air conditioning and heating systems. Compact design with two analog, 0 to 10 Vdc control outputs for heating and/or cooling.

Product Numbers

RLA162.5U Automatic Heat/Cool Changeover

Warning/Caution Notations

| | | |
|-----------------|--|---|
| WARNING: |  | Personal injury/loss of life may occur if you do not follow the procedures as specified. |
| CAUTION: |  | Equipment damage, or loss of data may occur if you do not follow the procedures as specified. |

Required Tools

- Small, flat-blade screwdriver
- Wire strippers
- 6-inch level

Mounting Accessories

- ARG70 wall plate
- 141-570 lockable thermostat guard
- QAP22 Changeover sensor

Expected Installation Time

35 minutes

Prerequisites

- Provide 24 Vac power source to thermostat wall mounting location.
- Run wires from damper/valve actuator to thermostat wall mounting location.

Installation

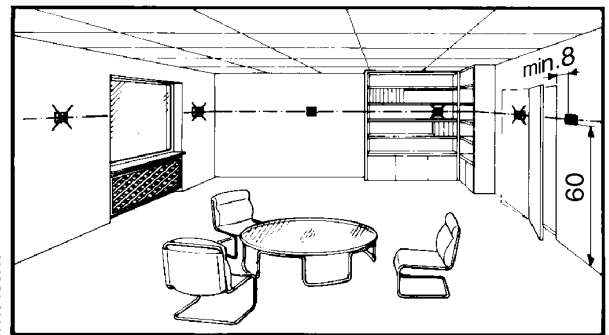


Figure 1. Acceptable Mounting Height in Inches.

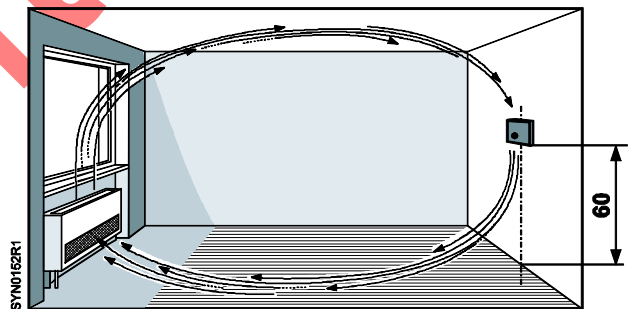
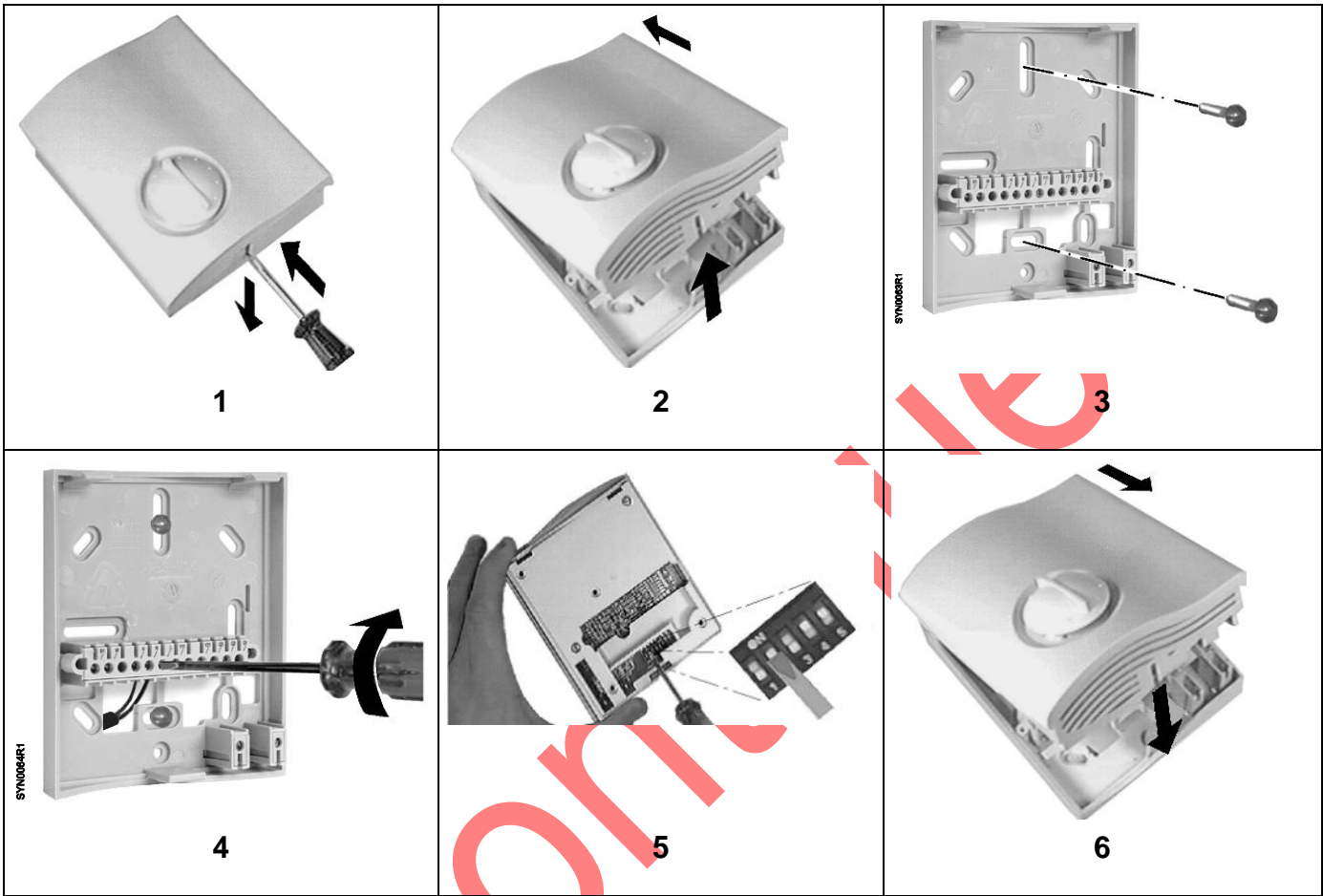
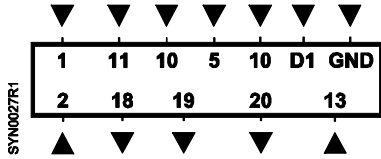


Figure 2. Airflow Requirements in Inches.



Wiring Terminals



- 1 Operating voltage, 24 Vac positive
- 2 Operating voltage, 24 Vac negative
- D1 Day/night changeover
- 5 Limitation input 0 to 10 Vdc
- GND Ground for day/night changeover
- 10 Measuring Neutral
- 11 Heat/cool changeover sensor
- 13 Fan or auxiliary relay, positive
- 18 Control signal, 0 to 10 Vdc, Heat 1
- 19 Control signal, 0 to 10 Vdc, Cool or Heat 2
- 20 Fan or auxiliary relay, negative

Figure 3. RLA162.5U Wiring Terminals.

Wiring Diagrams

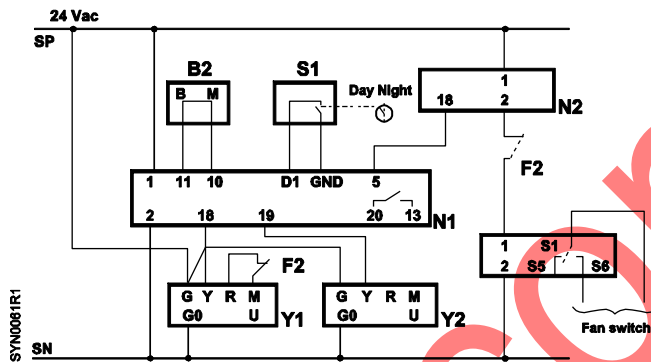


Figure 4. RLA162.5U Room Temperature Control with Setpoint Changeover.

Commissioning

Table 1. DIP Switch Settings.

| Function | 1 | 2 | 3 | 4 | 5 | Action |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------------------|
| Operating mode | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Heating and cooling in sequence |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Two-stage heating |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Single-stage cooling |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Single-stage heating |
| Control mode | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | PI (integral action time 600 seconds) |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | P (XP1) |
| Heating output control Action (18) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10 Vdc at setpoint conditions |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0 Vdc at setpoint conditions |
| Cooling/Second stage output Control Action (19) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10 Vdc at setpoint conditions |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0 Vdc at setpoint conditions |

The factory default setting for all five switches is OFF.

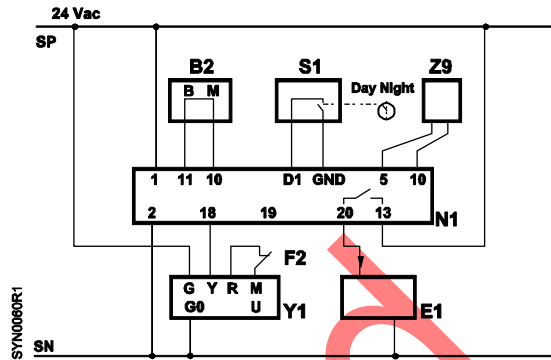


Figure 5. RLA162.5U Room Temperature Control with Minimum Limitation of the Supply Air Temperature.

- B2 Heat/cool changeover sensor
- E1 Fan or auxiliary unit
- F2 Freeze stat
- M Neutral
- N1 Room temperature controller (RLA162.5U)
- N2 Air duct temperature controller (RLM162U) as a limiter
- R Resistive input
- S1 Time clock or switch for day/night setpoint changeover
- U 0 to 10 Vdc output feedback
- Y 0 to 10 Vdc input signal
- Y1 Heating valve actuator
- Y2 Cooling valve actuator
- Z9 Limit thermostat

Commissioning, Continued

Proportional band adjustment (XP1):
0°F to 90°F (0 K to 50 K)

Potentiometer setting should correspond to the required range of the controller's output signal.

Energy saving adjustment (ECO):
0°F to 18°F (0 K to 10 K)

Potentiometer setting should correspond to the required offset of normal setpoint. Energy Saving = Normal setpoint +/- offset.

NOTE: XP1 and ECO adjustments must be made by the user; factory settings are zero or "random".

Troubleshooting

| Response | Possible Causes |
|--------------------------------------|---|
| Valve does not respond | <ul style="list-style-type: none"> Valve not connected No power supply |
| Valve travels in the wrong direction | <ul style="list-style-type: none"> Selection of operating action is wrong. DIP Switches 4 (Y1) and 5 (Y2) should match control action of the valve actuator. Wrong controller terminal used |
| Control responds too slowly | <ul style="list-style-type: none"> Reduce P-band (XP1) |
| Control is unstable | <ul style="list-style-type: none"> Increase P-band (XP1) |

Dimensions

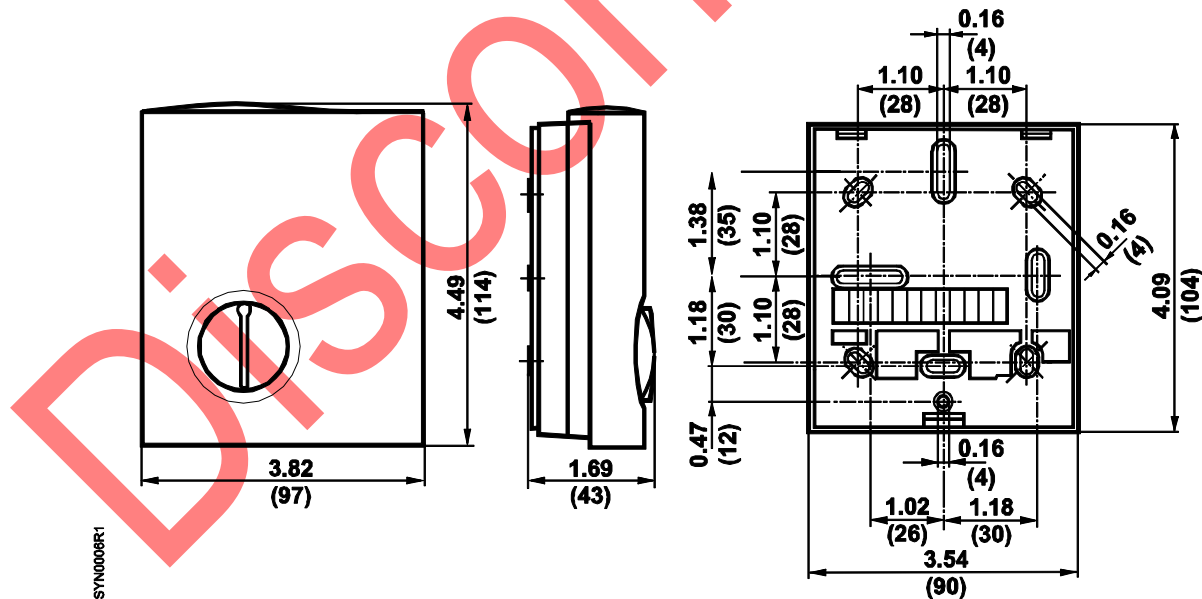


Figure 6. Dimensions in Inches (Millimeters).

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