Programmable Communicating Thermostat
Aprilaire Model TBZ00-8521-A

CONSUMER FEATURES

Basic Thermostat
» Electronic thermostat controls heating, cooling and fan
» Compatible with virtually all types of equipment – split system, rooftop, hydronic, heat pumps (including dual fuel) – single stage or multi stage
» 7-Day programmability with 4 timed heating and cooling changes per day
» Temperature hold mode for temporary, permanent, and vacation time periods
» Menu style programming
» Celsius or Fahrenheit display
» Password lock on user display
» Non-Volatile memory (Batteries not required)
» IEC 61000-4-2 safety rated to class 3

Demand Response
» Display - Control Event Notifications:
  • Countdown of the control event
  • Event completion
  • Return to normal

Opt-Out
» Consumer may cancel an event in progress or opt-out of events for one day from thermostat menu

Remote Access
» Provides complete control of thermostat from a user password-protected web page
» Monitor temperature and modify the daily program.

Power Provider Functionality
» Control strategies may be defined for each group, subgroup, or individual devices
» Devices may be assigned to multiple sets of groups and subgroups
» On-board intelligence for smooth ramp-in and ramp-out of control across the population of devices
» Events in progress may be interrupted with a smooth ramp-out across the population of devices
» Customizable control events from various shed/cycling strategies
» Control events may be targeted for each or all group, subgroup, or individual devices
» Non-volatile data storage has capacity for over 30 days data when recorded at 15 minute intervals

SPECIFICATIONS
**POWER PROVIDER FEATURES**

**Administration**
- Define control strategies for heating, cooling
- Individualized control strategies may be stored in the device or sent over the air
- A common “activate” command can be sent to specific groups to activate the individual stored strategy for ultimate flexibility
- Control event strategies for air handler cycling or temperature setback
- Structure DR programs into groups to maximize power recovery and minimize consumer impact
- Customize event notifications and user option and information screens

**Control Event Dispatch**
- Dispatcher selects groups of thermostats and LCR's to participate in control event
- Dispatcher selects control event strategies from pre-defined drop-down list
  - Event cycling or Temperature Set Points
- Homeowner notifications, addressed to groups, can be displayed on the thermostat

**Customer Support**
- Customer call center can have total access to thermostat to provide complete customer service
- Consumer may sign up for a pay for performance participation level from the thermostat menu
- Limit consumer override
- Verify consumer participation for calculating incentives

**POWER REQUIREMENTS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermostat Voltage:</td>
<td>24-volts ±20% AC or DC</td>
</tr>
<tr>
<td>Total Load Current:</td>
<td>5A</td>
</tr>
<tr>
<td>Single Output Load Current:</td>
<td>2A</td>
</tr>
</tbody>
</table>

**THERMAL**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Range:</td>
<td>32°F – 99°F (0° - 37°C)</td>
</tr>
<tr>
<td>Display Accuracy:</td>
<td>±1°F between 60°F and 80°F, ±2°F outside this range</td>
</tr>
<tr>
<td>Control Accuracy:</td>
<td>±1°F</td>
</tr>
<tr>
<td>Control Range Heat:</td>
<td>40°F-88°F (4°C - 30°C)</td>
</tr>
<tr>
<td>Control Range Cool:</td>
<td>42°F-90°F (6°C - 32°C)</td>
</tr>
<tr>
<td>Heat/Cool Deadband:</td>
<td>Adjustable 2° or 5° F or C</td>
</tr>
<tr>
<td>1st Stage Differential:</td>
<td>Adjustable 1°F - 4°F (1°F default)</td>
</tr>
<tr>
<td>2nd Stage Differential:</td>
<td>Adjustable 1°F - 4°F (1°F default)</td>
</tr>
<tr>
<td>Temperature Offset:</td>
<td>Adjustable 1°F - 4°F</td>
</tr>
</tbody>
</table>

**COMMUNICATIONS**

<table>
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<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Cisco 900 MHz Mesh Networks</td>
</tr>
</tbody>
</table>

All devices are 100% Factory Tested and Inspected in accordance with Factory Acceptance Testing Procedures mutually determined with each utility. Specifications subject to change.
**Message Center**

Normally this is where a consumer will find the current date and time and the name of the current event if running the temperature program. If the thermostat is in a Hold State, the thermostat will display when the Hold State is scheduled to end. The Message Center is also used to give information on when you should replace an air filter or UV lamp, when a consumer should service a humidifier and general HVAC equipment.

**Equipment Status**

In this area of the display, the thermostat will show the equipment’s mode and whether the equipment is active. A typical message in this area would be HEAT MODE when the equipment is not running and HEATING when the equipment is active.

**Outdoor Temperature**

The thermostat has terminals that can be hooked up to an outdoor temperature sensor. If this is installed, outdoor temperature will be displayed in this area of the screen.

When installed with the Aprilaire® Automatic Digital Humidifier Control (Model 58) or and Aprilaire® Model 6504 Intelligent Zoned Comfort System, this information is communicated to the thermostat so there is no need for the extra outdoor temperature sensor.

**Room Temperature**

The large temperature of the screen is the room temperature. The scale can be changed from Fahrenheit to Celsius if desired.

**Setpoints**

The setpoints are the temperature(s) to which the thermostat is controlling.

**Multi-Function Buttons**

The multi-function buttons are used throughout the thermostat menu system and have many functions. The description on the screen directly above the button is what that button is used for in that particular screen. In Figure 1, the left button would be used for INFO and the right button would be used for MENU.

**Up/Down Buttons**

These buttons are used to raise and lower temperature and to navigate through the thermostat’s menus.
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» Structure DR programs into groups to maximize power recovery and minimize consumer impact
» Customize event notifications and user option and information screens
» Cellular communication (other communications available)
» Definable “emergency events” which cannot be opted out by homeowner
» Receive Opt-Out notification and event participation statistics from thermostats
» Read event participation statistics from thermostats

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COMMUNICATIONS OPTIONS
TYPE: Cellular, Cisco 900 MHz Mesh

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When installed with the Aprilaire® Automatic Digital Humidifier Control (Model 58) and Humidifier, the message center will also inform you if the humidifier is operating.

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