Honeywell

TB8220U
Programmable Commercial Thermostat
FOR MULTISTAGE CONVENTIONAL AND HEAT PUMP SYSTEMS

GUIDE SPECIFICATION

GENERAL

A. Overview: The contractor shall furnish, install, and place in operating condition an HVAC control system described herein. All units shall be located in accordance with the plans.

B. Type of System: System Requirements:

a. Control up to 2 heating and 2 cooling stages for gas heat, electric heat, heat pump or compressor cooling.
b. Provide minimum 2 year clock backup.
c. Provide two Occupied and two Unoccupied periods per day.
d. Offer automatic heat/cool changeover with 2°F minimum deadband.
e. Provide cumulative override capability for a 1 to 4 hour installer-adjustable period.
f. Include a comfort adjust feature to modify setpoints for the override duration.
g. Provide Proportional plus Integral (P + I) temperature control.
h. Display room temperature in °F or °C.
i. Use multiple remote sensors (optional).
j. Use in conjunction with an economizer (optional).
k. Provide four levels of keypad lockout - none, override and holiday, override only and complete.
l. Provide Holiday Override, 1-365 days.
m. Provide separate configurable recovery ramps for heating and cooling.
n. Provide separate configurable cycle rates for heating and cooling response.
o. Provide touch screen user interface.

System Components:

a. Seven day programmable thermostat with subbase.
b. Wall mount temperature sensors (optional).
c. Outdoor air sensor (optional).

C. Codes and Standards: The system shall comply with applicable provisions of ASHRAE 90-75.

These specifications are based on equipment from Honeywell to set a standard for design and quality.

D. Wiring: All wiring shall meet National Electrical Codes and local electrical codes.

E. Testing Guarantee Service:

Prior to installation, the contractor shall provide copies of submittals.

The contractor is responsible for assuring that conduit and wire quantity, size, and type are suitable for the equipment supplied.

Upon completion, the contractor shall conduct a total system test for the owner and engineer.

All components, parts, and assemblies supplied by the manufacturer shall be guaranteed against defects in materials and workmanship for 5 years.

Warranty service shall be performed by the contractor.

SEQUENCE OF OPERATIONS

The heating and cooling setpoints shall be individually adjustable for both the Occupied and Unoccupied periods. The thermostat shall have a minimum deadband of 2°F (no mechanical heating or cooling shall operate within this deadband). Space temperature deviation above the cooling setpoint or below the heating setpoint shall generate a demand signal to control the system as follows:

A. Heating:

The thermostat shall control the heating output based on the demand signal communicated from the thermostat program, taking into account both space temperature deviation (proportional gain), the duration of that temperature deviation (integral gain).

The thermostat shall energize heating equipment when space temperature falls below heating setpoint.

B. Cooling:

The thermostat shall control the cooling output based on the demand signal communicated from the thermostat program, taking into account both space temperature deviation (proportional gain), the duration of that temperature deviation (integral gain).

The thermostat shall energize cooling equipment when space temperature exceeds cooling setpoint.

(Optional Remote Equipment) A solid state enthalpy changeover control shall determine the capability of the outdoor air to provide free cooling (optional). The system shall operate as follows:

a. Free cooling available from Outdoor Air: On a call for cooling, the system shall enable the economizer to provide free cooling. If this does not meet the space demand, the system shall call for mechanical cooling to satisfy the programmed setpoint.
b. Free Cooling Not Available From Outdoor Air: On a call for cooling, the system shall hold the economizer to minimum position and cooling shall be energized to satisfy the programmed setpoint.

C. Economizer Interface: The auxiliary output of the thermostat shall be connected to the economizer's power circuit or the Occupied/Unoccupied signal terminal.

a. Occupied Period: The auxiliary output will provide 24 Vac, allowing the economizer to operate normally and be available for free cooling if outdoor conditions permit.
b. Unoccupied Periods: The auxiliary output will cease, defeating either economizer operation or the minimum position.

D. Heating Setback and Cooling Setup:

Initiation of heating setback or cooling setup for each of 7 days shall be provided by a programmed time schedule manually entered into the thermostat. When all or a portion of a manually programmed schedule is unavailable, the thermostat shall control to the default program as shown in Table 1.

Table 1. Default Program.

	Occupied	Unoccupied
Heating Setpoints	70°F (21°C)	55°F (13°C)
Cooling Setpoints	75°F (24°C)	85°F (29°C)

E. Setpoint Recovery from Unoccupied to Occupied: The thermostat shall incorporate a ramping feature that gradually changes the space setpoints. During recovery operation, the setpoint changes at a rate in degrees per hour (defined in the Installer Setup Menu).

F. Fan Operation: Fan operation shall be selectable as follows:

a. On: Fan operates continuously in Occupied mode, and during a call for heat or cool in the Unoccupied mode.
b. Auto: Fan is energized with calls for heating and cooling.

G. Minimum Stage Operation Time:

a. Minimum On: Heat - 1 minute; Cool - 3 minutes.
b. Minimum Off: Cool & Heat Pump - 1 minute.

H. Power Interruption:

a. On loss of power, the thermostat shall maintain programmed times and temperatures for 10 years.
b. Clock and day information shall be retained for a minimum of 2 years.

I. Overrides:

a. The Holiday Override can be used when the thermostat is in Unoccupied mode. It shall switch to the Occupied mode for an installer-configured number of hours.
b. The Temporary Unoccupied Override shall fix the schedule to operate in Unoccupied mode for a number of days (between 1 and 365) without changing programming saved in memory.
c. Pressing “Cancel” or “Run Schedule” shall cancel the overrides and return to the program.

THERMOSTAT MODELS AND FEATURES

Table 2. TB8220 Thermostat Features.

Model	Applications	Maximum Stages[a]		Features
		Heat	Cool	
TB8220U	Conventional or Heat Pump	2[b]	2	Remote Outdoor or Indoor sensor

[a] All models are down-selectable and can be configured to control fewer stages than the maximum allowed.

[b] When configured for heat pump operation, an additional stage of heat is available.

OPTIONS

A. Outdoor Air Sensors: C7089U.

B. Temperature Sensors (Remote): T7770A, C7089U, C7189U, C7772.

C. Economizer Logic Modules: W6210, W6215, W7210, W7212, W7215, W7459.

D. Other Accessories: 209651A Vertical Mounting Hardware Wallplate Adapter (Trident white).

TG511, TG512 Universal Versaguard™ Thermostat guards.

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