DUAL SENSING DIGITAL THERMOSTAT

PRODUCT INSTRUCTIONS

SCOPE

This guide gives instruction regarding REHAU Programmable Digital Thermostat installation and operation. Thermostats may only be installed, calibrated and maintained by an appropriately trained installer of radiant systems. The installer should also have a basic understanding of electrical wiring and electronic controls.

Throughout this document, the signal word NOTICE is used to help you avoid property damage. We cannot warn of all hazards; you must also use your own good judgment.

ABOUT PROGRAMMABLE DIGITAL THERMOSTATS

This 3-wire thermostat offers powerful capabilities with simple, easy to use menus. There is a "reduced" operating mode which may be used for nighttime and vacation periods. With the optional floor sensor, this thermostat can regulate either the floor or the room temperature or both, in which case the floor sensor is used as a temperature limiter, set to either high or low limit.

This thermostat offers numerous programming options including the ability to:
– Exercise the system pump daily for 1 minute
– Define the thermostat to be operated as a simple on/off switch
– Use proportional integral regulation (PWM) anticipation logic
– Select a night reduction which automatically reduces the temperature by 7°F (4°C)

Components
Each thermostat (Art. No. 236487-001) comes complete with:
– Installation instructions
– Mounting template

In addition, you will need:
– 10k floor sensor, where applicable
– No.1 Phillips head screw driver
– 1/8 in. flat head screw driver
– Mounting screws (typical for drywall installation)
– Drill
– Pencil
– Level

Table 1: Thermostat Technical Specifications

Control	Microprocessor control
Material	White PVC plastic
Dimensions (H x W x D)	3 1/4 x 3 1/4 x 1 in (80 x 80 x 27 mm)
Measured temperature precision	0.2°F (0.1°C)
Packaged weight	0.26 lb (97 g)
Floor limiting temperature range	50 to 104°F (10 to 40°C)
Temperature regulation	Proportional integral regulation (adjustable – see installation menu)
	Cycle: 15 min. or static differential 1.8°F (1°C)
Ambient conditions (indoor use only)	32 to 122°F (0 to 50°C), < 90%
Electrical protection class	Class II – IP30
Power supply	24 V ±10% 60 Hz 15 W max
Output	TRIAC output 24 VC, 15W max (typical – 4 actuators)
Optional floor sensor	NTC thermistor, 10 kΩ; 10 ft (3 m) cable (Art. No. 236497-001)
Wire type	Minimum of three conductor thermostat wires (18-24 AWG);
	four or eight conductor thermostat wires are recommended

Thermostat Display Features
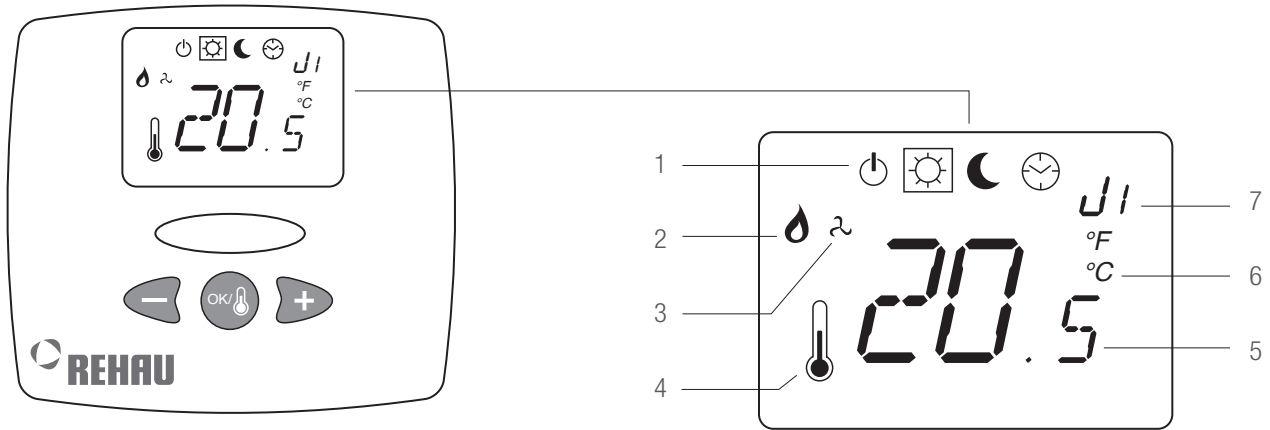
Fig. 1: Thermostat display features

1. Operating mode menu
2. Heating indication
3. Cooling indication
4. If symbol is displayed, the measured temperature is shown (position 5)
5. Measured temperature or set temperature
6. °C or °F indication
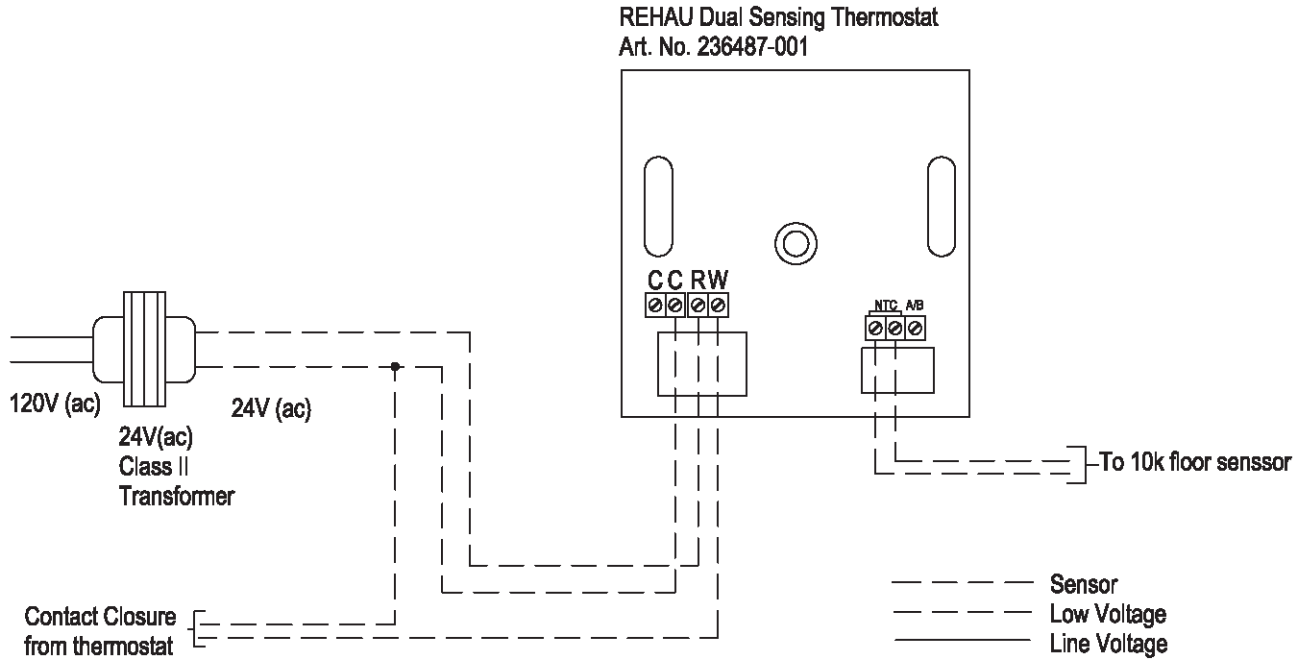7. Title for installation parameters (J0,CLr…)

REHAU Dual Sensing Thermostat
Art. No. 236487-001

120V (ac)
24V (ac)

24V(ac)
Class II
Transformer

Contact Closure
from thermostat

C C R W

NTC A/B

To 10k floor senssor

– – – – – Sensor
– – – – – Low Voltage
———— Line Voltage

Fig. 2: Wiring diagram for operation without actuator

Zone Actuator
4 actuatorss max.

End switch to signal
pump or boiler

A

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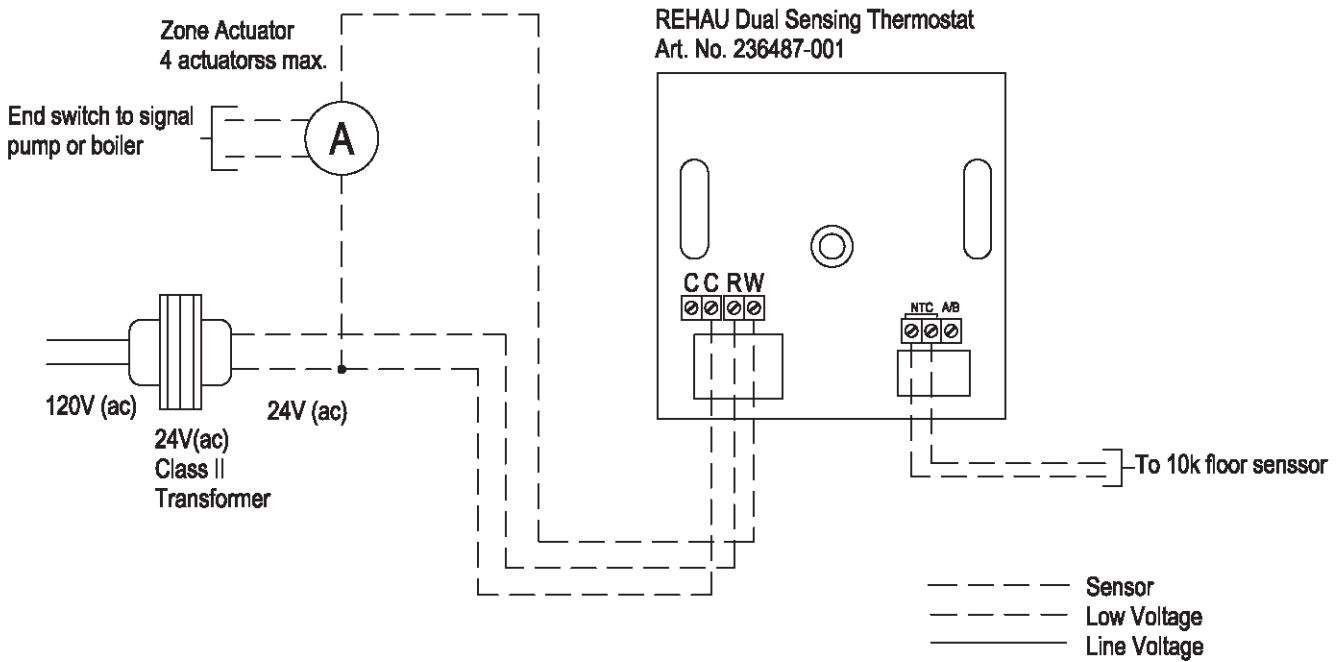
Fig. 3: Wiring diagram for operation with actuator

MOUNTING THE THERMOSTAT

Note: Thermostat must be mounted in the correct location to work properly.

1. Thermostat should be located 1.5 m (5 ft) above the finished floor. The thermostat must be installed on an interior wall. Avoid locations in drafts (e.g., staircases, air outlets), behind doors, in direct sunlight or near other heat sources.
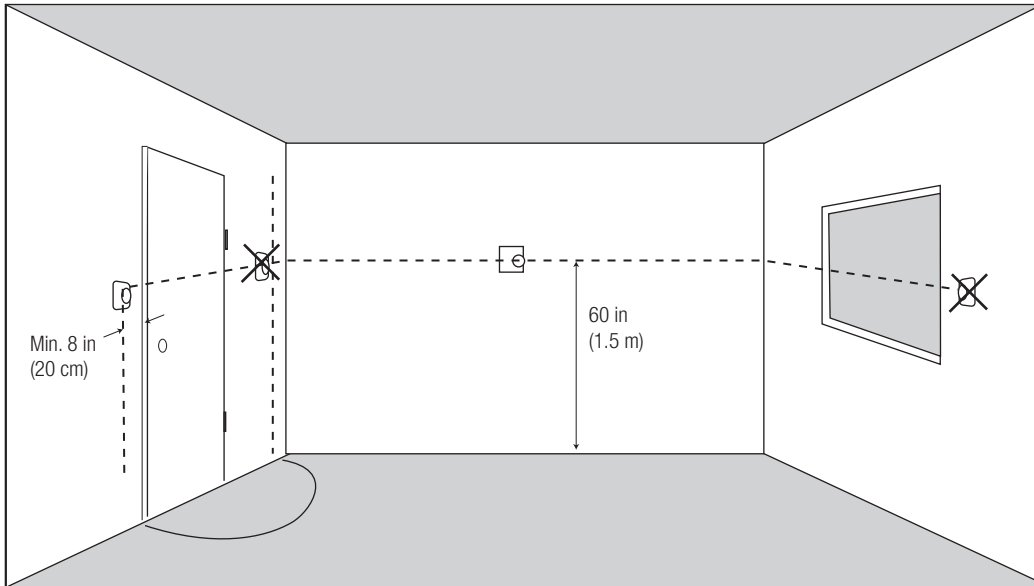

Fig. 4: Locating the thermostat

2. Make sure that wire is installed from control location to the desired thermostat location.

3. Use the mounting template (see Fig. 5) to help position the thermostat and drill the mounting holes.

4. Pull wires through access holes for thermostat wiring and floor sensor wiring (if applicable). Fasten the screws, but do not completely tighten the screws.

⚠ **WARNING:** Turn off all power to the wires before connecting wires to terminals. Failure to turn off power can cause electrocution.

5. Adjust thermostat with a level and tighten the screws.

6. Put the cover on the thermostat and secure with Phillips head screw, using a No. 1 Phillips head screw driver.

7. Apply 24V power.

PROGRAMMING THE THERMOSTAT

1. When power is initially applied, the thermostat automatically turns on and displays the current room temperature.

If there is no display shown when power is applied to the thermostat, press ⊙ until the box is around the sun symbol.

2. Press and hold ⊙ for 5 seconds until **ENd** is displayed.

3. Press ⊕ to toggle through the menu.

4. Press ⊙ to edit each parameter. The parameters will be shown on the upper right corner of the display.
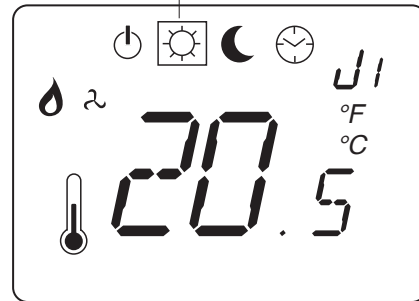
Table 2: Programming Parameters

Parameter	Description of Parameter	Default Setting	Adjustment / Choice
J0	Select temperature units	°F	°C
J1	Mode of operation	<< Hot >> Heating mode	<< Cld >> Cooling mode
Cy	Proportional integral regulation (PWM) time cycle value in minutes	<< 15 >> Slow system adapted to each heating type	Heating application: Burner oil << 10 >> Burner gas << 10 >> Heat pump << 20 >>
Bp	Value of the proportional band (PWM) in °C	<< 2.0°C / 3.6°F >>	Adjustable 0.1 to 12.7°F (0.1 to 12.7°C) Suggest well insulated house << 1.5°C >> Suggest non-well insulated house << 4°C >>
J4	Type of output for contact closure	<< NC >> Normally closed	<< NO >> Normally opened
J5	Pump exercising	<< Pnp >> To exercise the pump if the pump has not worked on a particular day. Operation time of pump is one minute.	<< NO >> No exercising
J6	Select sensor for operation	<< Air >> Room sensor only or room sensor with floor limitation if optional external 10K sensor is used.	<< Flr >> External 10K sensor is used, without floor limitation
J8	Selection of regulation type	<< rEg >> Proportional band	<< hys >> Static differential of 0.3°C
Cp	Value of the compensation in °C. This value can be increased if the thermostat is perturbed by external perturbations i.e. near to the heating elements.	<< 2.0°C / 3.6°F >>	Adjustable 0.1 to 12.7°F (0.1 to 12.7°C)
A0	Calibration of the internal sensor. The calibration must be done after 15 minutes working with the same setting temperature. Check room temperature with a thermometer and enter the real value.	"+" or "−" to adjust	
F0	Calibration of external sensor (if connected). The calibration must be done same as above.	"+" or "−" to adjust	Suggested 65°F / 18°C Adjustable 41 to 82°F (5 to 27.5°C)
FL	Lower limit of the floor temperature. Only effective if the external sensor is connected and selected.	<< 5°C / 41°F >>	Suggested 85°F / 30°C Adjustable 41.5 to 99°F (28 to 37°C)
CLr	Reset the thermostat to factory settings	Press and hold <<< OK Key >>> for 5 seconds	
ENd	To exit installer menu	Press the << OK Key >> once.	

Table 3: Room Air and Floor Sensing Options

Room Air Sensing Only Operation (J6)	When operating without a floor sensor, only the internal thermostat air sensor controls the "call for heat."
Room Air Sensing with Floor Lower Limit	When operating with the optional floor sensor (Art. 236497-001), the thermostat is "reading" both the room air temperature and the floor temperature. The floor sensor will ensure that the floor will never drop below a certain temperature. The range of this temperature is 50 to 104°F (10 to 40°C).
Room Air Sensing with Floor Upper Limit	When operating with the optional floor sensor (Art. 236497-001), the thermostat is "reading" both the room air temperature and the floor temperature. The floor sensor will ensure that the floor will never rise above a certain temperature. The range of this temperature is 50 to 104°F (10 to 40°C).
Floor Sensing Operation (J6), (FL) and (FH)	When operating with the optional floor sensor (Art. 236497-001), the floor sensor can completely control the "call for heat" with LOW (FL) and HIGH (FH) temperature limits. If (J6) is set to AIR, the thermostat continually monitors the room air temperature while also ensuring that the floor remains within the LOW and HIGH limits. (HIGH).

Note: Operating with only a slab sensor can lead to either overheating or under heating of the space.

END USER INSTRUCTIONS

Push the ⊙ button on the thermostat to select the desired operating mode

OFF Mode
In this mode, the thermostat is off and the display goes blank. All program settings are saved.
NOTICE: In this mode, the system can freeze.

COMFORT Mode
In this mode, the thermostat will continually maintain the temperature entered.
When the sun is blinking, the desired heating temperature is set by pressing buttons and
after a few seconds, the display switches back to the measured temperature,
denoted by the ￼ symbol.

REDUCED Mode
In this mode, the thermostat automatically reduces the "set temperature" to your adjusted
setback temperature. After a few seconds, the display switches back to the measured temperature,
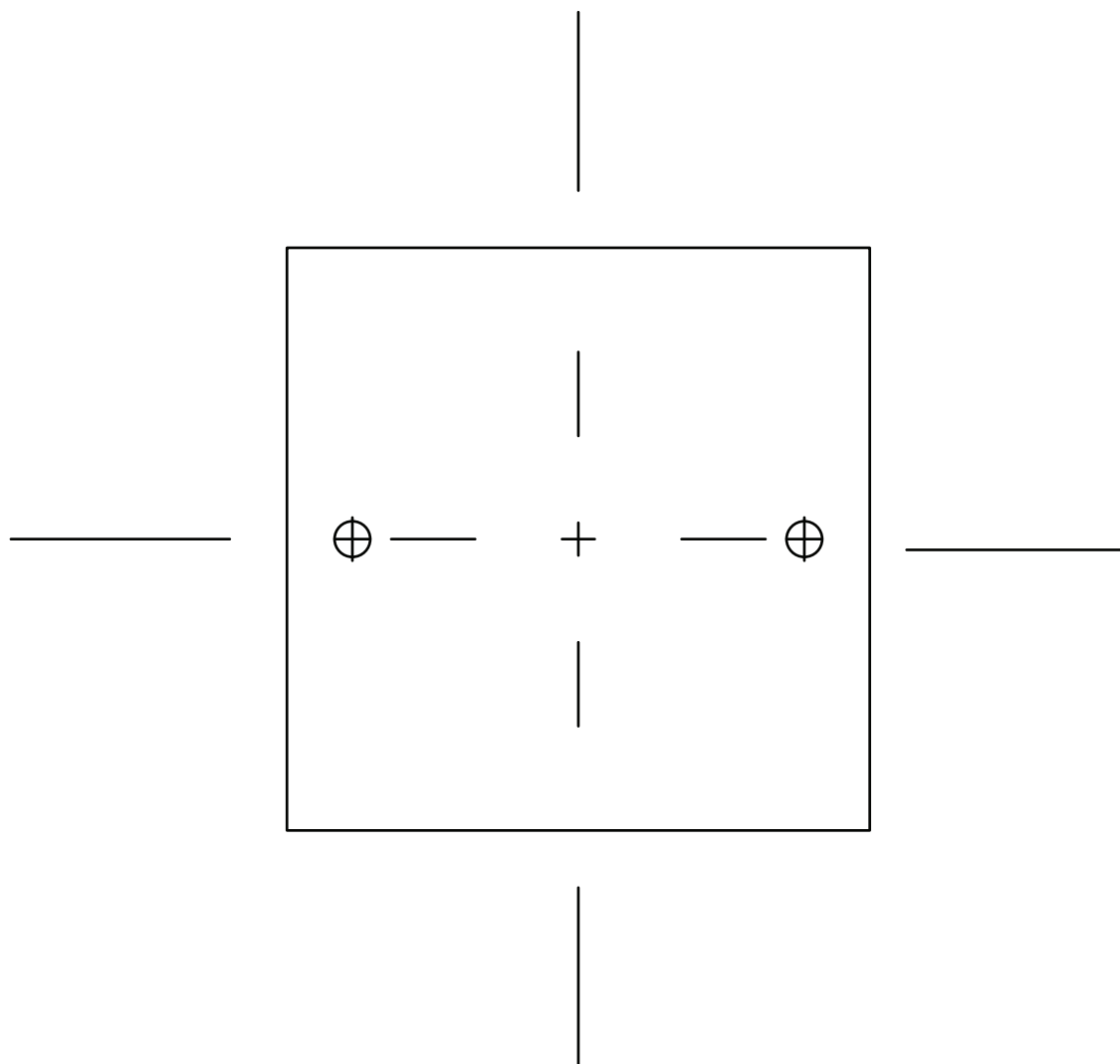denoted by the ￼ symbol.

EXTERNAL CLOCK Mode
In this mode, the thermostat will work according to the "comfort mode."
This mode is currently not available.

APPENDIX
MOUNTING TEMPLATE

Clip page and use as mounting template

Thermostat should be located 1.5 m (5 ft) above the finished floor

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