

Tech Tip: B and C Wire Logic

Audience

Professional Installers and Support Agents

Disclaimer

If a common wire is inserted into any connector other than (C), the fuse of a HVAC system can be damaged/blown. If uncertain of what the (B) wire logic is, we strongly recommend contacting Zen Support.

Summary

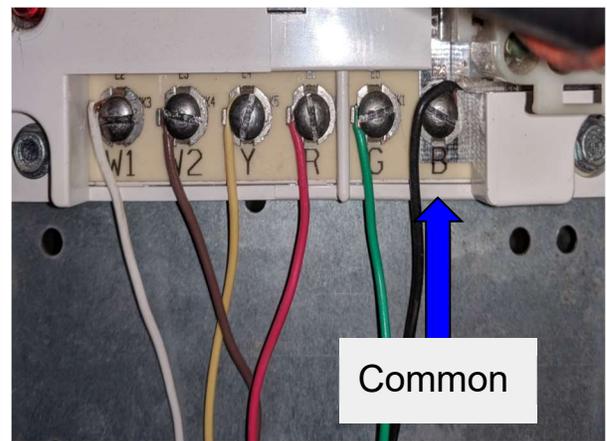
The common wire, usually labeled C, should go in the C Terminal of the Zen Thermostat. A wire labeled O, B, or O/B is used to control whether a heat pump is in heating or cooling mode. However, on some thermostats, a wire labeled B is the common wire C. In most cases, the common wire is labeled C. Because the common wire is used to provide direct power to the thermostat, it's important to determine what function a wire labeled B serves before connecting it to the Zen Thermostat.

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| C = 24 Volt common |
| B = 24 Volt common |
| B = Changeover energized in heating |
| O = Changeover energized in cooling |

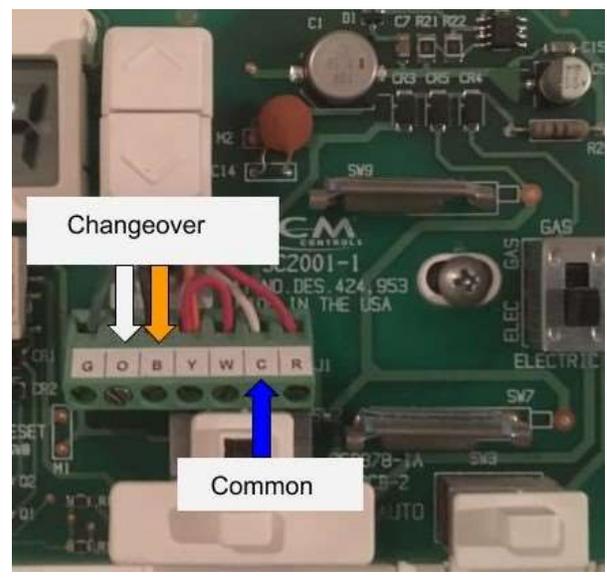
Identification

To identify the logic of each wire attached to a HVAC system, remove the cover from the current thermostat. A series of ports with logic designations will be present; take note of the wires that are connected. It is highly recommended to take a photo of the wires as well. In addition, read through the manual of the current thermostat, it may describe the function associated with the B port for the respective thermostat.

In this example, the (B) wire will be used as the (C) wire or common wire on the Zen Thermostat.



When the (C) wire is present with an (O),(B), or (O/B) wire, it is safe to assume the system is a Heat pump, with a changeover. The logic for the (O),(B), or (O/B) wire and the (C) wire can remain the same.



If a preexisting thermostat doesn't have a separate terminal labeled C, make a note of the color of the B wire. An orange wire is conventionally a heat pump reversing valve wire and will be connected to the O/B terminal of the Zen Thermostat. When a heat pump HVAC system does not have a separate wire labeled O, then the wire labeled B will connect to the O/B connector of the Zen Thermostat wall plate. An orange wire is conventionally a heat pump reversing valve wire and will be connected to the O/B terminal of the Zen Thermostat.

While the color of the wires connected to a thermostat doesn't always adhere to industry standards, they can provide a clue in situations when still uncertain about the function of a wire labeled B.

Exception and Escalations

If assistance is required, please collect the below information on site to assist Zen Thermostat Support:

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- A photo of the originally installed thermostat wiring
- A photo of the wiring connected to the wall plate
- A photo of the back of the Zen Thermostat showing the serial number. To locate the serial number, remove the Zen Thermostat from the wall and on the back of the Zen Thermostat body the serial number is listed on a sticker at the side of the device.

Send the photos to support@zenecosystems.com to continue the escalation to Zen Thermostat support.

For further assistance, please do not hesitate to call us at 949-359-8208.