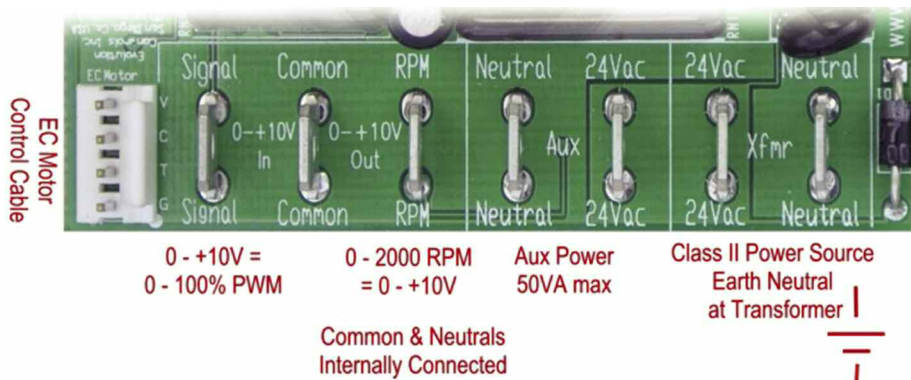
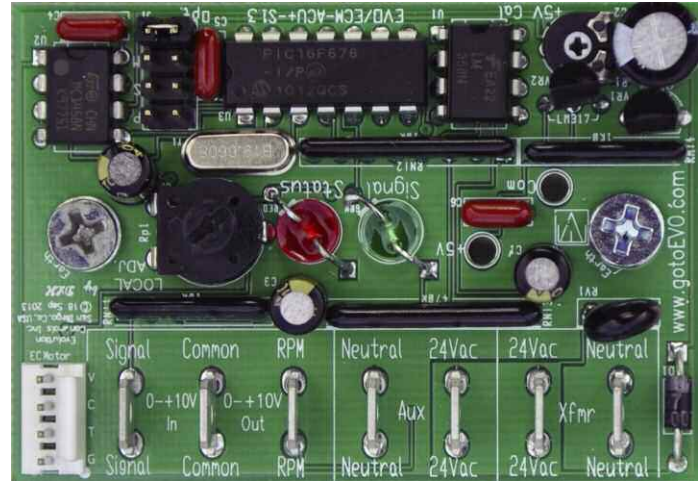


Controlling the EC Motor

The Anemostat A-Pulse controller allows VAV terminal controllers with analog output signals of 0-10Vdc to adjust and monitor Anemostat Energy Smart EC Motors. The EC motor features an internal microprocessor based drive and provides exceptional efficiency, performance and motor life. The motor may be factory configured to provide constant mass airflow or constant torque over the configured control range. The A-Pulse provides remote adjustment of the motor output from 0 to 100% of the motor's programmed control range. A signal lamp on the control continuously flashes out the flow index. Instruments are not required to read the flow index. A 0-10Vdc output signal from the A-Pulse can communicate motor RPM back to the VAV controller.



Jumpers configure the A-Pulse control type for a 0-10Vdc input signal, 2-10Vdc input signal, or Manual/Override control. The A-Pulse can also be used for stand-alone Manual Control.

Signal Lamp

A green lamp continuously indicates the flow index (flow index of 0-100% refers to the min to max flow range of the motor). After a pause, the lamp flashes out the tens digit, then the units digit of a number between 1 and 99. Long flashes represent the tens digit, and short flashes represent the units digit. For example, a flow index of 23 flashes two longs, then three shorts. Two extra-long flashes indicate a flow index of 0. One extra-long flash and ten short flashes indicates a flow index of 100. The lamp flashes the signal that was present when the flash sequence started. Turning the Manual Adjust controls the EC motor to the Manually Adjust setting. The manual setting has authority for 15 minutes.

Manual Override

- Temporary local adjust for air balancing
- Manual control without any 0-10Vdc signal
- Local Default
- Startup mode keeps control in Manual Mode until automation is connected.

When Manual Adjust is turned, the EC motor is controlled by this manual adjustment and remains at the manual adjustment setting for 15 minutes after the last adjustment movement is detected (allowing time to make airflow measurements, if desired). With the “M” jumper in place, the manual adjustment controls the EC motor when a .1-10 Vdc control signal is NOT detected at the SIGNAL terminal on the controller. This feature allows the A-Pulse to be used for manual control. It also provides a local default for critical applications by providing a safe operating speed should the .1-10 Vdc signal fail. The controller is provided initially with startup mode enabled. The control behaves like the “M” jumper is in place, even if it is not. This allows the fan terminal to be tested and used before the VAV controller is installed. After automation is installed, the control counts start/stop events that occur with a .1-10Vdc signal present. The start/stop may be performed by cycling the 24Vac power to the controller, or by raising and lowering the .1-10Vdc signal with the “P” jumper installed. Startup mode is disabled after five events.

Jumpers

- P** The “P” jumper provides ON/OFF Fan control when the signal drops below 1Vdc and on when the signal exceeds 2Vdc. The manual adjustment turns the motor On/Off with the “P” jumper installed.

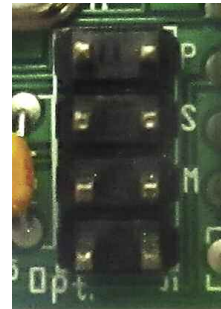
Without the jumper, the Fan On-Off control can be achieved by turning the 24vac power to the A-Pulse controller On/Off to control motor On/Off.

- M** The “M” jumper enables manual override. Manual override is overridden when the 0-10Vdc input signal exceeds .2Vdc. Manual override controls the motor before automation is installed, or when automation fails.

Without the “M” jumper, manual override is enabled whenever manual adjust is turned. To disable this manual mode, the A-Pulse must cycle the motor On/Off 5 times while input signal is greater than .1Vdc.

- S** The “S” jumper reverses the Manual Adjust rotation so adjustment is correct from the component side of the board (sometimes marked “R”).

- OPT** The “OPT” space has no function. The space may be used to store an unused jumper.



JOB NAME:

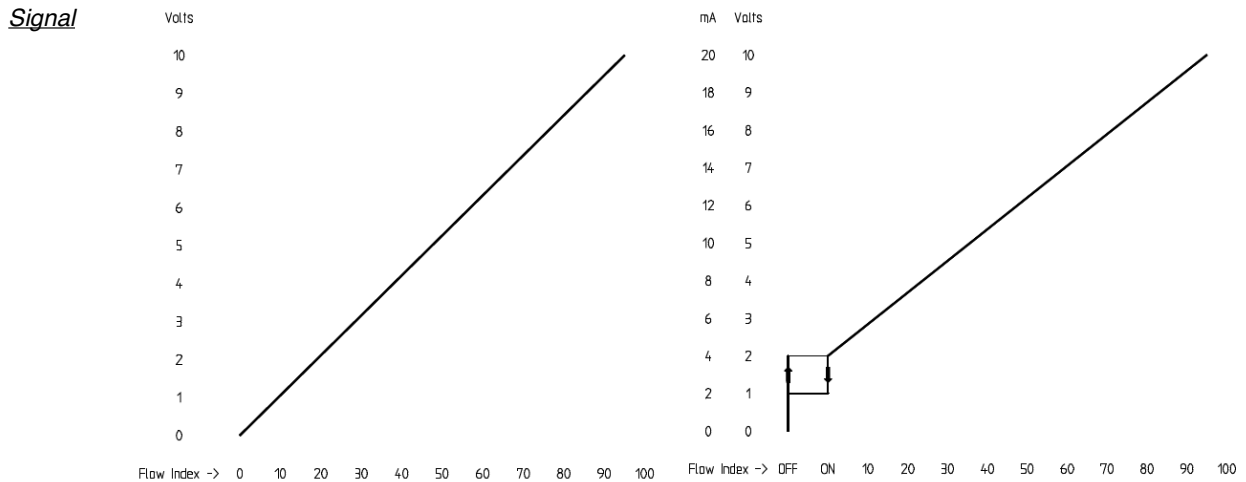
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SPECIFICATIONS

Power NEC Class II or equal
~24V ± 20% 50/60 Hz
2W, 4VA + 1VA/Motor

Control Signal NO "P" Jumper 0-10Vdc = 0%-100% PWM Pulse Width Mod
WITH "P" Jumper 2-10Vdc = 0%-100% PWM Pulse Width Mod
ON/OFF Control Between 1-2Vdc

RPM Signal 0-10Vdc (5 mA max) = 0 to 2,000 RPM in 10 RPM steps



Power the A-Pulse controller with a ~24V NEC Class power limited transformer. Observe all code requirements and follow all safety practices regarding low voltage power supplies and circuits to insure a safe, reliable installation.

Some applications may require an isolated power supply or alternative earthing scheme. Follow applicable code requirements and carefully observe all safety practices concerning earthing and safety requirements for low voltage circuits.

Earth one lead of the ~24V side of the power transformer. Connect the earthed lead to the controller Xfmr neutral connection.

Connect the hot lead of the ~24V side of the power transformer to the controller ~24V connection.

~24V Aux and Neutral are convenience connections. Up to 20 VA loads may be connected to Aux.

With the "P" jumper out, you may interrupt the Xfmr power connection as a means to stop the motor. Most VAV controllers will power the A-Pulse controllers directly from a ~24V on/off output, eliminating the need for a fan relay.

JOB NAME:

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VAV terminal controllers that switch neutral may require a fan relay.

The signal input is single-ended, so the A-Pulse controller internally connects neutral and signal common.

Connect the 0-10Vdc control signal to the Signal connection. Connect the control signal common to the Common connection.

The input presents a 21K ohm load to the signal source. Include this resistance when calculating a dropping resistor for 4-20 Ma operation. A 511 ohm 1% resistor provides a 500 ohm dropping resistance.

Connect to the motor using an ECM motor control cable. The control's motor cable connector is small so it may be carefully pulled through an empty 3/4" conduit.

Keep high voltage wiring away from the A-Pulse circuitry or wiring. Follow electrical code requirements for separation of high and low voltage wiring and components.

Start-Up

During Construction

The fan terminal can be operated to allow heating during construction with the proper downstream duct connected AND with minimum downstream pressure required. Manual Adjust can be set on site to provide a flow to safely operate heating.

Air Balance via VAV controller (DDC) and Automation

If the VAV controller is already installed, air balance can be achieved using the analog output signal from that controller. Please note that a controller output signal less than .2Vdc may put the A-Pulse into manual override. Avoid setting this signal to less than .2Vdc.

Caution: Turning Manual Adjust locks out the VAV controller analog output signal for 15 minutes. Cycle power for faster lockout removal.

Manual Air Balance – Fan Flow

The A-Pulse can be manually adjusted before the terminal controls are installed or commissioned. The balancer's Manual Adjustment has authority until automation is connected.

Air Balancer:

1. Use Manual Adjust to set the fan flow. This adjustment will have authority for at least 15 minutes.
2. Read the flashing green lamp and record the flow index.

VAV Controls Integrator:

1. Set the Signal to 0Vdc to invoke manual override.
2. Record the RPM.
3. Enter the flow index from the air balance report.
4. Observe the RPM is at or near the RPM observed in step 2.
5. Cycle the motor On/Off 5 times. This clears the manual override function unless the "M" jumper is in place.

JOB NAME:

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Jumper Configurations

Automation

<i>Permanent Manual Override?</i>	Yes	Install the M Jumper
	No	Remove the M Jumper

<i>Fan On/Off Control using Signal?</i>	Yes	Install the P Jumper
	No	Remove the P Jumper

Manual Adjustment

<i>Manual Adjustment of Fan Only?</i>	Yes	Install the M Jumper
	No	Remove the M Jumper

<i>On/Off Control using Manual Adjust?</i>	Yes	Install the P Jumper
	No	Remove the P Jumper

JOB NAME:

SUBMITTED BY: