BAST-321HP-BW2

CONTEMPORARY CONTROLS

BASstat

Wi-Fi BACnet®/IP Heat Pump Thermostat

The BASstat series of BACnet-compliant communicating thermostats provide effortless integration into BACnet/IP networks using a Wi-Fi connection. These thermostats are suited for heating, cooling, and ventilation with binary output control for single and 2-stage compressor heat pumps with or without 3rd stage auxiliary heat. Adaptive control algorithm applied to multi-stage on/off control saves energy and ensures comfort for the occupants. Three sensing options are available: built in temperature sensor, input for a remote temperature sensor, or temperature override network command from Building Automation System. Reversing valve (O/B) logic is configurable. Occupancy status can be set from thermostat buttons, a wired ESI input, or over the BACnet network. Thermostat buttons can be locked to prevent tampering. Digital display with graphical icons is easy to read and understand. Numerous icons indicate parameters such as: Active Mode, Cooling stage 1 or 2, Heating stage 1, 2 or 3, Ventilation Only, Fan Active, Occupied/Unoccupied state, and a Clock icon to indicate Short Cycle Delay or Max Cycles per hour active waiting state. Two control types are available: Cooling and Heating with Auto-changeover (default) and Cooling or Heating with Manual-changeover.

Electrical *(Class 2 Circuits Only)*

INPUT	**AC only**
Voltage (±10%):	24 V
Power:	5 VA
Frequency:	47-63 Hz

Environmental

Operating temperature:	0°C to 50°C
Storage temperature:	−10°C to +60°C
Relative humidity:	5–95%, non-condensing

Functional — **Wi-Fi**

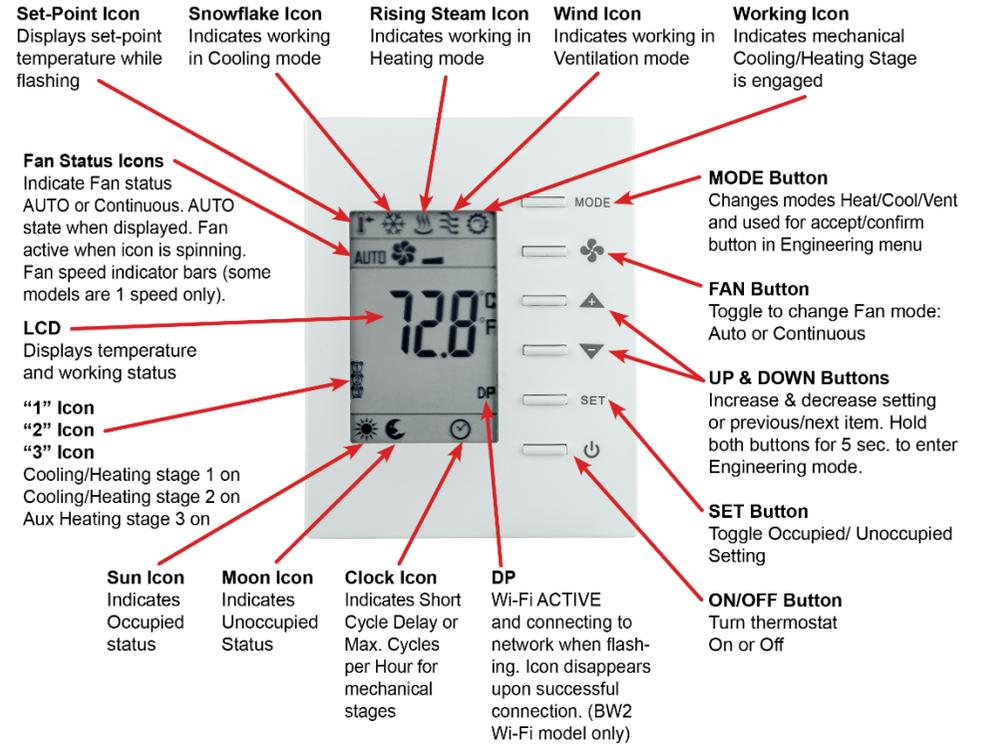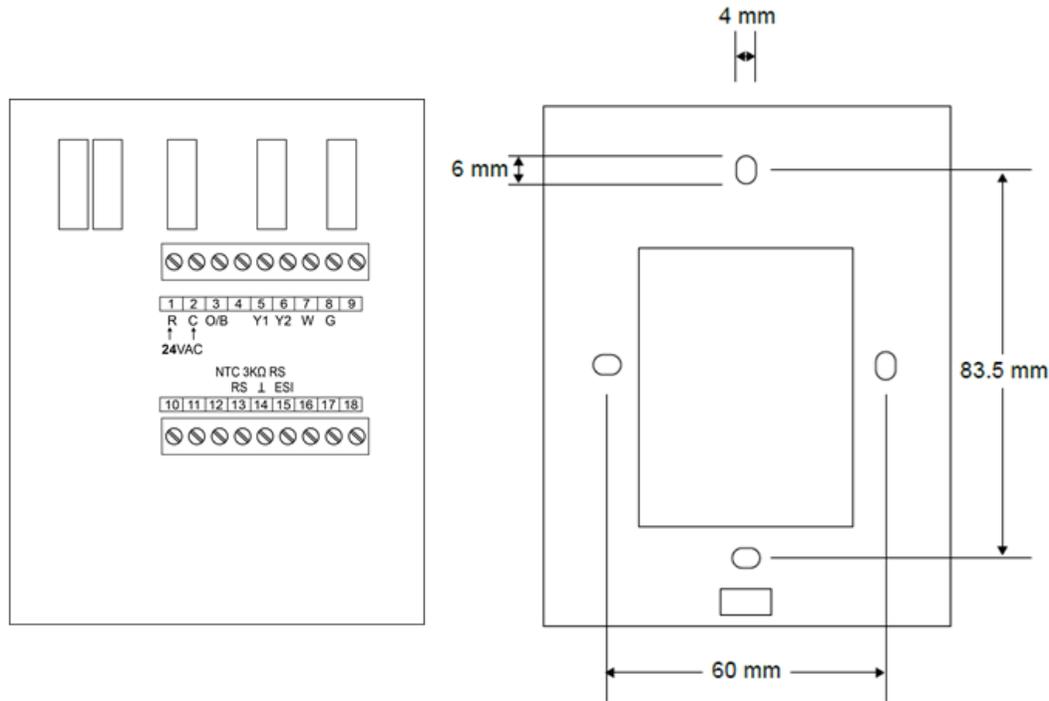|	
Physical Layer:	802.11b/g/n
Wi-Fi range:	150ft. as defined by the standard (depending on obstructions) 54Mbps max data rate

Installation

The BASstat requires **24 VAC** while drawing no more than 5 VA of power. The recommended conductor size is 16–18 AWG or up to 1.5mm^2 wires.

WARNING: Internally, this device utilizes a half-wave rectifier and therefore can only share the same AC power source with other half-wave rectified devices. Sharing AC power with full-wave rectified devices is NOT recommended. Devices powered from a common AC source could be damaged if a mix of half-wave and full-wave rectified devices exists.

BASstat mounts directly onto wall, panel, standard 65×65mm junction box (hole pitch 60 mm) or standard 2×4 inch vertical junction box (hole pitch 83.5 mm). To mount on electric box, separate back plate from the controller by loosening the screw. Align the mounting holes of the back plate to the screw holes of the electric box. Fix the back plate to the electric box using screws. Suggested screws for use are Phillips wide "truss head" or "washer head" screws #6-32 x ¾" (20mm). Wire the controller and mount on top of back plate. Secure by tightening the mount screw at the bottom.

WARNING: DO NOT let the back-mount screw heads rise above the back plate or it may touch the circuit board and cause a short.

BACnet/IP Wi-Fi communication requires connecting to the thermostat as an access point for initial configuration. A Wi-Fi enabled laptop/computer or smart portable device can discover the BASstat initially as a Wi-Fi access point with SSID "*WiFi- 122B-xxxx*" and no passphrase by default (simply click to connect to Access Point). The digits "*xxxx*" in "*122Bxxxx*" are the last 4 digits of the thermostat's Wi-Fi chip MAC address found written on the back side. This can assist when multiple Wi-Fi stats are installed (outlined in image below). Once connected to the thermostat, open its web page by typing *192.168.0.1* with **admin** for username and no password. Web page will be presented for network configuration. After initial connection, the Wi-Fi mode in the thermostat can be changed to **Infrastructure,** and the local Wi-Fi network configuration can be entered and stored. A reboot of the thermostat is required. Thanks to its EEPROM, the BASstat will store configuration in the event of power loss.

If configuration fails or the thermostat needs to be configured to use a different Wi-Fi access point, the thermostat must be reset and reconfigured. Reset will restore all values to default and can be selected from *Engineering Menu* (*rSt*).

Mechanical (left diagrams):

4 mm

6 mm

83.5 mm

60 mm

R　C　O/B　　　Y1 Y2　W　G
1　2　3　4　5　6　7　8　9
24VAC

NTC 3KΩ RS
RS ⊥ ESI
10　11　12　13　14　15　16　17　18

Operation Overview (LCD callouts):

Set-Point Icon
Displays set-point temperature while flashing

Snowflake Icon
Indicates working in Cooling mode

Rising Steam Icon
Indicates working in Heating mode

Wind Icon
Indicates working in Ventilation mode

Working Icon
Indicates mechanical Cooling/Heating Stage is engaged

Fan Status Icons
Indicate Fan status AUTO or Continuous. AUTO state when displayed. Fan active when icon is spinning. Fan speed indicator bars (some models are 1 speed only).

LCD
Displays temperature and working status

"1" Icon
"2" Icon
"3" Icon
Cooling/Heating stage 1 on
Cooling/Heating stage 2 on
Aux Heating stage 3 on

Sun Icon
Indicates Occupied status

Moon Icon
Indicates Unoccupied Status

Clock Icon
Indicates Short Cycle Delay or Max. Cycles per Hour for mechanical stages

DP
Wi-Fi ACTIVE and connecting to network when flashing. Icon disappears upon successful connection. (BW2 Wi-Fi model only)

MODE Button
Changes modes Heat/Cool/Vent and used for accept/confirm button in Engineering menu

FAN Button
Toggle to change Fan mode: Auto or Continuous

UP & DOWN Buttons
Increase & decrease setting or previous/next item. Hold both buttons for 5 sec. to enter Engineering mode.

SET Button
Toggle Occupied/ Unoccupied Setting

ON/OFF Button
Turn thermostat On or Off

A unique *Device Instance* number throughout the entire BACnet network is required to distinguish the device from all other BACnet devices. When more than one BASstat is installed on the same network, their *Device Instance* numbers must be configured prior to connecting to the BACnet/IP network, or BACnet communication will fail due to a duplicate instance. Device instance can be modified in *Engineering Menu* items (*dEVH*) – high bytes – and (*dEVL*) – low bytes; *Device Instance = (dEVH)*1000+(dEVL).*

To enter the Engineering Menu, press the *UP* and *DOWN* buttons simultaneously for 5 seconds. Use the *UP* and *DOWN* buttons to navigate through the menu and change menu item values. Use the *MODE* button to enter a menu item and accept/confirm a selected value. To exit the *Engineering Menu*, navigate to menu item (*End*) and press *MODE.* The menu will also exit automatically 10 seconds after the last button is pressed.

The BASstat has a built-in space temperature sensor with provision for remote wired 3kΩ NTC thermistor sensor, or temperature value can be sent by another device over the BACnet network. Two control types are available: Cooling and Heating with Auto-changeover and Cooling or Heating with Manual-changeover. These control types are selectable from *Engineering Menu* (*tyPE*) or BACnet object *MSV7*. The default control type is *Cooling and Heating with Auto-changeover*. User-side comfort control is accomplished with six buttons – mode (*Heat*, *Cool*, or *Ventilation* – dependent on control type chosen from *Engineering Menu (tyPE)* or BACnet object *MSV7*), fan, raise, lower, set, and power. There are also options to lock select buttons or all buttons on the thermostat. A large LCD display indicates setpoint, space temperature, and current mode of operation using graphical icons. By default, the BASstat thermostat will not provide *Fan* output signal when in *Heat Mode* since most HVAC comfort systems provide their own *Fan* control signal based on a delay after a call for heating. This can be configured from *Engineering Menu* item (*F-Ht*) or BACnet object *BV15* with a default value of 0. To enable fan output for heating, set this value to 1.

Reset settings can be performed from Engineering Menu item (rSt) which will reset all parameters including communication (MAC and Device Instance) and all control algorithm values back to factory-programmed defaults.

For complete datasheet and details on BASstat, support, or compliance information, please download our BASstat User Manual and Data Sheet at:
https://www.ccontrols.com/basautomation/basstat.php
Free BACnet Discovery Tool for configuration: https://www.ccontrols.com/sd/bdt.htm

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