Before Getting Started

Setting up the ZIP Economizer with Variable Frequency Drive.

1. You will need a VFD rated for supply fan HP.

2. You will need to have a ZIP Economizer ECON-ZIP-BASE and an Energy Module ECON-ZIP-EM.

3. You will also need a separate SPDT relay for integration, and SPST for fan enabling.

Note: You will need to set Energy Module I/O Configuration to "IF" under Settings.

Wiring VFD to ZIP Economizer

Wire the VFD according to the manufacturer's instructions. Ensuring line voltage to the drive, and wiring the output of the VFD to motor per diagram below.
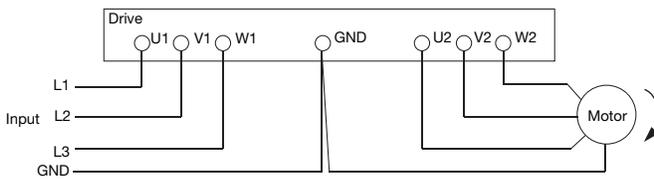
Verify that the motor rotation is correct. If not, switch 2 of 3 wires from VFD to motor.

1. Locate the VFD Digital Inputs, as well as any pertinent High, Low Speed Designation.

Example VFD Terminal Designations

| Reference	Drive Control Terminal Description
+24V	Auxiliary voltage output DC 24 V / 250 mA (reference to GND), short circuit protected.
GND	Auxiliary voltage output common
DCOM	Digital input common. Jumper to GND.
DI1	Start/stop. Jumper to +24 V.
DI2	Program to 40 Hz. Wire to SPDT NO contact.
DI3	Program to 60 Hz. Wire to SPDT NC contact.
DI4	Safety interlock. Jumper to +24 V.

(Digital Inputs - X1 Terminal)

The control circuit inputs to the VFD are DC 24 V signals. This voltage is sourced from the VFD at its terminal strip X1, +24 V. The speed inputs are received at X1 terminals (DI--2) for low speed (40 HZ) motor operation and (DI--3) for high speed (60 HZ) motor operation. When neither input is present, the VFD will shut the fan motor off.

Utilizing the nomenclature from the example VFD Terminal Designations table, pull the following items from the terminal block for Digital Inputs.
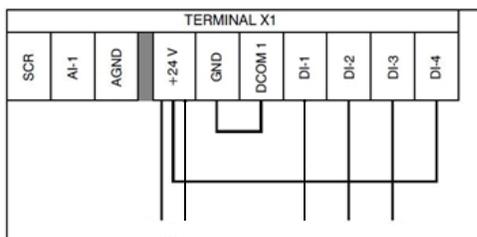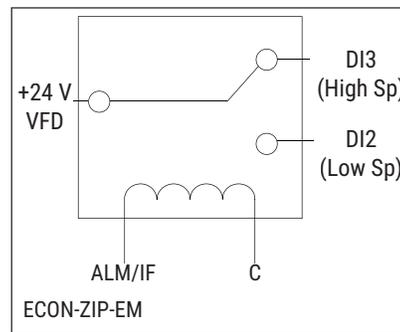

2. Connecting them into the following, utilizing the ALM/IF connection at the ECON-ZIP-EM.

Fan enable relay; single pole, single throw
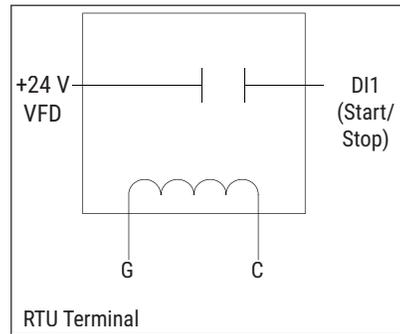
Single pole, double throw relay

3. Power RTU and enter Settings menu.

Programming Indoor Fan Settings

When a VFD is added, up to three (3) additional settings will be required.

a. Low Sp Vent Min – When a 2 Speed strategy is used to save energy, an additional Vent Min Pos needs to be entered for low speed operation due to less available static pressure from the fan. This position will be greater than Vent Min Pos, however equal the same measured airflow rate value.

b. Low Sp DCV Min - When a 2 Speed strategy is used to save energy, an additional DCV Min Pos needs to be entered for low speed operation due to less available static pressure from the fan. This position will be greater than DCV Min Pos, however equal the same measured airflow rate value.

c. Low Exh Fan Pos - When a 2 speed stategy is used to save energy, an additional Exh Fan On Pos needs to be entered for low speed operation due to less available static pressure from the fan. This position will be greater than Exh Fan On Pos, however equal the same measured airflow rate value.

These values should be set to provide the same airflow of outside air (OA) and exhaust as when fan is operating at full speed. Due to less pressure generated by the fan, this value is typically a higher percentage open value.

⚠ **WARNING** *Live Electrical Components!*

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.