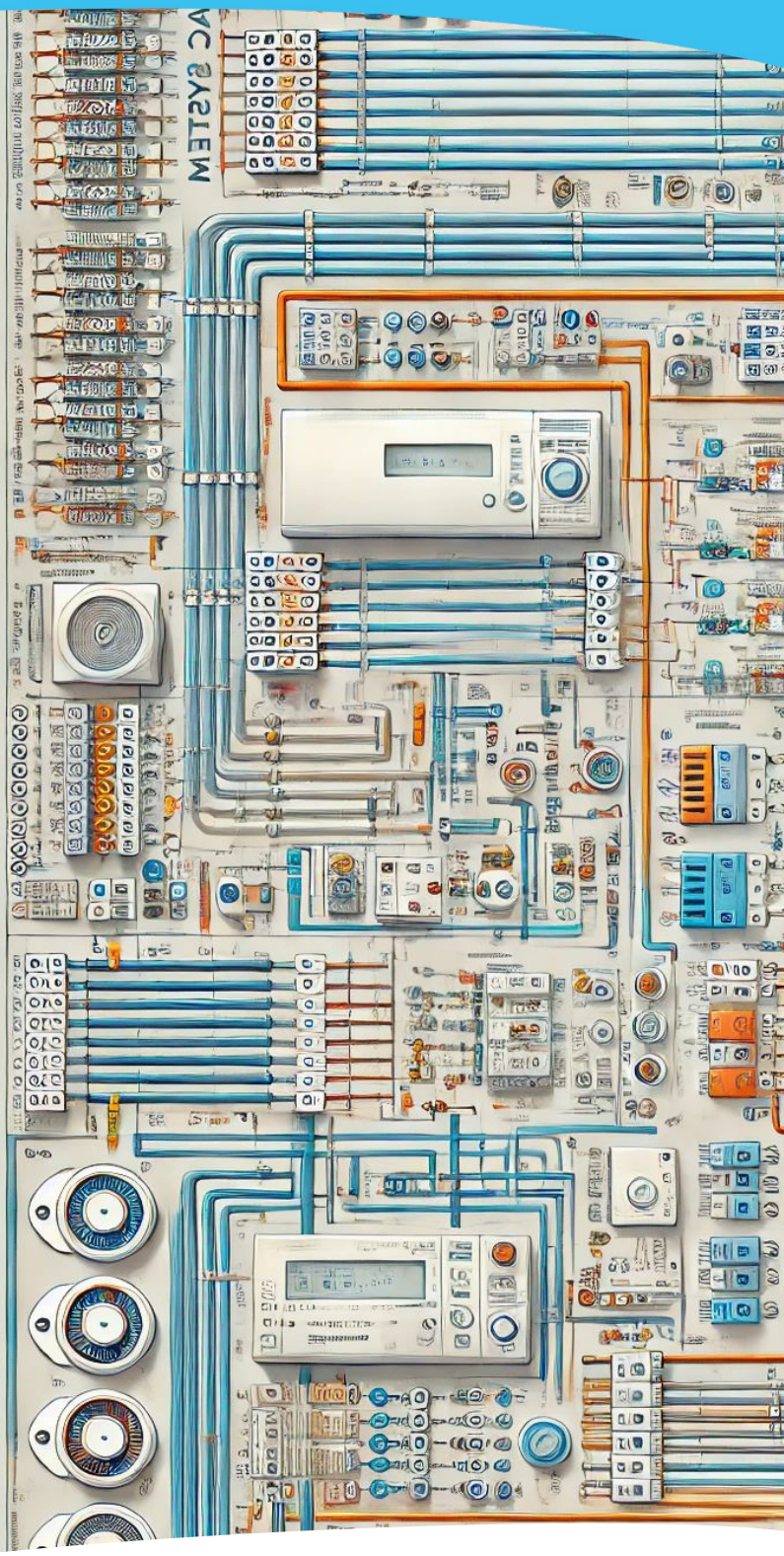
FLAIR

Wiring Diagrams

For Flair Products and Solutions



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We’re Here to Help

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For dedicated dealer phone and email support, login or register.

Existing Flair Pro?
Login to the Pro Portal for contact information.

PRO PORTAL

flair.co/pros

Not yet a Flair Pro?
Complete the Pro registration and a member of our team will be in touch.

PRO REGISTRATION

flair.co/register

1.1 About This Document

Purpose

This document provides detailed instructions for wiring Flair Products including the Bridge Pro, Smart Vents and the Puck/Puck Pro.

Audience

This document is intended for:

- **HVAC Contractors:** Professionals responsible for installing and maintaining heating/cooling systems.
- **System Integrators:** Those configuring heating/cooling solutions with Flair products.
- **Advanced Users:** Homeowners with technical expertise who wish to optimize their heating/cooling systems.

Scope

This document covers:

- Wiring for boiler based staged heating systems and their various configurations.
- Wiring for electric baseboard heating systems and their various configurations.
- Wiring and wiring installation guidance for Smart Vent systems.

NOTE: This document does not include detailed instructions for setting up Flair solutions, Flair app configuration, product specifications etc. Those materials are available at the Pro Training Center.

PRO TRAINING
flair.co/protraining

A Note On Safety

Always turn off breakers and unplug equipment prior to installation and wiring of Flair or third party equipment regardless of voltage and other safety precautions. Always use proper personal protective equipment (PPE) including but not limited to eye protection, insulated tools, gloves, etc.

1.2 Wiring Guidance for Flair Devices

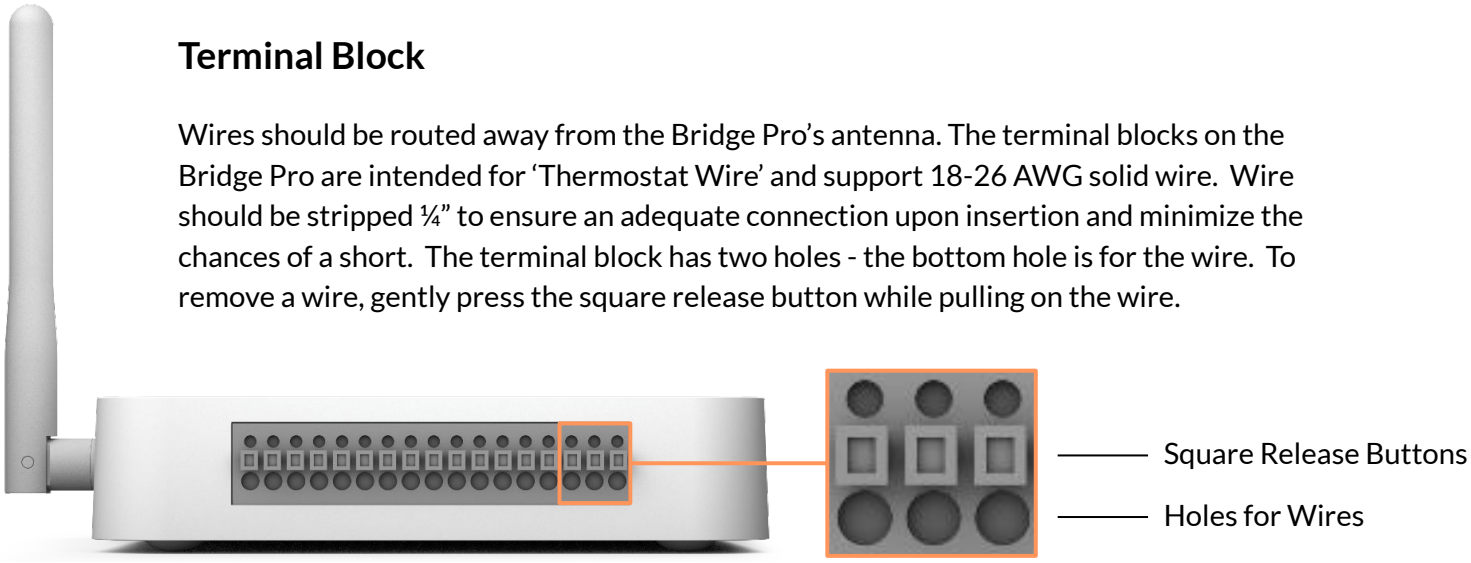
Bridge Pro Wiring and Terminal Block

Powering the Bridge Pro

The Bridge Pro can be powered either by USB-C or via 24 VAC.

Terminal Block

Wires should be routed away from the Bridge Pro's antenna. The terminal blocks on the Bridge Pro are intended for 'Thermostat Wire' and support 18-26 AWG solid wire. Wire should be stripped ¼" to ensure an adequate connection upon insertion and minimize the chances of a short. The terminal block has two holes - the bottom hole is for the wire. To remove a wire, gently press the square release button while pulling on the wire.



Puck/Puck Pro

Powering the Puck

The Puck or Puck Pro can be powered by AAA batteries or micro-USB (both included). Additionally, the Puck can be powered via the USB Mount accessory (sold separately) which allows for mounting and powering a Puck on a USB-A outlet.

USB Mount
flair.co/usb-mount

NOTE: Always use the micro-USB cable provided by Flair if powering the Puck via a USB adapter. If using a third party micro-USB pigtail, the USB data lines must be left fully disconnected, including from one another.

Smart Vent Wiring

Power the Smart Vent

The Smart Vent is designed to accept 20 AWG, plenum rated wire. Smart Vents can be wired together in parallel to a common transformer but should not be wired in series. Refer to the 'Hardwired Power for Smart Vents' section for additional details and guidance.

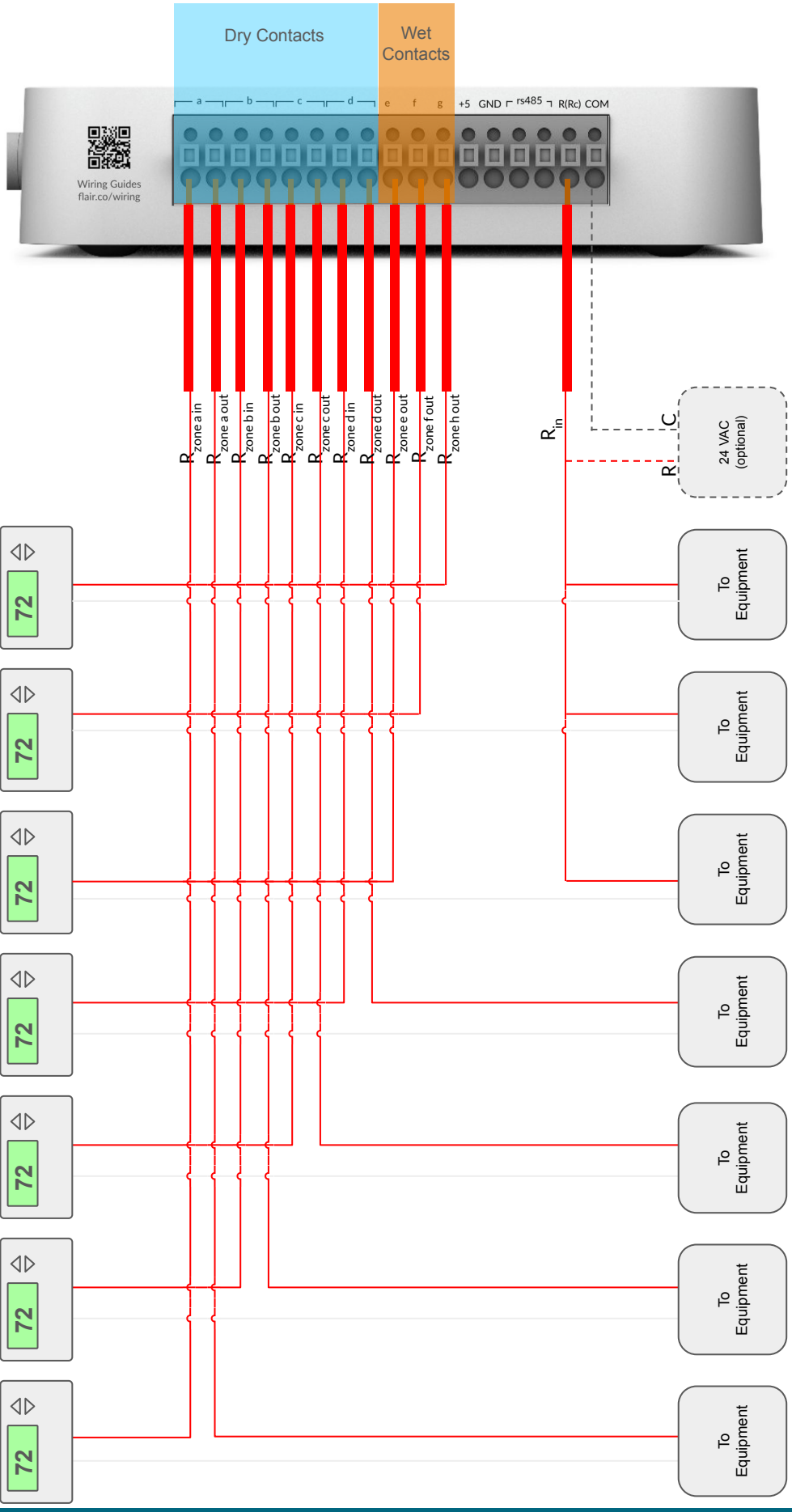
2.1 Boilers - “Lockout” Configuration

Overview

In this configuration, the Bridge Pro is “locking out” each boiler zone based on the systems staged heating settings in the Flair app. Electrically, think of the Bridge Pro as an additional relay in series with the thermostat such that a call for heat will only cause the zone to heat if both the thermostat is calling for heat and if the Bridge Pro ‘unlocks’ the zone.

This configuration leaves existing boiler thermostats in place and is compatible with any 24 VAC thermostat, smart or otherwise.

This diagram depicts a 7 zone boiler system, the maximum number of zones that a single Bridge Pro can support.



STAGED HEATING GUIDE

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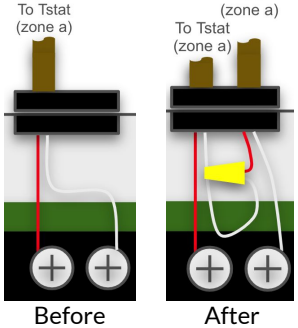
BRIDGE PRO SPECS

flair.co/bp-spec

Splice Example

Example of splicing the Bridge Pro into thermostat wiring. In this example, we splice in at the zone control board thermostat connection.

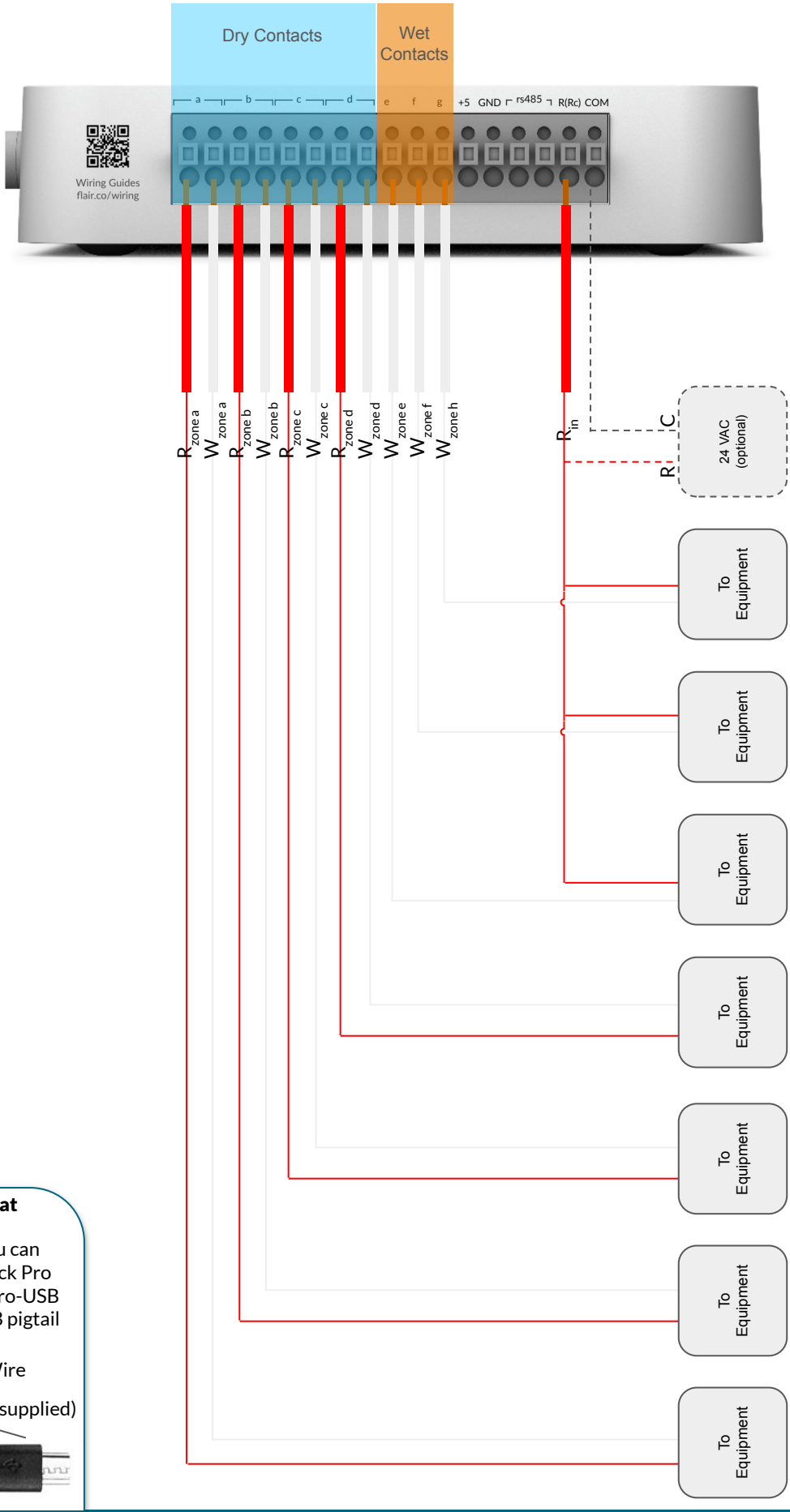


2.2 Boilers - “Controller” Configuration

Overview

In this configuration, the Bridge Pro in combination with Puck Pros serve as the thermostat system for both the DHPs and Boiler system, selecting which system to use based on the staged heating settings in the Flair app.

This diagram depicts a 7 zone boiler system, the maximum number of zones that a single Bridge Pro can support.



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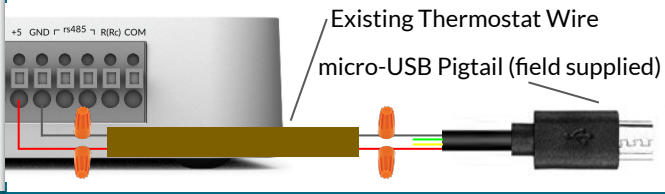
Detailed Bridge Pro Specifications

Optional Puck Power via Existing Thermostat Wire and Bridge Pro

If you are removing an existing boiler thermostat, you can utilize the existing wire pull to power one Puck or Puck Pro using the +5 and GND from the Bridge Pro and a micro-USB pigtail. Note - ensure the data lines on the micro-USB pigtail are not connected to anything including themselves.



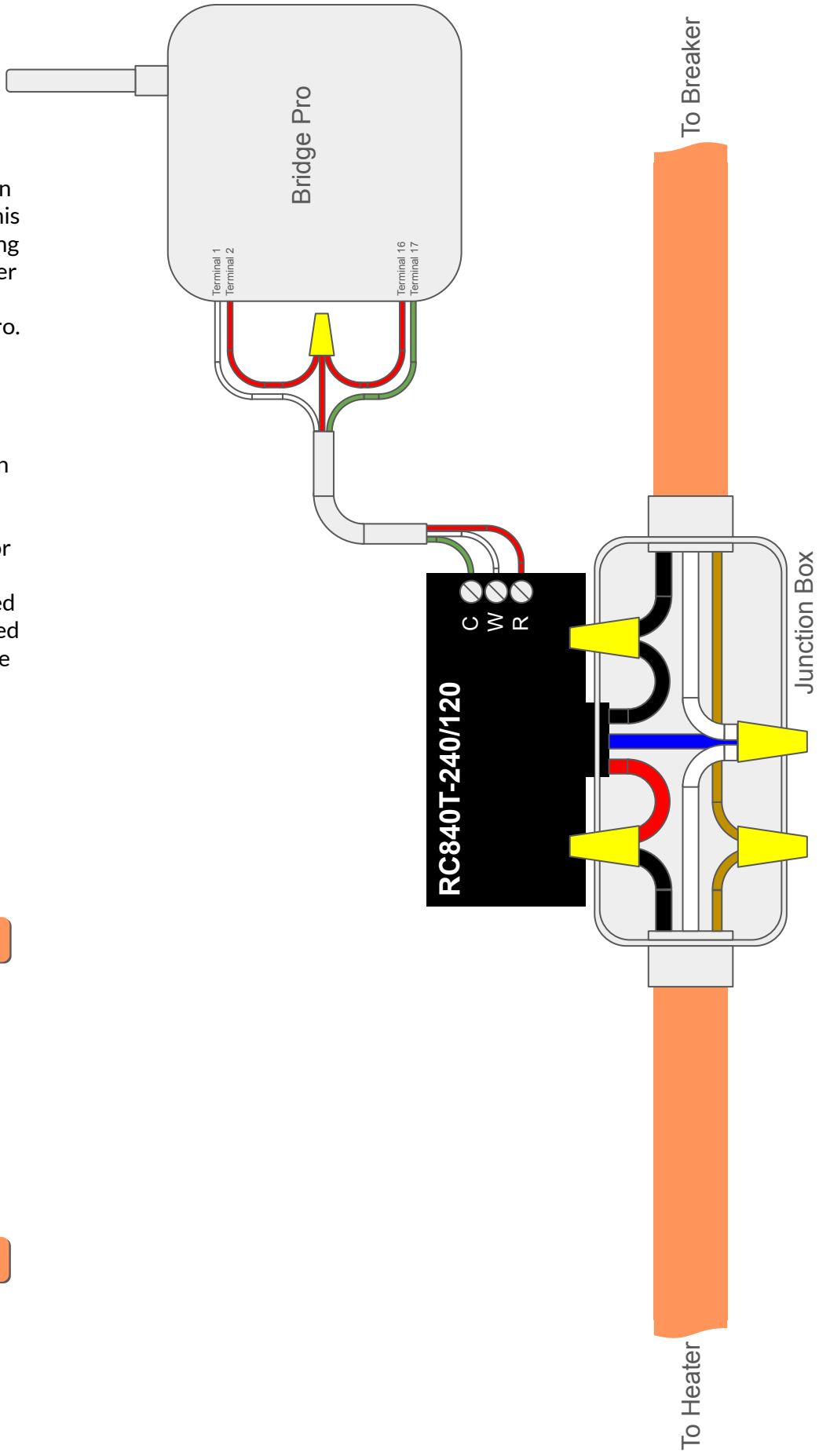
2.3 Electric Baseboard Heaters - One Zone

Overview

In this diagram, the Bridge Pro is working with a single 24 VAC controlled line level relay to switch an electric baseboard heater zone. In this diagram, the Bridge Pro is also running off of the internal 24 VAC transformer in the RC840T thus no USB power needs to be supplied to the Bridge Pro.

If a line level thermostat is inline between the line level relay and the heater itself, then the system should be configured as a 'Lockout' system in the app.

If there is no line level thermostat (for instance, if a prior line level stat was removed, the connections wire nutted together, and the junction box covered with a blank), then the zone should be configured as a 'Controller'.



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Detailed Bridge Pro Specifications

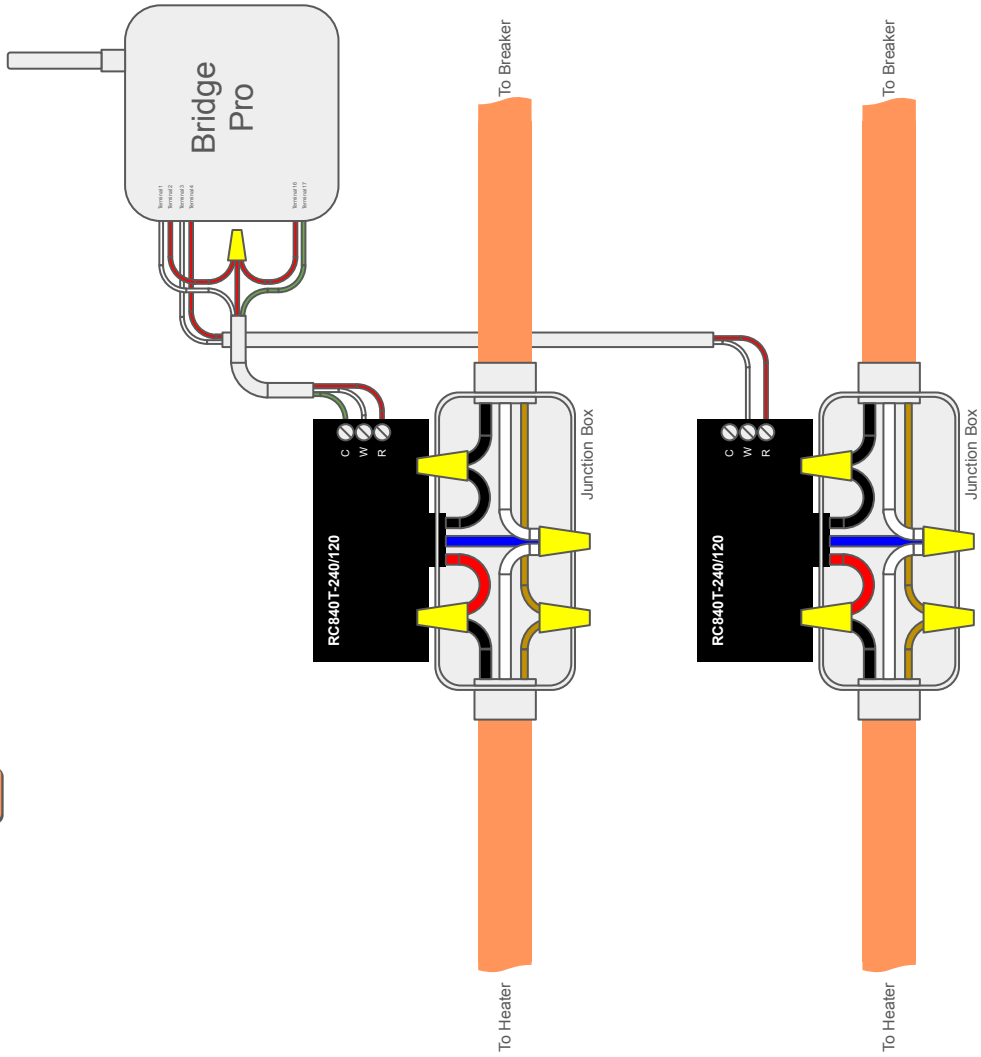
2.4 Electric Baseboard Heaters - Two Zones

Overview

In this diagram, the Bridge Pro is working with two 24 VAC controlled line level relays to switch two electric baseboard heater zones. In this diagram, the Bridge Pro is also running off of the internal 24 VAC transformer in the RC840T thus no USB power needs to be supplied to the Bridge Pro. Note that after the first relay, the Common ('C') connection on the second line level relay is left disconnected.

If a line level thermostat is inline between the line level relay and the heater itself, then the system should be configured as a 'Lockout' system in the app.

If there is no line level thermostat (for instance, if a prior line level stat was removed, the connections wire nutted together, and the junction box covered with a blank), then the zone should be configured as a 'Controller'.



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Detailed Bridge Pro Specifications

2.5 Electric Baseboard Heaters - Two Zones

With External Transformer

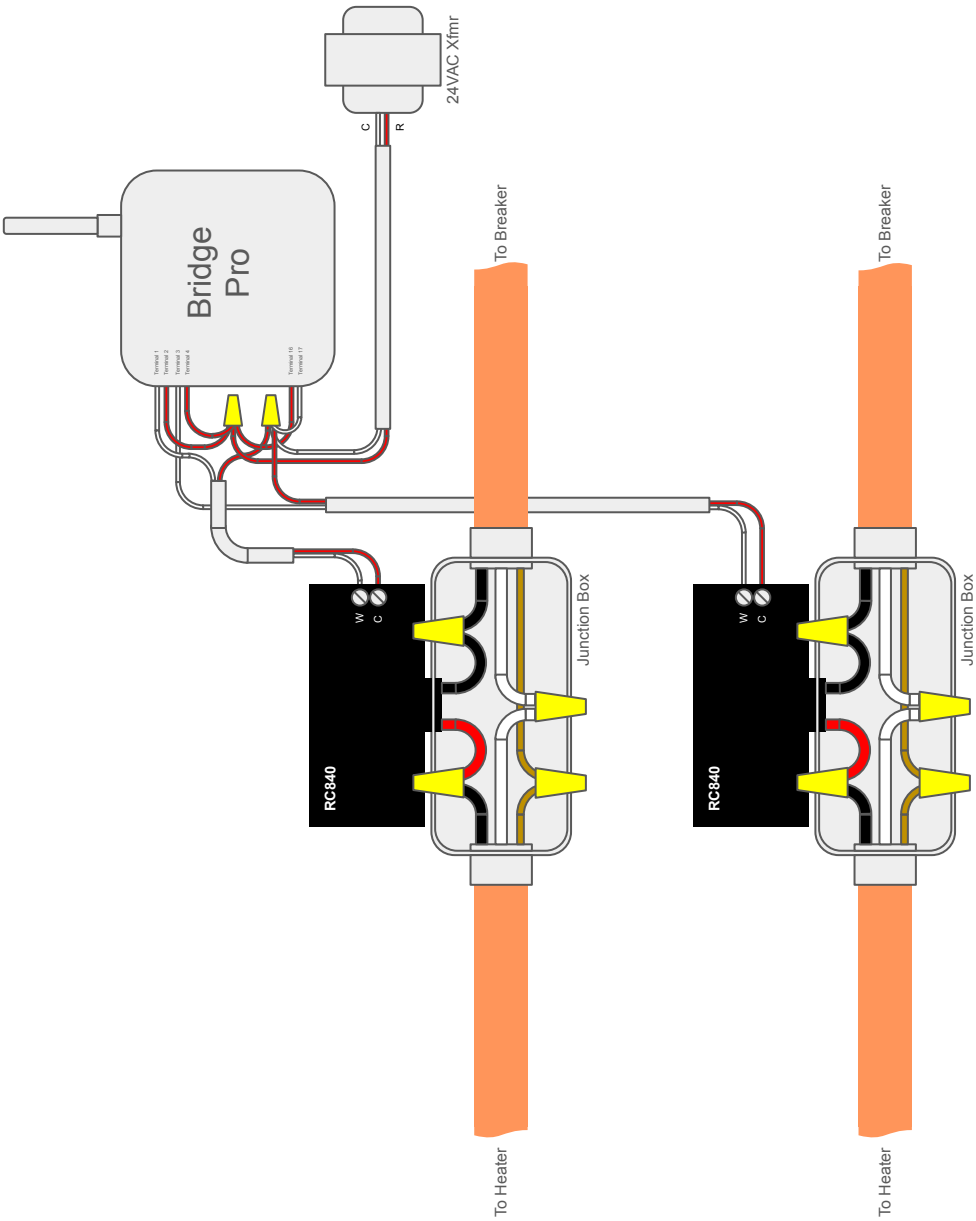
Overview

In this diagram, the Bridge Pro is working with two 24 VAC controlled line level relay to switch an electric baseboard heater zone. In this diagram, the Bridge Pro is also running off of an external 24 VAC unlike the prior diagrams.

The advantage of this configuration is that the same line level relay can be used regardless of whether the electric heater is 120 VAC or 240 VAC.

If a line level thermostat is inline between the line level relay and the heater itself, then the system should be configured as a 'Lockout' system in the App.

If there is no line level thermostat (for instance, if a prior line level stat was removed, the connections wire nutted together, and the junction box covered with a blank), then the zone should be configured as a 'Controller'.



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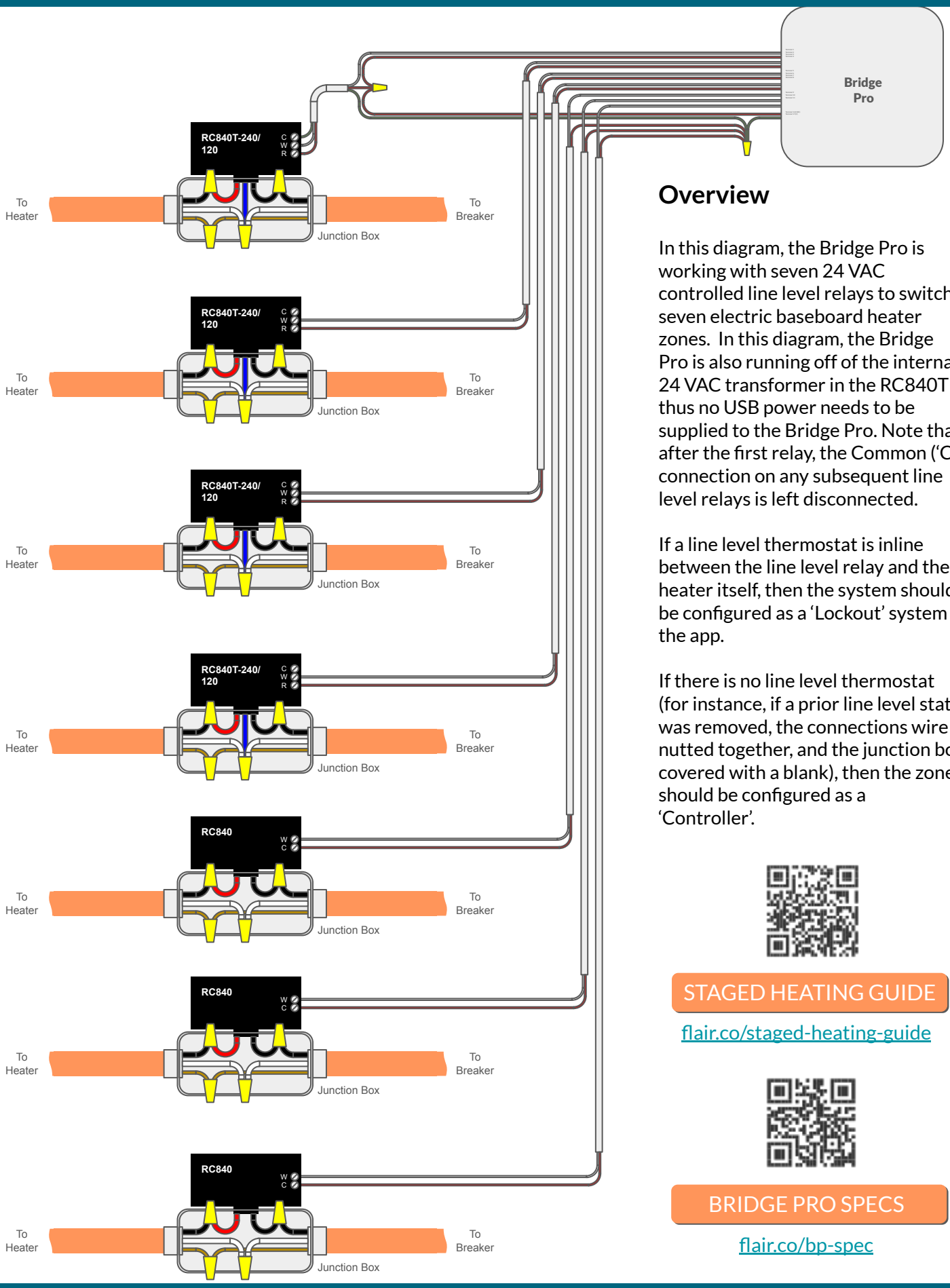
2.6 Electric Baseboard Heaters - Seven Zones



Overview

In this diagram, the Bridge Pro is working with seven 24 VAC controlled line level relays to switch seven electric baseboard heater zones. In this diagram, the Bridge Pro is also running off of the internal 24 VAC transformer in the RC840T thus no USB power needs to be supplied to the Bridge Pro. Note that after the first relay, the Common ('C') connection on any subsequent line level relays is left disconnected.

If a line level thermostat is inline between the line level relay and the heater itself, then the system should be configured as a 'Lockout' system in the app.

If there is no line level thermostat (for instance, if a prior line level stat was removed, the connections wire nutted together, and the junction box covered with a blank), then the zone should be configured as a 'Controller'.

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BRIDGE PRO SPECS

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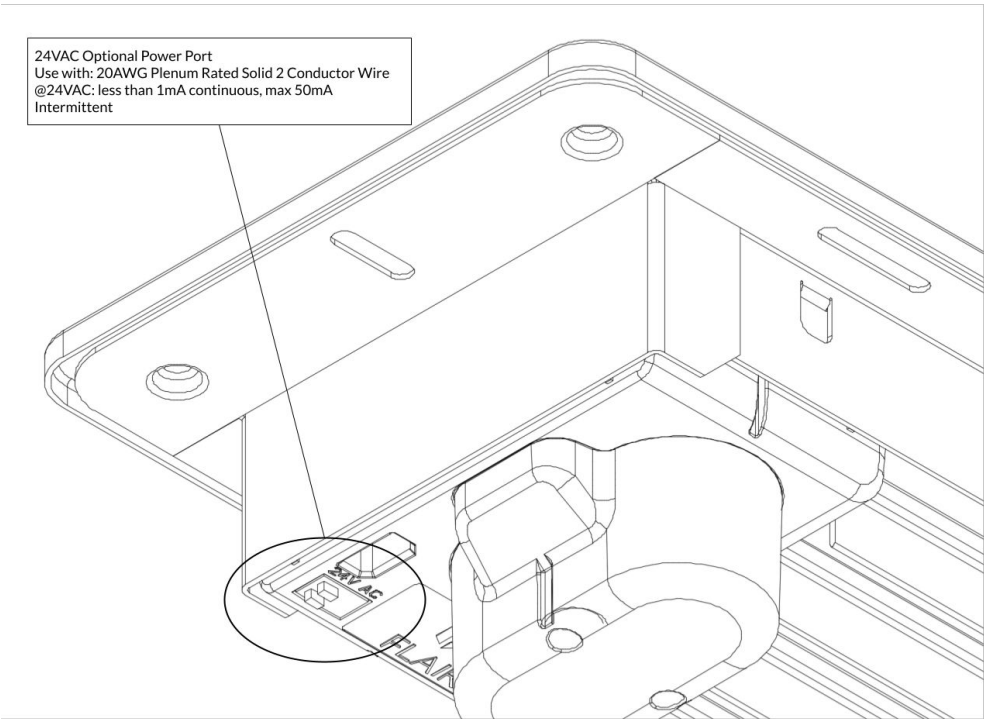
3.1 Hardwired Power for Smart Vents



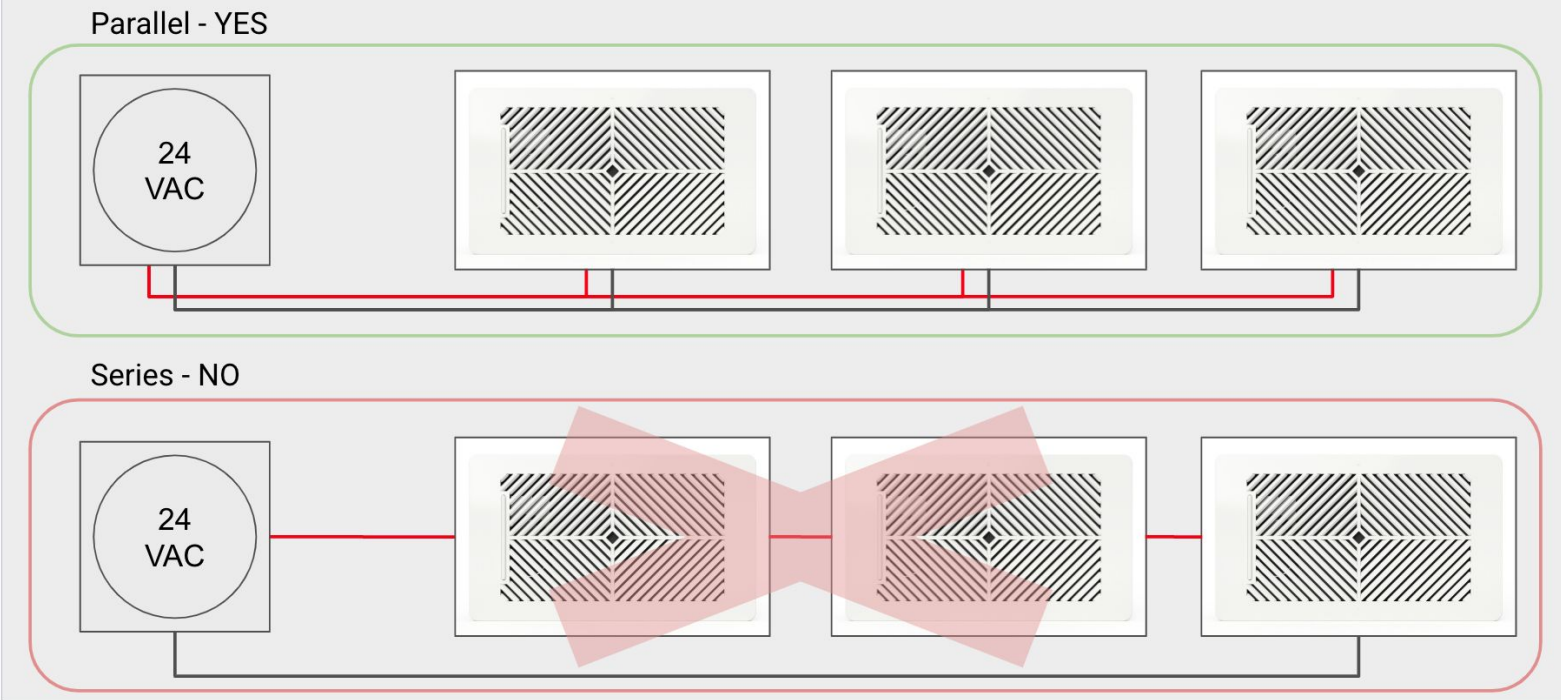
Installation

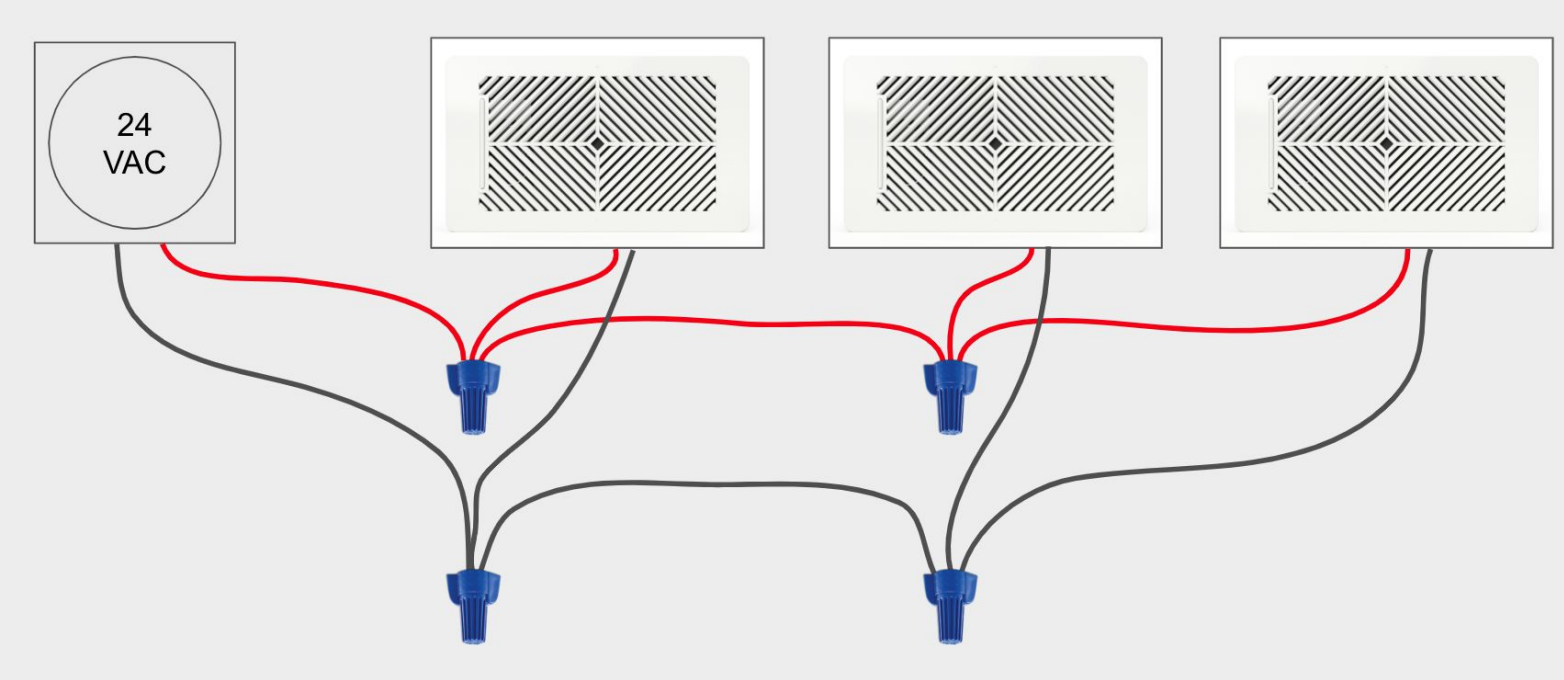
1. Drill hole in boot or duct near vent, where convenient. Hole size should be large enough for 20 AWG Plenum Rated Solid (2 Conductor) wire.
2. Slide 20 AWG Plenum Rated Solid (2 Conductor) wire through hole into boot.
3. Pull enough through to reach back of vent (boot dependent) - if you pull some extra, you can trim it later. When pulling the wire through, be careful to avoid stripping the wire on the metal boot or duct as this could lead to a short.
4. Using high quality Duct Tape or Mastic, seal the hole around the wire and the hole in the duct or boot.
5. Strip insulation and insert each conductor into the 24 VAC port on the back side of the Smart Vent (either wire can go in either hole, polarity does not matter).
6. If there is excessive wire in the boot or duct, trim the wire and repeat step 5. Ensure that the wire doesn't interfere with the louvre movement. Also ensure the two wires are fully separated and cannot short near the vent terminal block. In case of excess exposed wire at the vent terminal block, press the release buttons on the terminal block and pull the wire out. Trim exposed wire as needed and reinsert.
7. Connect the other end of wire to a 24V AC transformer/power supply (note that you will **not** need to wire to the ground pin/terminal if one is available).
8. Assemble battery related parts on vent according to regular installation process - there is no need to install the actual batteries.
9. Continue with regular installation and setup process.
10. Plug in or power 24 VAC power supply/transformer.

Electrical Notes

- Flair Vents operate with very low power requirements and operate at different times hence a 40VA (@24 VAC) will suffice for in excess of 10 vents. Beyond 10 vents, it is recommended that you consider additional power supplies due to the length of the wire runs becoming very long.
- Grounding is not needed.
- Max length from transformer to Smart Vent should be 100 ft or less if using 20 AWG copper. If using aluminum or steel, please keep distances shorter.

3.1 Hardwired Power for Smart Vents





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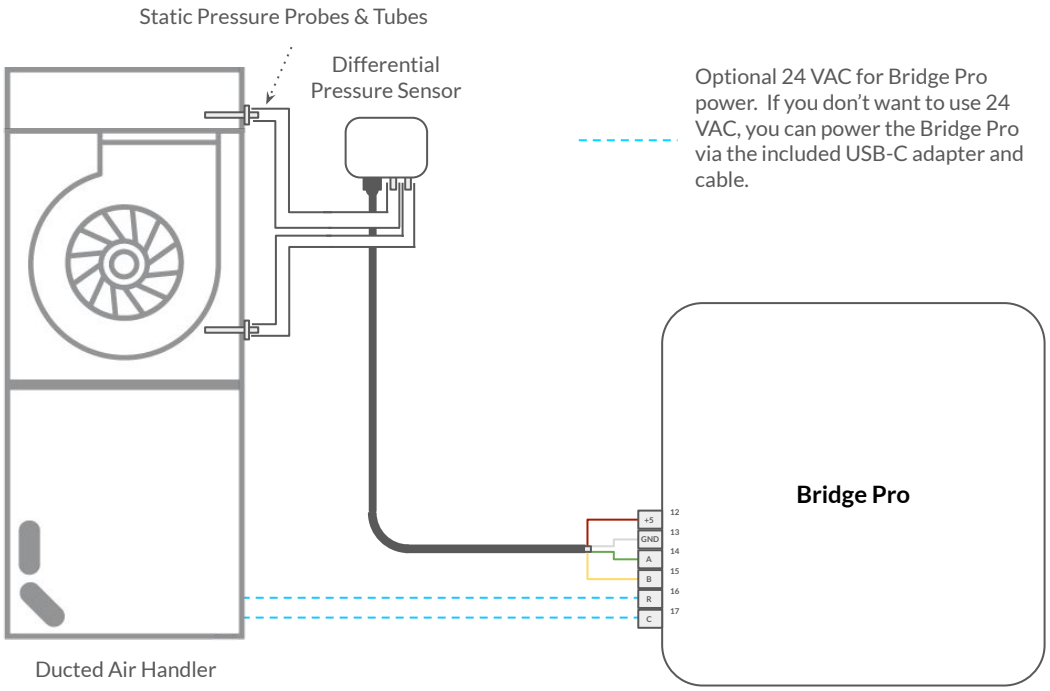
Detailed Bridge Pro Specifications

3.2 Static Pressure Kit and Bridge Pro

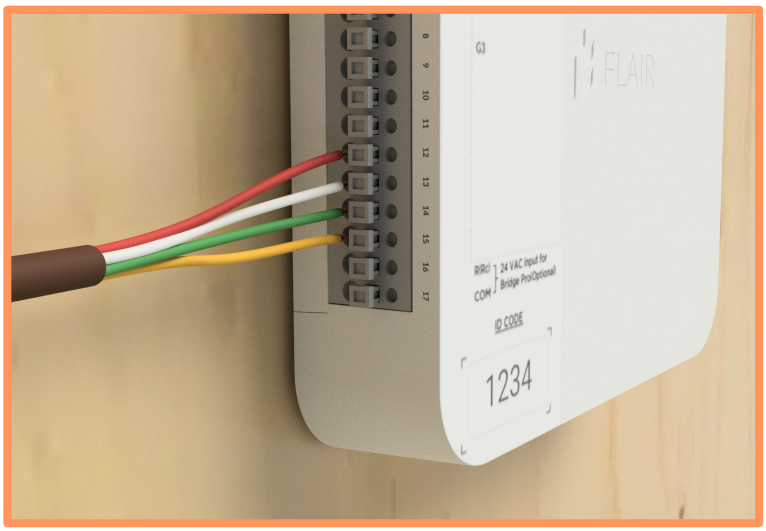
Overview

In this diagram, the Bridge Pro and Static Pressure Kit are connected to read the static pressure of a ducted air handler for use in a Pro Level Zoning and Air Balancing solution. The Bridge Pro can optionally be powered by the air handlers 24 VAC supply.



Flair Differential Pressure Sensor Wiring

Flair Bridge Pro Wiring

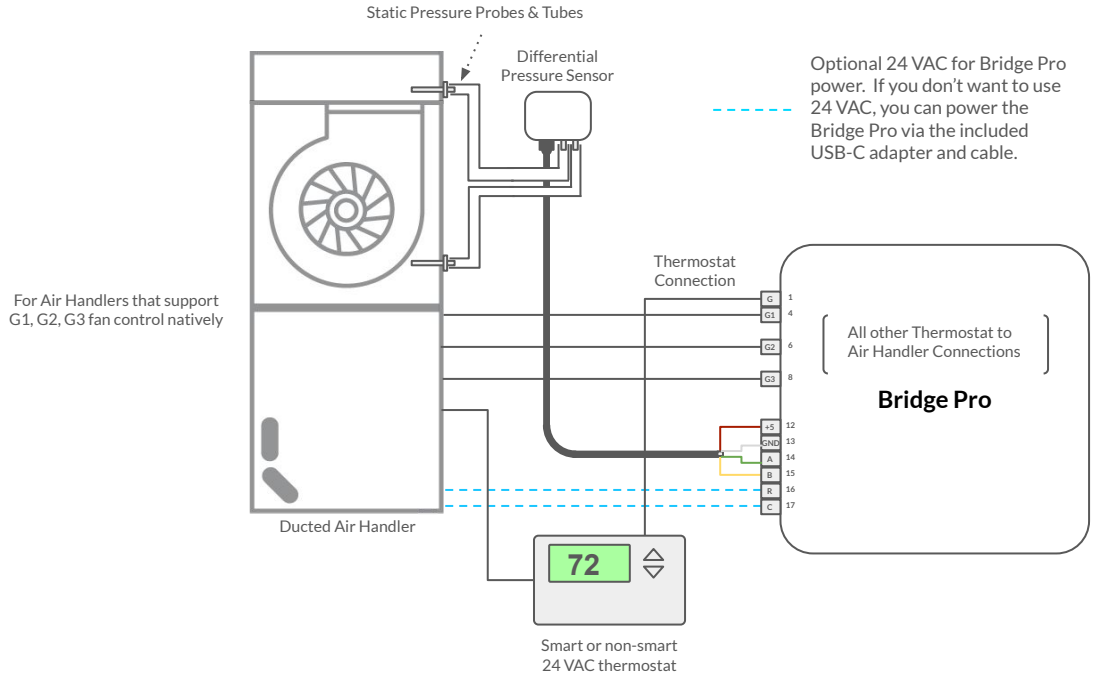


3.3 Multi Speed Fan & Static Pressure - **Without** 24 VAC/Thermostat Adapter

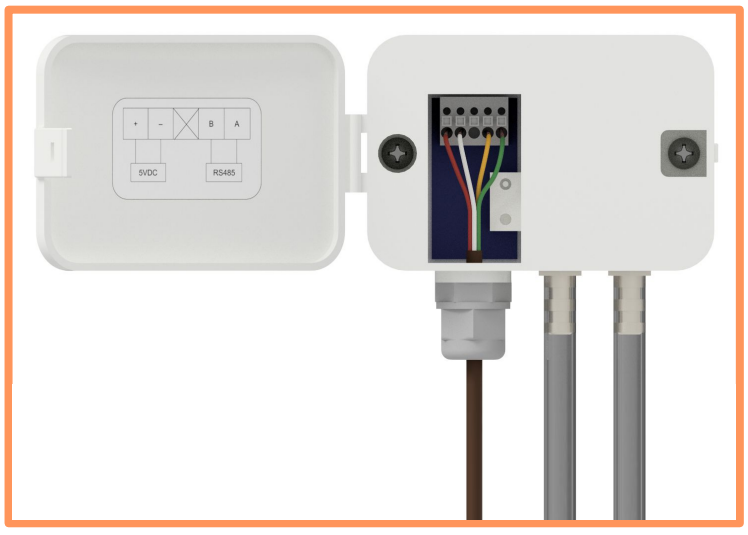
Overview

In this diagram, the Bridge Pro and Static Pressure Kit are connected to read the static pressure of a ducted air handler for use in a Pro Level Zoning and Air Balancing solution. The Bridge Pro can optionally be powered by the air handlers 24 VAC supply.

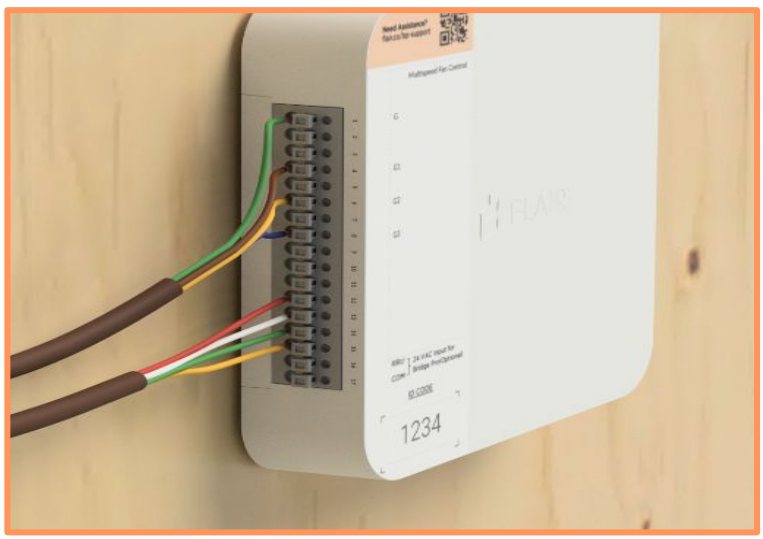
Additionally, the thermostat's G (fan) call is routed through the Bridge Pro which in turn generates a G1 (Low), G2 (Medium), or G3 (High) call for air handlers that natively support multi speed fan control.



Flair Differential Pressure Sensor Wiring



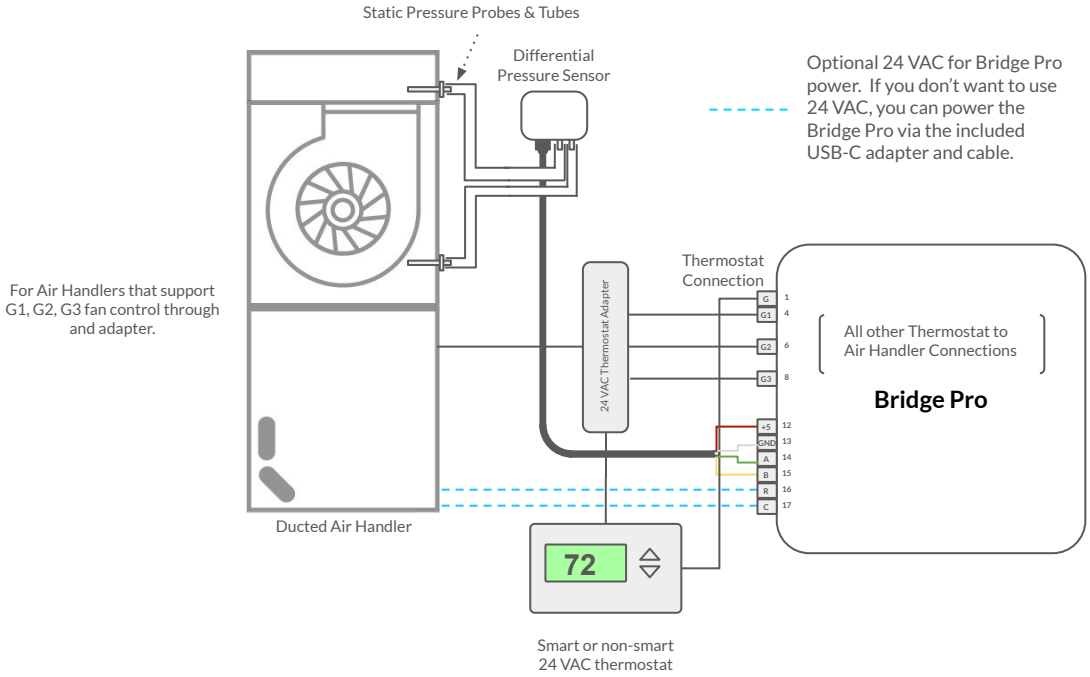
Flair Bridge Pro Wiring



3.3 Multi Speed Fan & Static Pressure - **With** 24 VAC/Thermostat Adapter

Overview

In this diagram, the Bridge Pro and Static Pressure Kit are connected to read the static pressure of a ducted air handler for use in a Pro Level Zoning and Air Balancing solution. The Bridge Pro can optionally be powered by the air handlers 24 VAC supply.
Additionally, the thermostat's G (fan) call is routed through the Bridge Pro which in turn generates a G1 (Low), G2 (Medium), or G3 (High) call for air handlers that support multi speed fan control through their 24 VAC/Thermostat Adapter.



Example Adapters

MITSUBISHI ELECTRIC
PAC-US445CN-1

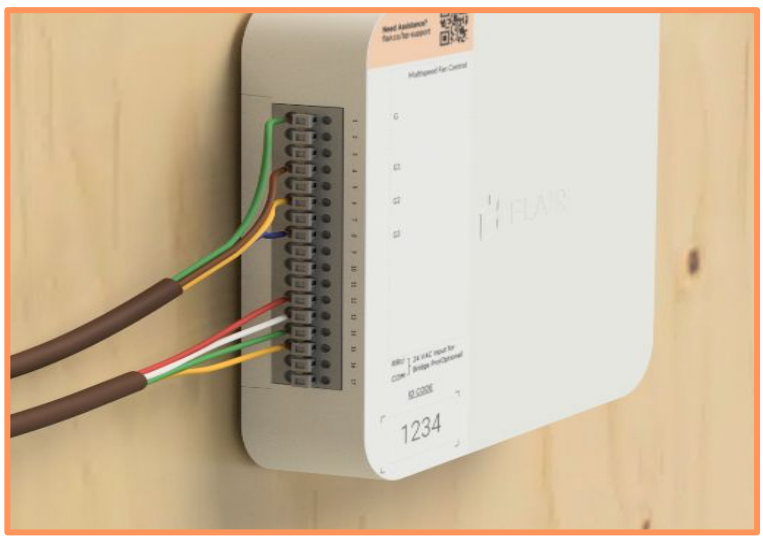
FUJITSU
FUJITSU UTY-TTRX

SAMSUNG
SAMSUNG MIM-A60UN

LG
LG PDRYCB320

Flair Differential Pressure Sensor Wiring

Flair Bridge Pro Wiring

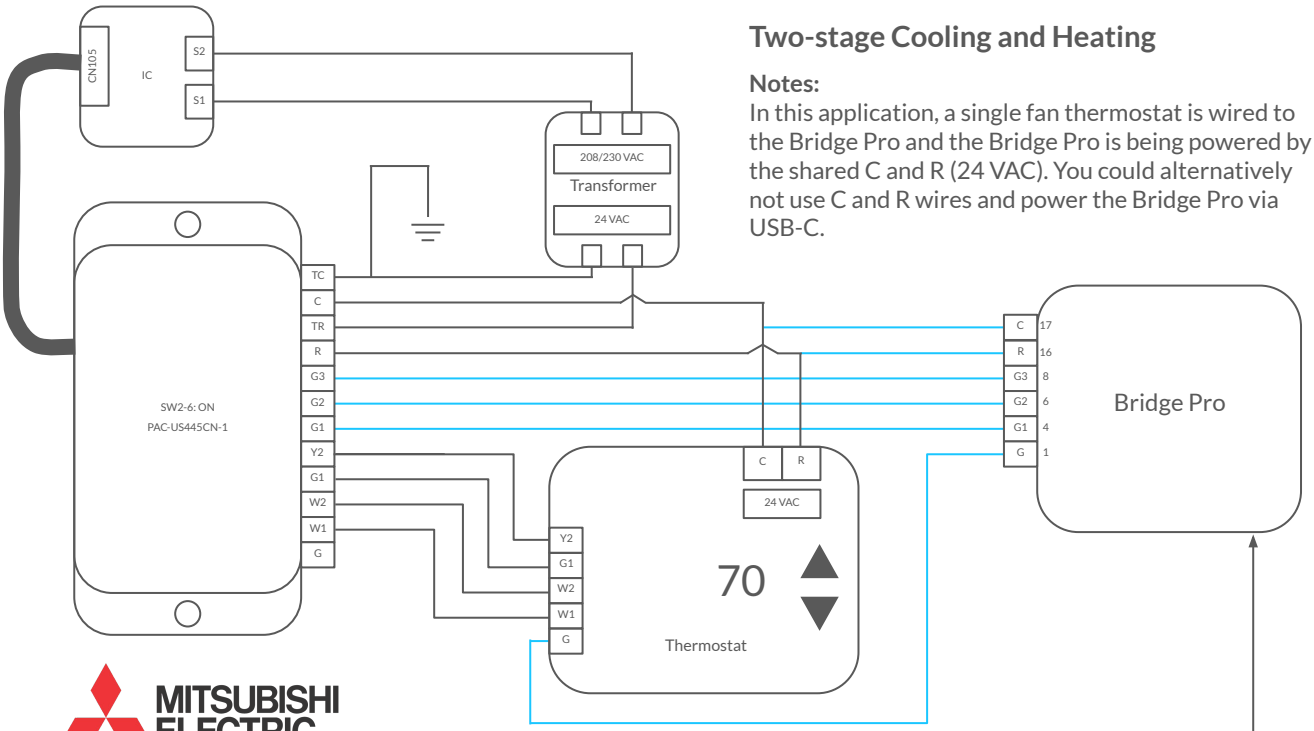


3.5 Mitsubishi Fan Control Wiring

Overview

In this diagram, the Bridge Pro and Static Pressure Kit are connected to read the static pressure of a ducted air handler for use in a Pro Level Zoning and Air Balancing solution. The Bridge Pro can optionally be powered by the air handlers 24 VAC supply as shown.

Additionally, the thermostat's G (fan) call is routed through the Bridge Pro which in turn generates a G1 (Low), G2 (Medium), or G3 (High) call for air handlers that support multi speed fan control through their 24 VAC /Thermostat Adapter.

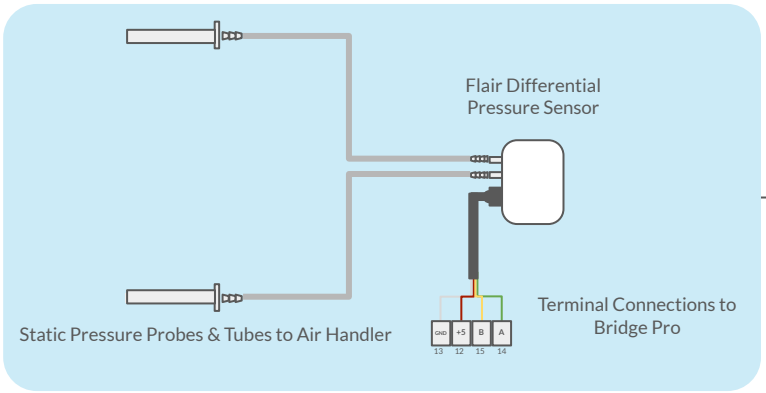


Two-stage Cooling and Heating

Notes:
In this application, a single fan thermostat is wired to the Bridge Pro and the Bridge Pro is being powered by the shared C and R (24 VAC). You could alternatively not use C and R wires and power the Bridge Pro via USB-C.

MITSUBISHI ELECTRIC

[Thermostat Interface PAC-US445CN-1]



Flair Static Pressure Kit

Note: Thermostat has to be set to conventional mode for optimum operation.

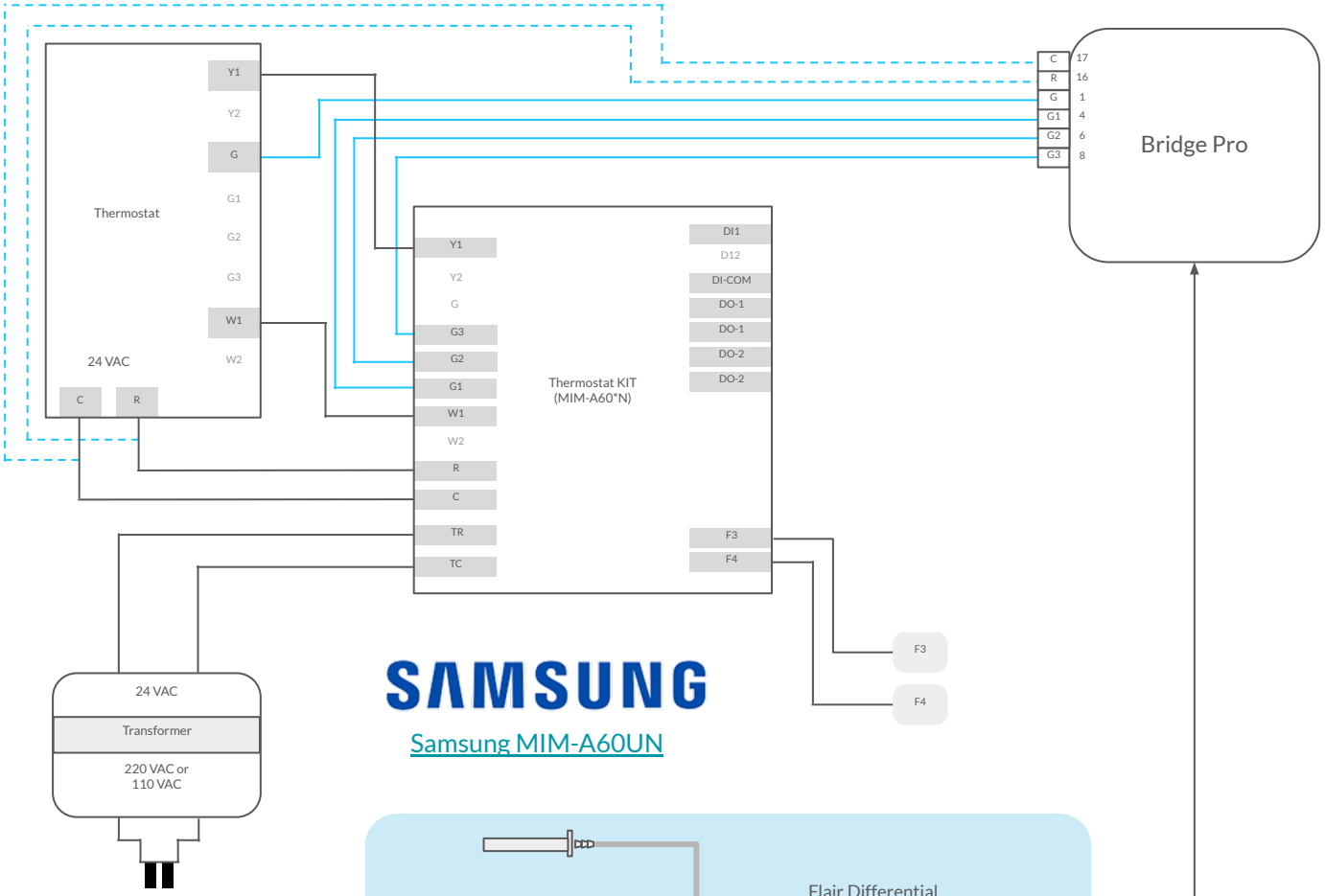
3.6 Samsung Fan Control Wiring

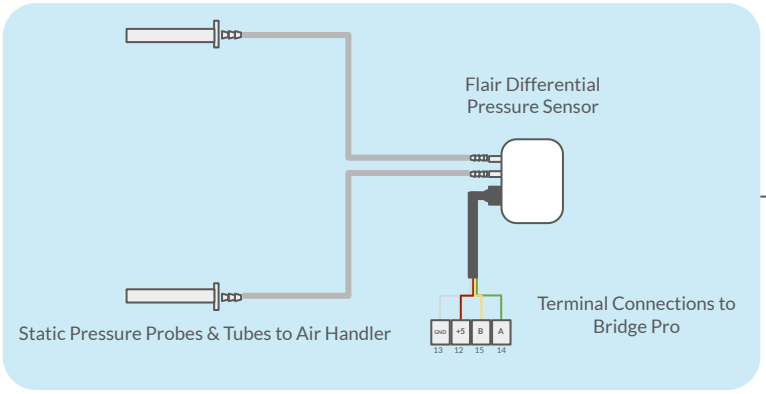
Overview

In this diagram, the Bridge Pro and Static Pressure Sensor are connected to read the static pressure of a ducted air handler for use in a Pro Smart Vent system. The Bridge Pro can optionally be powered by the air handlers 24 VAC supply as shown.

Additionally, the thermostat's G (fan) call is routed through the Bridge Pro which in turn generates a G1 (Low), G2 (Medium), or G3 (High) call for air handlers that support multi speed fan control through their 24 VAC /Thermostat Adapter.

Optional 24 VAC for Bridge Pro power.
If you don't want to use 24 VAC, you can power the Bridge Pro via the included USB-C adapter and cable.





Flair Static Pressure Kit

3.7 LG Fan Control Wiring

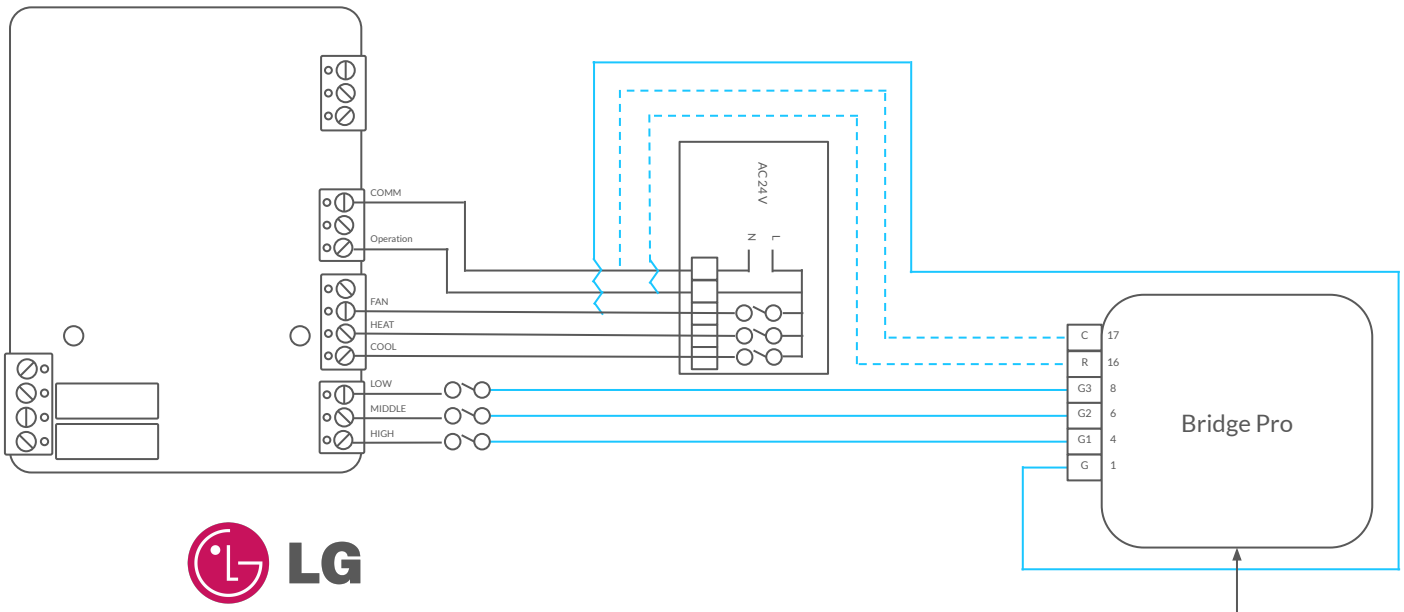
Overview

In this diagram, the Bridge Pro and Static Pressure Sensor are connected to read the static pressure of a ducted air handler for use in a Pro Smart Vent system. The Bridge Pro can optionally be powered by the air handlers 24 VAC supply as shown.

Additionally, the thermostat's G (fan) call is routed through the Bridge Pro which in turn generates a G1 (Low), G2 (Medium), or G3 (High) call for air handlers that support multi speed fan control through their 24 VAC /Thermostat Adapter.

Optional 24 VAC for Bridge Pro power.
If you don't want to use 24 VAC, you can power the Bridge Pro via the included USB-C adapter and cable.

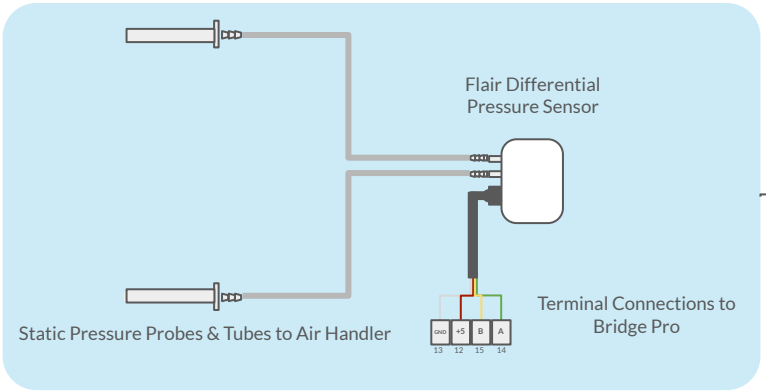
Wiring: For input contact voltage: DC 5-12 V, 24 V~



LG

PDRYCB320 Dry Contact for Thermostat

Notes:
This item is compatible with the following LG model numbers:
LVN**180**HV4 / LVN**181**HV4 / LVN**240**HV4 / LVN**241**HV4 / LVN**360**HV4 / LVN**361**HV4



Flair Static Pressure Kit

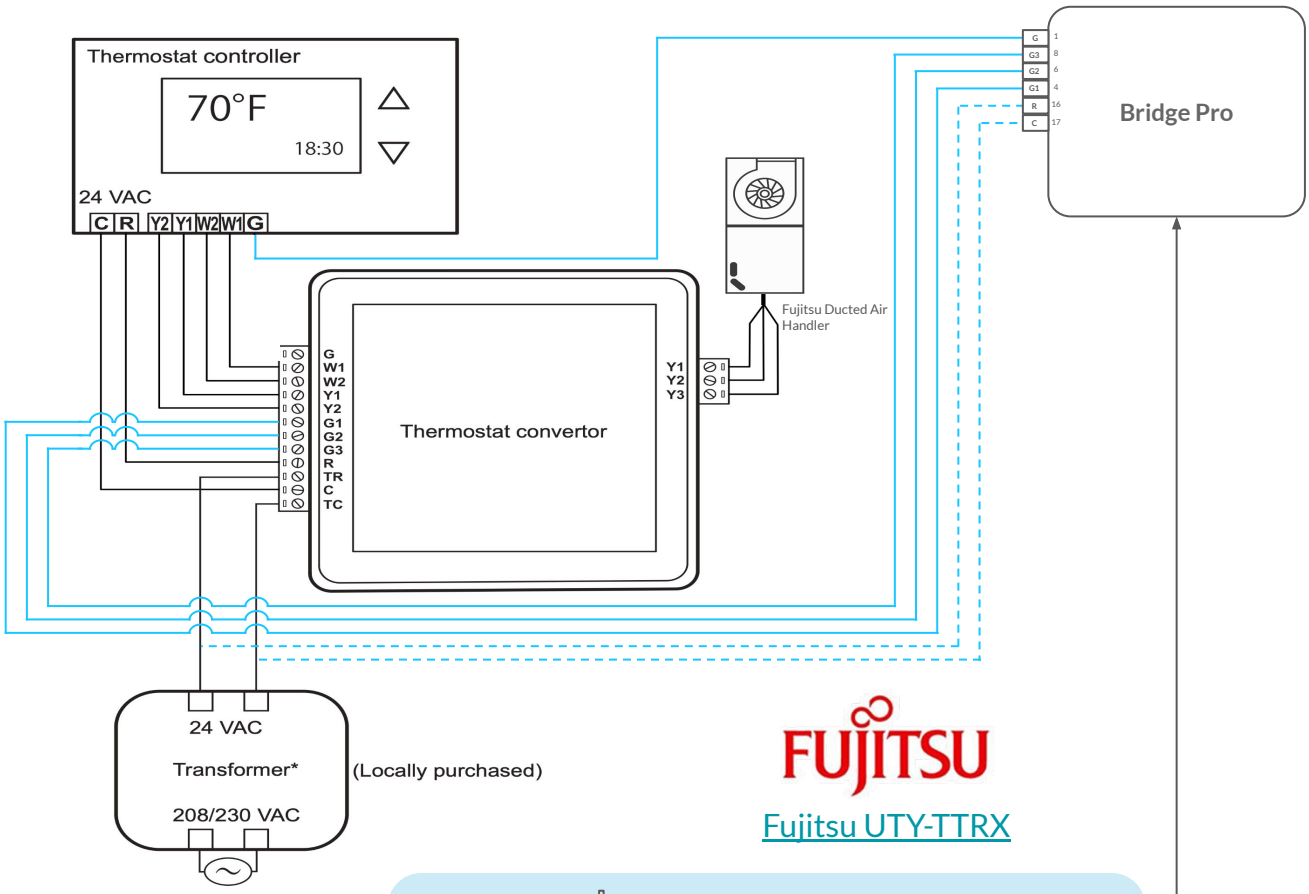
3.8 Fujitsu Fan Control Wiring

Overview

In this diagram, the Bridge Pro and Static Pressure Sensor are connected to read the static pressure of a ducted air handler for use in a Pro Smart Vent system. The Bridge Pro can optionally be powered by the air handlers 24 VAC supply as shown.

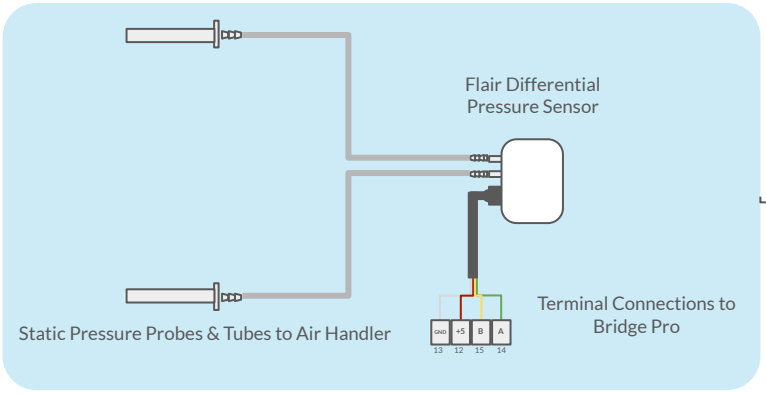
Additionally, the thermostat's G (fan) call is routed through the Bridge Pro which in turn generates a G1 (Low), G2 (Medium), or G3 (High) call for air handlers that support multi speed fan control through their 24 VAC /Thermostat Adapter.

Optional 24 VAC for Bridge Pro power.
If you don't want to use 24 VAC, you can power the Bridge Pro via the included USB-C adapter and cable.



FUJITSU

Fujitsu UTY-TTRX



Flair Static Pressure Kit