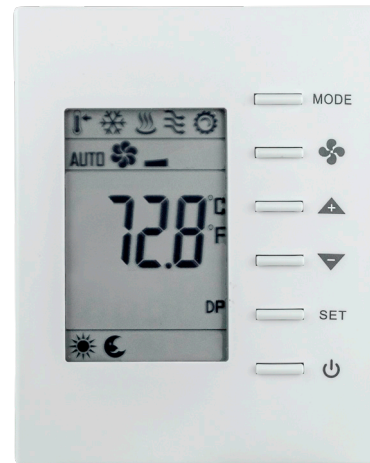


BAST-321HP – BACnet Communicating Thermostat for Single and Multi-Stage Heat Pump Operation

The BASstat series of BACnet-compliant wired or wireless communicating thermostats ensure easy integration into BACnet/IP (Wi-Fi) or BACnet MS/TP (EIA-485) networks. The BAST-321HP is suited for heating, cooling, and ventilation with binary output control for single and multi-stage heat pumps with or without 3rd stage auxiliary heat. An adaptive control algorithm 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 network command from a Building Automation System (BMS). 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 are optionally lockable to prevent tampering. Digital display with graphic icons is easy to read and understand.



Versatile BACnet Communication in Two Distinct Models

- BACnet MS/TP in B2 models with MS/TP baud rates 9.6kbps - 76.8kbps (BTL Listed)
- BACnet/IP in BW2 models with 802.11 b/g/n 2.4GHz Wi-Fi
- Both B2 and BW2 models are BACnet compliant with a B-ASC device profile

Flexible Installation

- 24VAC (+/-10%) power input
- Digital Display with graphic icons of operation, °C or °F display
- Single or Multi-stage, low voltage binary outputs for heat pump applications
- Configurable O/B reversing valve control (N.O/N.C.)
- Manual or Auto-changeover modes
- Effective run time accumulation for energy consumption calculations

- Selectable built-in temperature sensor or remote temperature sensor input (NTC Thermistor 3kΩ)
- Occupied / Unoccupied mode can be switched locally by the user, by using a separate occupancy sensor, or remotely by the BMS headend
- Configurable PID Algorithm parameters: Proportional Gain, Integral Rate, Stage Widths, Deadband
- Configurable Max Heat & Min Cool temperatures, Short Cycle Delay, Maximum Cycles Per Hour
- Stand-alone operation with BACnet setpoint and schedule supervision or optional full BMS control
- Non-volatile memory retains user settings during power loss
- Lockable user interface
- Operating Environment: 0-50°C, 5-95% RH (non-condensing)
- Mounts directly onto wall, panel, standard 65×65 mm junction box (hole pitch 60 mm) or standard 2×4 inch vertical junction box (hole pitch 83.5 mm)

BASstat – Overview

The BASstat's backlit LCD display is large and easy to read. It incorporates graphic icons to indicate current state of operation: Active Mode, Cooling stage 1 or 2, Heating stage 1, 2, or 3, Ventilation Only, Fan Active, Occupancy Status, and Clock icon to indicate Short Cycle Delay or Max Cycles per hour active waiting state. Six buttons on the BASstat allow users to adjust temperature set points, change HVAC modes, turn the thermostat ON/OFF, and more. Pressing the Set and Up/Down buttons can manually toggle the thermostat from

occupied/unoccupied modes where BACnet occupancy command is not an option. Front panel buttons are lockable to prevent user tampering. These buttons can also be locked individually, making the BASstat suitable for applications where limited user control is desired. For greater operational flexibility, an optional remote space temperature sensor is available. Featuring an NTC type 3kΩ thermistor, the temperature sensor is directly compatible with any BASstat model.

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

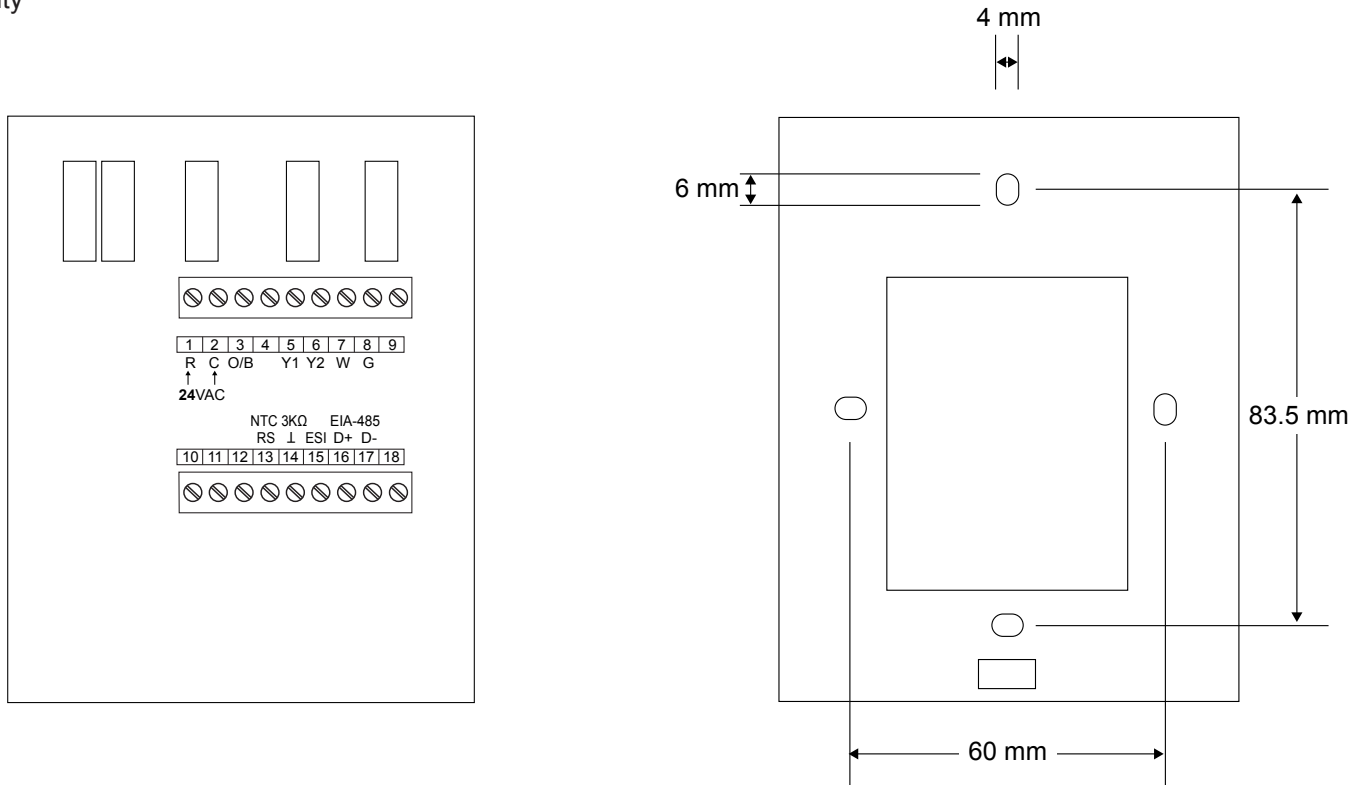
ON/OFF Button
Turn thermostat On or Off

Wiring Diagram

Wiring: 14 to 22 AWG wires or 1.5mm² wires.

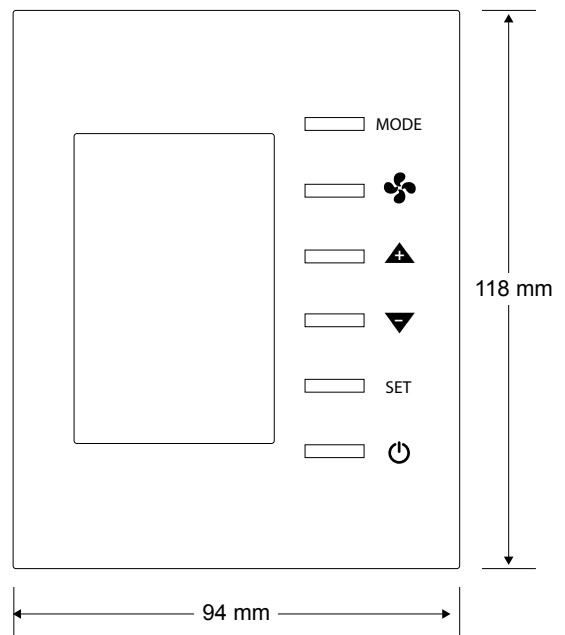
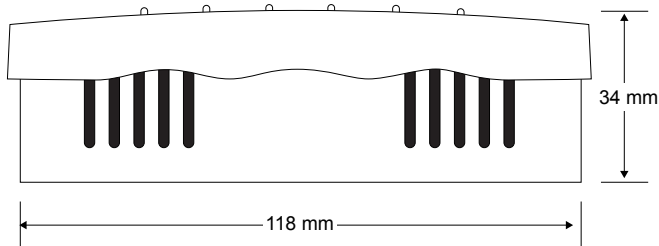
Mounts directly onto wall, panel, standard 65×65mm junction box (hole pitch 60 mm) or standard 2×4-inch vertical junction box (hole pitch 83.5mm).

EIA-485 connection to pins 16(D+) and 17(D-) applicable to B2 - BACnet MS/TP model only. BW2 model uses Wi-Fi connectivity



Dimensions (all dimensions are in mm)

Width: 94mm
 Height: 118mm
 Depth: 34mm



Specifications

Functional	B2 model	BW2 model
Compliance	EIA-485	IEEE 802.11b, 802.11g, 802.11n (single stream) 16.5dBm@11b, 14.5dBm@11g 13.5dBm@11n Frequency range: 2400MHz~2484MHz
Protocols supported	BACnet MS/TP	BACnet/IP
Cable length	4000 ft/1200 m @76.8kbps (max)	N/A
Wi-Fi range	N/A	150ft. as defined by the standard (depending on obstructions) 54Mbps max data rate
Authentication	N/A	WEP, WPA/WPA2 PSK
Maximum Number of Devices	32 MS/TP devices (max)	N/A or depending on Wi-Fi router performance
Temperature Display Range	-10 to +60°C (14 to 140°F)	-10 to+ 60°C (14 to 140°F)
Temperature Display Resolution	0.1°F (0.1°C)	0.1°F (0.1°C)
Temperature Accuracy	±1.0°C (±1.8°F) with all outputs off	±1.0°C (±1.8°F) with all outputs off

Electrical

Input	AC only	AC only
Voltage (V, ± 10%)	24 VAC	24 VAC
Power	5 VA	5 VA
Frequency	47–63 Hz	47–63 Hz

Environmental/Mechanical

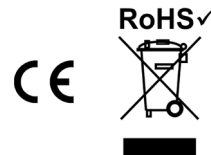
Operating temperature	0°C to 50°C	0°C to 50°C
Storage temperature	-10°C to +60°C	-10°C to +60°C
Relative humidity	5–95%, noncondensing	5–95%, noncondensing
Protection	IP30	IP30
Weight	0.44 lbs. (.2 kg)	0.44 lbs. (.2 kg)

Regulatory Compliance

CE Mark; RoHS

BW2 model Wi-Fi FCCID

P53-EMW3165-P



Electromagnetic Compatibility

The BASstat complies with the following specifications and bears the CE mark in accordance with the provisions of the Electromagnetic Compatibility (EMC) Directive 2004/108/EC based on the following specifications:

Standard	Test Method	Description
EN 61000-6-2	IEC 61000-4-2	Electrostatic Discharge Immunity
EN 61000-6-2	IEC 61000-4-3	Radiated, Radio-Frequency, Electromagnetic Field Immunity
EN 61000-6-2	IEC 61000-4-4	Electrical Fast Transit/Burst Immunity
EN 61000-6-2	IEC 61000-4-5	Voltage Surge Immunity
EN 61000-6-2	IEC 61000-4-6	Immunity to Conducted Disturbances
EN 61000-6-2	IEC 61000-4-8	Power Frequency Magnetic Field Immunity
EN 61000-6-2	IEC 61000-4-11	Voltage Dips and Interruptions
EN 61000-6-3	IEC 61000-3-2	Limits for Harmonic Current Emissions
EN 61000-6-3	IEC 61000-3-3	Limitation of Voltage Fluctuations and Flicker in Low Voltage Supply Systems

Ordering Information

Model	Description
BAST-321HP-B2	BACnet MS/TP Heat Pump 2-comp, 1-Aux Heat, 1-Fan, Wired
BAST-321HP-BW2	BACnet/IP Heat Pump 2-comp, 1-Aux Heat, 1-Fan, Wi-Fi
TAS-THTRAD01	3K Ω Room Temperature Sensor w/Insulated Pad

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