TB7600 Series Communicating RTU/Heat Pump Thermostats
FOR COMMERCIAL HVAC APPLICATIONS

APPLICATION

The TB7600 Series PI thermostat family is specifically designed for single stage and multi-stage control of heating/cooling equipment such as rooftop and self-contained units. The TB7600 Series are communicating thermostats with models available in BACnet® MS/TP and ZigBee® wireless mesh protocols and can be easily integrated into a WEBS-AX building automation system based on the NiagaraAX® platform. The product features an intuitive, menu-driven, backlit LCD display, which walks users through the programming steps, making the process extremely simple. Accurate temperature control is achieved due to the product’s PI time proportional control algorithm, which virtually eliminates temperature offset associated with traditional, differential-based thermostats.

Depending on the model, up to three remote sensor inputs are available. All models contain a SPST auxiliary switch, which can be used to control lighting or disable the economizer function and a discharge air sensor input. For more advanced applications, economizer control logic has been integrated into the thermostat for use with proportional damper economizer actuators.

Thermostats equipped with an occupancy sensor cover provide advanced active occupancy logic, which will automatically switch occupancy levels from Occupied to Unoccupied as required by local activity being present or not. This advanced occupancy functionality provides advantageous energy savings during occupied hours without sacrificing occupant comfort. All thermostats are PIR ready and can be ordered with or without Honeywell occupancy sensor. The occupancy sensor cover is available to order separately if a PIR is needed at a later time.

FEATURES

• Available in BACnet MS/TP and ZigBee wireless protocols
• Backlit LCD display with dedicated function menu keys for simple operation
• Built in default profile set-up for easier start up and commissioning
• Fully integrated advanced occupancy functionality with a PIR accessory cover on some models
• Non-volatile EEPROM memory prevents loss of parameters during power outage
• Programmable smart fan operation can provide energy savings during night mode
• Password protection to minimize parameter tampering
• Three levels of keypad lockout to limit access to change user parameters such as setpoints, system mode, etc.
• Gas/oil or electric system compatibility for all type of applications
• SPST auxiliary output can be used for lighting and/or economizer override
• 0 to 10 Vdc economizer output for more retrofit opportunities
  — Built in dry bulb economizer logic using outdoor temperature sensor
  — Input for supply/mixed air temperature sensor
• Support single and two stages heat pump with one auxiliary heat stage
• Remote indoor averaging sensing with 2, 3, 4, 9 or 16 sensors
• Remote discharge air sensor input
• Automatic frost protection to prevents costly freeze damage
• Anti short cycle and minimum on/off run time protection to reduce wear and maximizes life span of mechanical equipment
• Two programmable digital inputs for added flexibility can be used to monitor filter status, activate a remote temporary occupancy switch, and/or used as a general purpose service indicator
• 7 day programmable models, 2 or 4 events for use in non-networked applications
• Six hour reserve prevents the need to reprogram day/time on programmable models after a power outage on programmable models

Heat Pump Model Specific Features
• Selectable single or dual stage compressor stages
• High balance point locks out auxiliary heating when outside air temperature is above set value, low balance point locks out heat pump compressor operation when outside air temperature is below the set value
• Comfort/economy mode maximizes heat pump use before turning on auxiliary heating

Compressor/auxiliary interlock adds flexibility by locking out heat pump operation during auxiliary heating to prevent high pressure trip when the coil is downstream of the auxiliary heat source
* Use programmable models only when installing as stand-alone thermostats that may eventually be added to a WEBs-AX network. When a programmable thermostat is added to a network, schedules should be applied through the WEBStation-AX.

More Information
To learn about additional products in this family visit http://customer.honeywell.com.
• TB7300 Series Communicating Fan Coil Unit Thermostats Specification Data (Form No. 63-2709).
• TB7200 Communicating Zoning Thermostats Specification Data (Form No. 63-2708).
• Sensors Product Overview Brochure (Form No. 63-9285) for a complete listing of compatible sensors.

TB7600 Series Model Selection

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Description</th>
<th>Outputs</th>
<th>Scheduling¹</th>
<th>Occupancy Sensor²</th>
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**Remote sensor accessories**

Remote mount outdoor temperature sensors must be 10 Kohm NTC @ 77°F.

Remote sensors can be used for:
- Various averaging combinations (3 thermistors with 2 dip switches are provided with each sensor)
- Optional occupancy led
- Optional override key

**Theory of Operation**

The TB7600 uses a proprietary adaptive logic algorithm to control the space temperature. This algorithm controls the heating/air conditioning system to minimize overshoot while still providing comfort. It provides exceptional accuracy due to its unique PI time proportioning control algorithm, which virtually eliminates temperature offset associated with traditional, differential-based on/off thermostats.

**SPECIFICATIONS**

**Network Protocol:** Models available in BACnet MS/TP or ZigBee wireless mesh

**WEBs-AX Controllers:** Compatible with WEB-2xx, WEB-6xx, and WEB-7xx

**Thermostats Per Controller**

BACnet: 126 thermostats (BACnet allows 128 but 1 node is used by the controller, and when more than 64 devices are on the network a repeater is required so 1 node used by the repeater).

Wireless: WEB-2xx: 30
WEB-6xx & WEB-7xx: 50

**Platform:**

WEB-2xx and WEB-6xx - WEBStation-AX 3.0 or later
WEB-7xx - WEBStation-AX 3.5 or later

**Thermostat power requirements:**

19-30 Vac 50 or 60 Hz; 2 VA (RC and C) Class 2
RC to RH jumper 2.0 Amps 48 VA maximum
Operating conditions:
32 F to 122 F (0 C to 50 C)
0% to 95% R.H. non-condensing

Storage conditions:
-22 F to 122 F (-30 C to 50 C)
0% to 95% R.H. non-condensing

Sensor: 10 K NTC thermistor onboard

Resolution: ± 0.2 F (± 0.1 C)

Control accuracy: ± 0.9 F (± 0.5 C) @ 70 F (21 C) typical calibrated

Occupied and unoccupied setpoint range cooling:
54 to 100 F (12.0 to 37.5 C)

Occupied and unoccupied setpoint range heating:
40 F to 90 F (4.5 C to 32 C)

Room and outdoor air temperature range:
-40 F to 122 F (-40 C to 50 C)

Proportional band for room temperature control:
Factory set, heating and cooling at 2.0 F (1.1 C)

Digital inputs: Relay dry contact only across C terminal to DI1 or DI2

Contact output rating:
Each relay output: (Y1, Y2, G, W1, W2 and AU)
30 Vac, 1 Amp maximum
30 Vac, 3 Amp in-rush

Economizer analog output rating: 0 to 10 Vdc into 2KΩ resistance min.

Economizer analog output accuracy: ± 3% typical

Wire gauge: 18 gauge maximum, 22 gauge recommended

Dimensions: see Fig. 2.

Approximate shipping weight: 0.75 lb (0.34 kg)

Agency Approvals all models:
UL: UL 873 (US) and CSA C22.2 No. 24 (Canada), File E27734 with CCN XAPX (US) and XAPX7 (Canada)
Industry Canada: ICES-003 (Canada)
FCC: Compliant to CFR 47, Part 15, Subpart B, Class A (US)
CE: EMC Directive 89/336/EEC (Europe Union)
C-Tick: EN55022:2006, IEC 61326-1:2005

Agency Approvals wireless models
FCC: Compliant to: Part 15, Subpart C
This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Agency Approvals BACnet models
BTL

IMPORTANT

All TB7600 series controls are for use as operating controls only and are not safety devices. These instruments have undergone rigorous tests and verifications prior to shipment to ensure proper and reliable operation in the field. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user/installer/electrical system designer to incorporate safety devices (such as relays, flow switch, thermal protections, etc.) and/or alarm system to protect the entire system against such catastrophic failures. Tampering of the devices or miss application of the device will void warranty.

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