



BAC-19xx63-ZEC FlexStat

Installation Guide

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QUICK START

Complete the following steps to select and install a KMC Conquest® BAC-19xx63-ZEC FlexStat:

1. **Select the appropriate model** for the intended application and options (see the [BAC-19xx63-ZEC Series FlexStats Data Sheet](#) at kmccontrols.com).
2. **Mount and wire the unit** (see this document and the [BAC-19xx63-ZEC FlexStat Sequence of Operation and Wiring Guide](#)).
3. **Configure and operate** the unit (see this document and the [BAC-19xx63-ZEC FlexStat Application Guide](#)).
4. If necessary, **troubleshoot** any issues (see the [BAC-19xx63-ZEC FlexStat Application Guide](#)).

NOTE: This document gives basic mounting, wiring, and setup information. For additional information, see the KMC Controls website for the latest documents.



⚠ CAUTION

BAC-19xx63-ZEC models are NOT compatible with the backplates of older BAC-10xxx/12xxxx/13xxxx/14xxxx FlexStats! If replacing an older FlexStat, replace the backplate as well.



WIRING CONSIDERATIONS

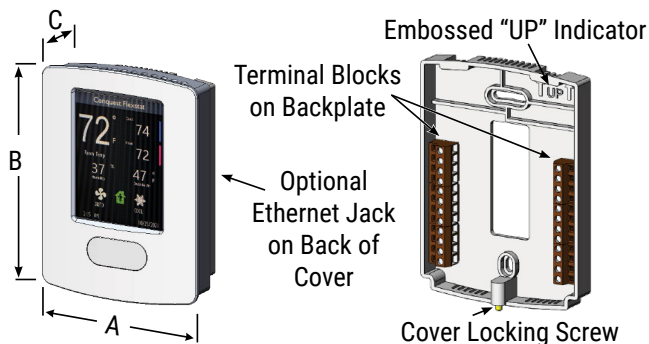
See the [BAC-19xx63-ZEC FlexStat Sequence of Operation and Wiring Guide](#) for sample wiring for different applications. See the [BAC-19xx63-ZEC FlexStat Application Guide](#) for additional important wiring considerations.

⚠ CAUTION

BAC-19xx63-ZEC models are NOT compatible with the backplates of older BAC-10xxx/12xxxx/13xxxx/14xxx FlexStats! If replacing an older FlexStat, replace the backplate as well.

- Because of the many connections (power, network, inputs, outputs, and their respective grounds or switched commons), **be sure wiring is well planned before installation of conduit!**
- **Make sure that conduit for all wiring has adequate diameter for all necessary wiring.** Using 1-inch conduit and junction boxes is recommended! Use external junction boxes above the ceiling or in another convenient location as needed to make connections that run to the FlexStat's junction box.
- To prevent excessive voltage drop, **use a conductor size that is adequate for the wiring length! Allow plenty of "cushion" to allow for transient peaks during startup.**
- Using **multiple conductor cables** for all inputs (e.g., 8 conductor) and outputs (e.g., 12 conductor) is recommended. Grounds for all inputs can be combined onto one wire.

MOUNTING



DIMENSIONS		
A	3.874 inches	99.4 mm
B	5.124 inches	130.1 mm
C	1.301 inches	33.0 mm

Illustration 1—Dimensions and Mounting Information

NOTE: For optimum temperature sensor performance, the FlexStat must be mounted on an interior wall and away from heat sources, sunlight, windows, air vents, and air circulation obstructions (e.g., curtains, furniture). Additionally, for a model with an occupancy sensor option, install it where it will have unobstructed view of the most typical traffic area. See the [Room Sensor and Thermostat Mounting Location and Maintenance Application Guide](#).

NOTE: If replacing an existing thermostat, label wires as needed for reference when removing the existing thermostat.

1. Complete rough-in wiring at each location prior to FlexStat installation. Cable insulation must meet local building codes.

⚠ CAUTION

Use only the mounting screw supplied by KMC Controls. Using other screws may damage the FlexStat. Do not turn the screw in farther than necessary to remove the cover.

2. If the cover is locked on the backplate, turn the **hex screw** in the bottom of the FlexStat **clockwise** until the screw (just) clears the cover. (See Illustration 2.)

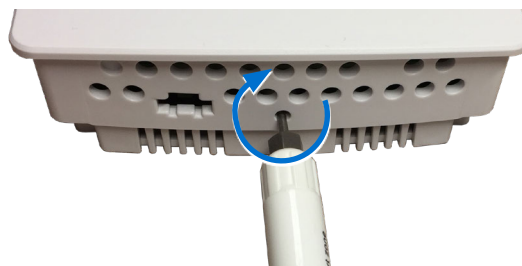


Illustration 2—Unlocking the Cover from the Backplate

NOTE: The hex screw should always remain in the backplate.



Illustration 3—Hex Screw Flush in the Backplate

3. Pull the **bottom** of the cover away from the backplate (mounting base).



Illustration 4—Removing the Cover from the Backplate

4. Route the wiring through the center hole of the backplate.
5. With the embossed “UP” and arrows toward the ceiling, mount the backplate on an electrical box using the provided screws.

NOTE: Models mount directly on vertical 2 × 4 inch boxes, but they require an **HMO-10000W wall mounting plate** for 4 × 4 boxes.

6. Make the appropriate connections to the terminals and (for Ethernet models) modular jack.

See also **Number of Detected Zones on page 6**, **Sensor and Equipment Connections on page 5**, and **Power Connection on page 6**. See also the **BAC-19xx63-ZEC FlexStat Sequence of Operation and Wiring Guide**, and the **BAC-19xx63-ZEC FlexStat Application Guide**.

NOTE: SC = Switched (relay) Common
NOTE: IN1 is reserved for the internal temp sensor

Ethernet Network Connector
(Optional, on Cover)

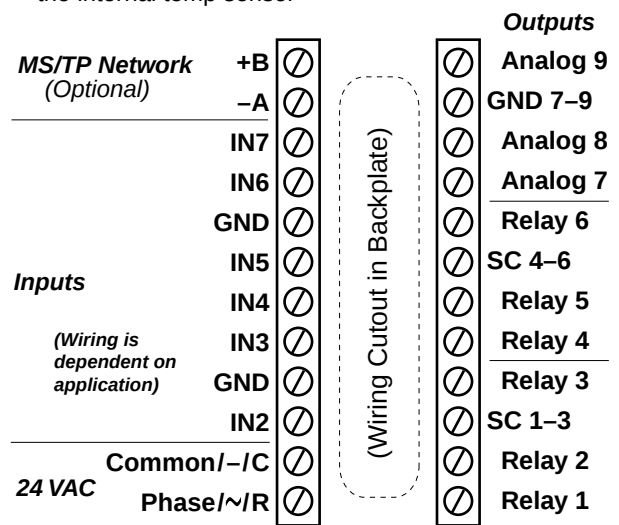


Illustration 5—BAC-19xx63-ZEC Terminals and Connections

7. **AFTER wiring is complete**, carefully position the top of the FlexStat's cover over the top of the backplate, swing the bottom of the cover down, and push the cover into place

CAUTION

When reinstalling the cover on the backplate, be careful not to damage or dislodge any wiring or components. Do not use excessive force. If there is any binding, pull off the cover and examine pins and terminal socket connectors.

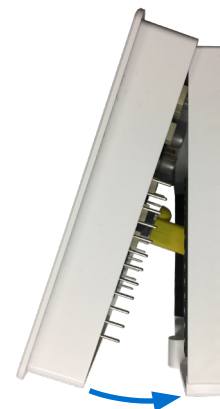


Illustration 7—Reinstalling the Cover on the Backplate

8. Turn the **hex screw** at the bottom **counterclockwise** until it engages the cover and holds it in place.



Illustration 8—Locking the Cover on the Backplate

NETWORK CONNECTIONS

Connect (Optional) Ethernet Network

1. For BAC-19xx63CE-ZEC models (only), plug an **Ethernet patch cable** into the back of the FlexStat.

NOTE: The Ethernet patch cable should be T568B Category 5 or better and a maximum of 328 feet (100 meters) between devices.



Illustration 9—Ethernet Network Connection ("E" Models)

Connect (Optional) MS/TP Network

⚠ CAUTION

To avoid damage from ground loops and other communication issues in networked MS/TP model FlexStats, correct phasing on MS/TP network and power connections on **ALL** the networked controllers is critically important!

NOTE: See the [BAC-19xx63-ZEC FlexStat Application Guide](#) for additional wiring considerations.

1. For the non-E models (only), connect the BACnet network to the **BACnet MS/TP terminals** using shielded twisted-pair cable.

NOTE: Use 18 or 22 gauge AWG shielded twisted pair cable with maximum capacitance of 51 picofarads per foot (0.3 meters) for all network wiring. Log in and see the

[EIA-485 Network Wire Recommendations Technical Bulletin](#) for recommendations. For principles and good practices when connecting an MS/TP network, see [Planning BACnet Networks \(Application Note AN0404A\)](#).

- A. Connect the **-A** terminals in parallel with all other **-A** terminals on the network:
- B. Connect the **+B** terminals in parallel with all other **+B** terminals on the network.
- C. Connect the **shields** of the cable together at each device using a wire nut (or the **S** terminal in other KMC BACnet controllers).

NOTE: The **S (Shield)** terminal in KMC controllers is provided as a connecting point for the shield. The terminal is not connected to the ground of the controller. When connecting to controllers from other manufacturers, verify the shield connection is not connected to the controller's ground.

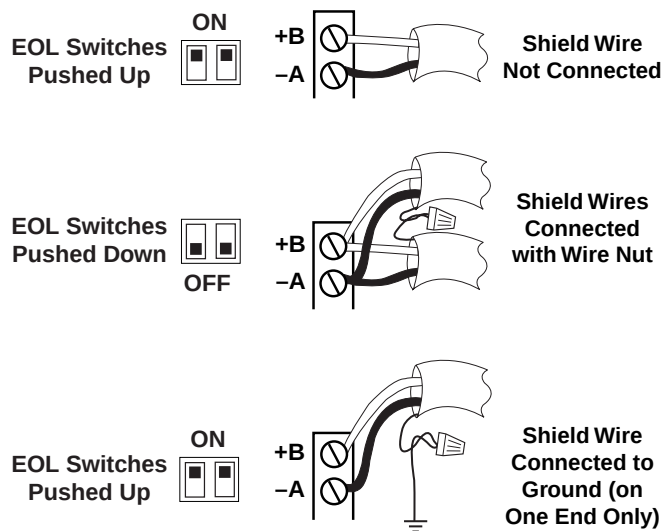
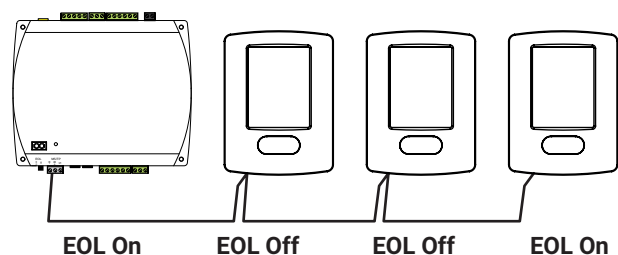


Illustration 10—MS/TP Connections and EOL (MS/TP Models)

2. Connect the cable shield to a good earth ground at **one end only**.

NOTE: Devices on physical ends of MS/TP wiring segments must have EOL (End Of Line) termination for proper network operation. Verify the FlexStat's EOL switch is in the proper position.

3. If a FlexStat is at the physical **end** of the MS/TP network line (only one wire on each –A or +B terminal), set both EOL switches to **On** on the back of the circuit board. If not at the end of the line (two wires on each terminal), ensure that both switches are Off.

SENSOR AND EQUIPMENT CONNECTIONS

Input Connections

1. Wire any additional sensors to the **appropriate input terminals**. See the [BAC-19xx63-ZEC FlexStat Sequence of Operation and Wiring Guide](#). (These applications are the selectable packaged programs in the BAC-19xx63-ZEC models.)

NOTE: Use KMC software to properly configure the devices. For **passive** input devices (e.g., switch contacts and 10K ohm thermistors), set the termination to the **10K Ohm** position. For **active** voltage devices, set the termination to the **0 to 12 VDC** position.

NOTE: Unused analog inputs can be converted to binary inputs by right-clicking the input object in KMC software and selecting **Convert to....**

NOTE: Wire sizes 14–22 AWG can be clamped in each terminal. No more than two 16 AWG wires can be joined at a common point.

Output Connections

1. Wire additional equipment (such as fans, dampers, and valves) to the appropriate output terminals. See the [BAC-19xx63-ZEC FlexStat Sequence of Operation and Wiring Guide](#). Connect the device under control between the desired output terminal and the related SC (Switched Common for relays) or GND (Ground for analog outputs) terminal.

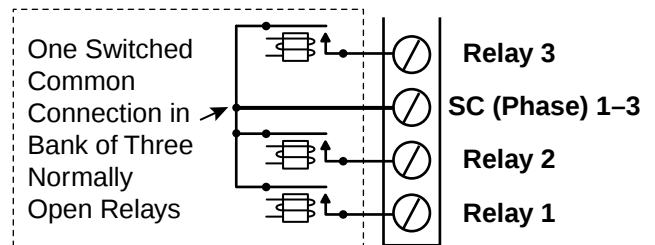


Illustration 11—Switched (Relay) Common and Relay Bank

NOTE: For the bank of three relays, there is one Switched (relay) Common connection (in place of the GND terminal used with analog outputs). (See Illustration 11.) For the relay circuit, the phase side of the AC should be connected to the SC terminal. FlexStat relays are NO, SPST (Form “A”).

NOTE: Unused analog outputs can be converted to binary outputs by right-clicking the output object in KMC software and selecting **Convert to Binary Object**.

⚠ CAUTION

Do not attach a device that draws current exceeding the FlexStat's output capacity:

- **Maximum output current for individual ANALOG/UNIVERSAL outputs is 100 mA (at 0–12 VDC) or 100 mA total for each bank of three analog outputs.**
- **Max. output current is 1 A for individual RELAYS at 24 VAC/VDC or a total of 1.5 A for relays 1–3 or 4–6.**

⚠ CAUTION

Relays are for Class-2 voltages (24 VAC) only. Do not connect line voltage to the relays!

⚠ CAUTION

Do not mistakenly connect 24 VAC to an analog output ground. This is not the same as a relay's (SC) Switched Common. See the backplate's terminal label for the correct terminal.

POWER CONNECTION

⚠ CAUTION

To avoid damage from ground loops and other communication issues in networked MS/TP model FlexStats, correct phasing on MS/TP network and power connections on ALL the networked controllers is critically important!

NOTE: Follow all local regulations and wiring codes.

1. Connect a 24 VAC, Class-2 transformer (or 24 VDC power supply) to the power terminals (see Illustration 12):
 - A. Connect the **neutral** side of the transformer to the common (–/C) terminal **⊥**.
 - B. Connect the AC **phase** side of the transformer to the phase (~/R) terminal **~**.

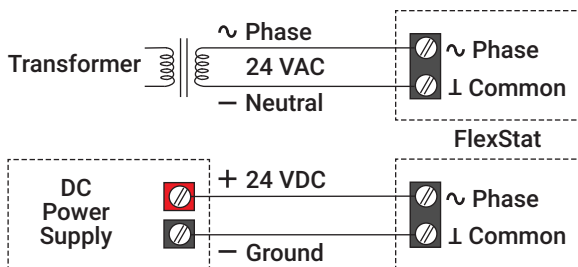


Illustration 12—Power Terminals

NOTE: Connect only one controller to each transformer with 14–22 AWG copper wire.

NOTE: For information on principles and good practices when connecting transformers, see [Tips for Connecting 24-Volt Power Application Note \(AN0604D\)](#).

NOTE: To connect 24 VDC (–15%, +20%) instead of VAC power:

- Connect GND to the **⊥** (common) terminal.
- Connect 24 VDC to the **~** (phase/R) terminal.

NOTE: Use either shielded connecting cables or enclose all cables in conduit to maintain RF emissions specifications.

NOTE: If power is applied to the terminals, the FlexStat will power up when it is reinstalled on the backplate. See [Mounting on page 2](#).

CONFIGURATION AND PROGRAMMING

To set up the FlexStat from the touchscreen:

1. Push and hold the upper left corner of the screen (DAT reading) to start.
2. Select the desired options and values. See the [BAC-19xx63-ZEC FlexStat Application Guide](#) for details.

NOTE: Options in menus are dependent on the FlexStat model and selected application.

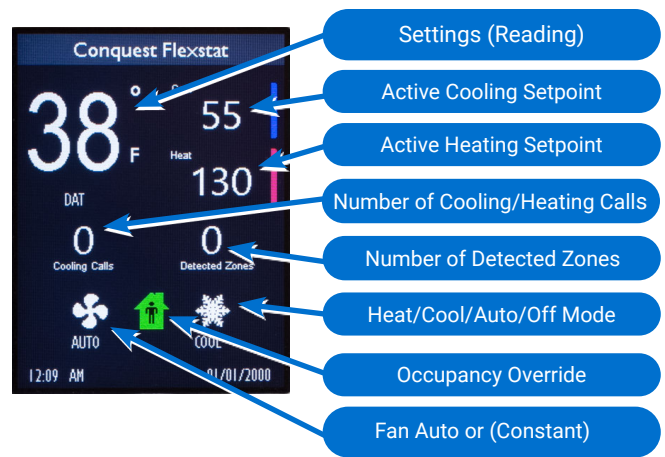


Illustration 13—Screen Menus Access (Default)

Advanced configuration of a FlexStat can be done through software. See the [BAC-19xx63-ZEC Series FlexStat Data Sheet](#) for the most relevant KMC Controls tool for additional configuring, programming (with Control Basic), and/or creating graphics for the controller. See the documents or Help systems for the respective KMC tool for more information.

NOTE: In CO₂ sensing models, the NetSensor must be continuously powered and exposed to fresh air through the HVAC system in order to self calibrate. The calibration technique is designed for use in applications where CO₂ concentrations periodically drop to outside ambient conditions (~400 ppm). The sensor typically reaches its operational accuracy after 25 hours of continuous operation if exposed to ambient reference levels of air 400 ± 10 ppm CO₂. The sensor will maintain accuracy specifications if exposed to a reference value at least four times within 21 days.

MS/TP NETWORK ACCESS PORT

The MS/TP EIA-485 data port on the bottom of the cover provides technicians temporary access to an **MS/TP** network (not Ethernet) using an **HPO-5551**, **BAC-5051AE**, and **KMC Connect**. See the documentation for those products for details.

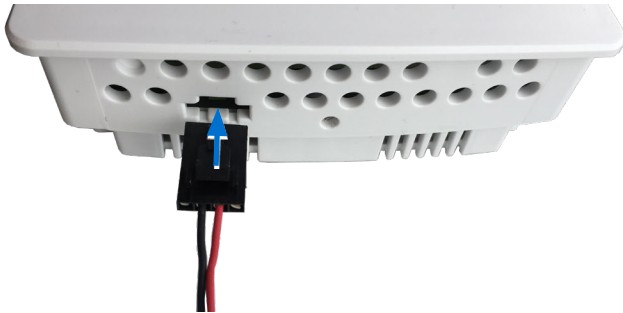


Illustration 14—MS/TP (EIA-485) Data Port

MAINTENANCE

To maintain accurate **temperature and humidity** sensing, remove dust as necessary from the ventilation holes in the top and bottom of the case.

To maintain maximum sensitivity of the built-in **motion** sensor, occasionally wipe dust or dirt off the lens—but do not use any fluid on the sensor.

To clean the case or display, use a soft, damp cloth (and mild soap if necessary).

ADDITIONAL RESOURCES

The latest support files are always available on the KMC Controls web site (www.kmcccontrols.com). To see all available files, you will need to log-in.

See the **BAC-19xx63-ZEC Series FlexStats Data Sheet** for:

- Specifications
- Accessories and replacement parts

See the **BAC-19xx63-ZEC FlexStat Sequence of Operation and Wiring Guide** for:

- Sample wiring for applications
- Sequences of operation
- Input/output objects and connections

See the **BAC-19xx63-ZEC FlexStat Application Guide** for:

- Configuration of settings
- Passwords
- Communication options
- Display customization
- Wiring considerations
- CO₂ and DCV information
- Restarting options
- Troubleshooting

For additional instructions on custom configuration and programming, see the Help system in the relevant KMC software tool.

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Your input helps us make our documents clearer and more useful.

IMPORTANT NOTICES

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. A BAC-19xx63-ZEC Class A digital apparatus complies with Canadian ICES-003.

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