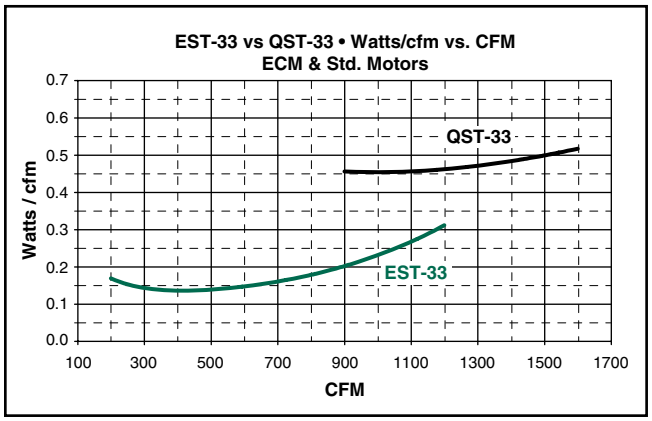
Model EST *E*nergy *S*mart *T*erminals with Electronically Commutated Motors (ECMs)

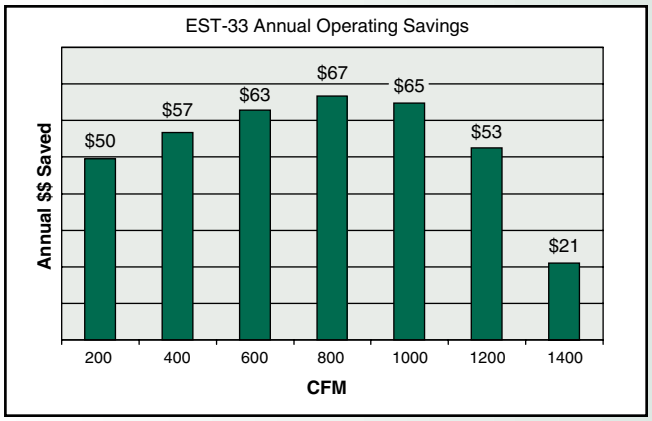
ECMs provide the latest fan motor technology with an integrated brushless-DC motor, power inverter, and microprocessor controls. DC motors operate efficiently due to a high power factor and lack of rotor losses. ECM technology offers all the efficiency and speed control advantages of a DC motor without typical motor disadvantages – such as carbon brush wear, short life, and high sound levels. And ECMs operate at lower temperatures, resulting in less heat gain!!

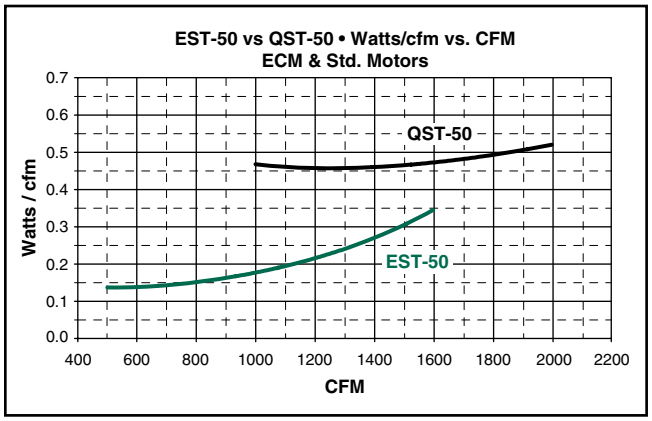
• Energy Efficient

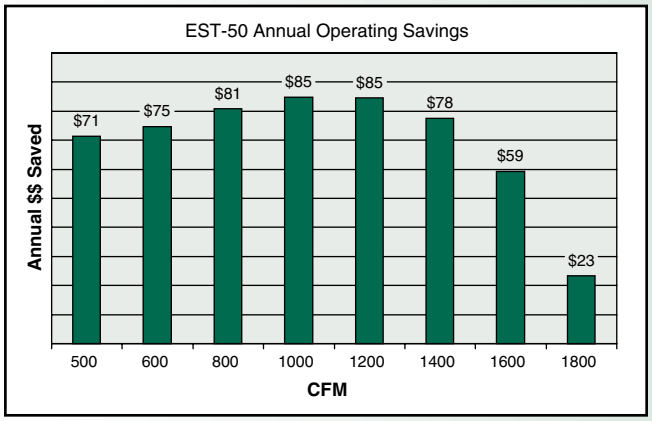
A comparison of energy consumption in Watts/CFM is shown below for our Model EST (ECM) vs. our highly efficient Model QST (PSC motors) air terminals. The Energy Savings is readily apparent.

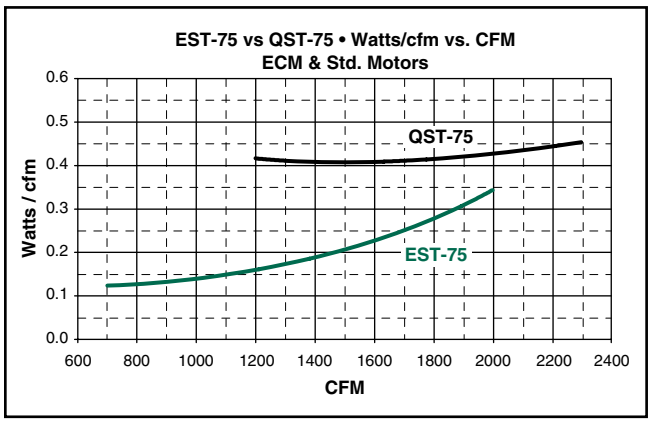
The savings in annual operating costs, assuming an electric rate of $.08/kWh at 70 hours per week per year is shown below. These energy savings exclude the reduced motor heat gain into the system, and reduced balancing costs that should be expected by the owner. Payback periods of 6 to 24 months are typical. Actual utility rates, available power provider rebates, time of operation, and actual flow set point will all impact payback periods.

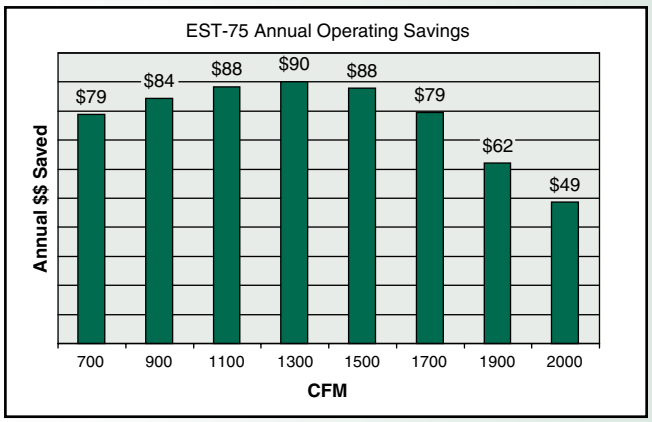


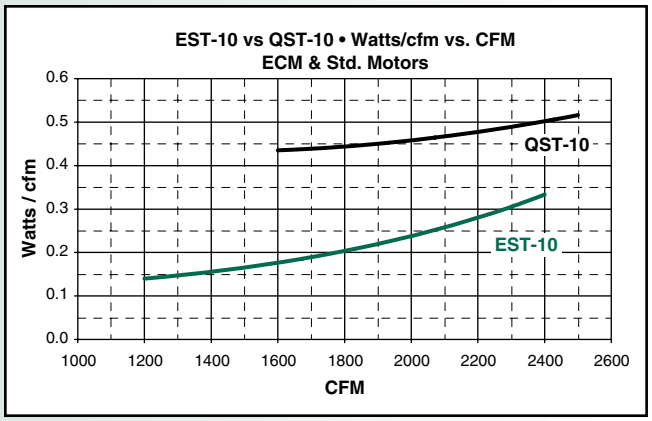


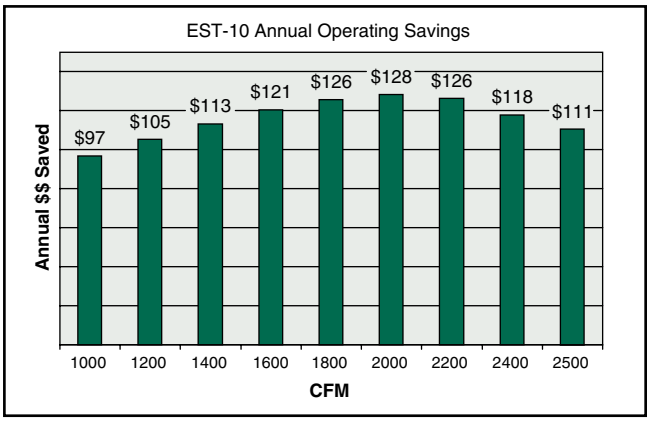












• Construction

ECMs incorporate ball bearings, permanently lubricated eliminating the need for periodic oiling. The motor, inverter, and microprocessor are conveniently packaged with the motor housing. The brushless design means no brushes to wear out..

• Power

ECMs are available for 120 VAC, 240 VAC or 277 VAC, single phase power. A built-in inverter converts the single phase input power to three phase motor operation equating to superior efficiency and reduced sound when compared with single phase motors.

• Programmable

The ECM Smart Motor is factory programmed to respond to input signals to deliver the desired fan air flow quantity demanded by the control system. Programmed soft starts and slewed speed rates provide a stable system with minimal stress on components.

• Fan Air Flow Control – Pressure Independent

With an ECM affixed to a fan assembly within the terminal, motor speed and torque is sensed and automatically and electronically adjusted to the desired air flow rate INDEPENDENT of the external static pressure. Fan air flow rates can now be factory programmed, eliminating the need for personnel to crawl into the ceiling space to adjust fan flow rates. This is not possible with conventional PSC motor driven fans!!! Of course, fan air flow adjustments can be performed in the field as required.

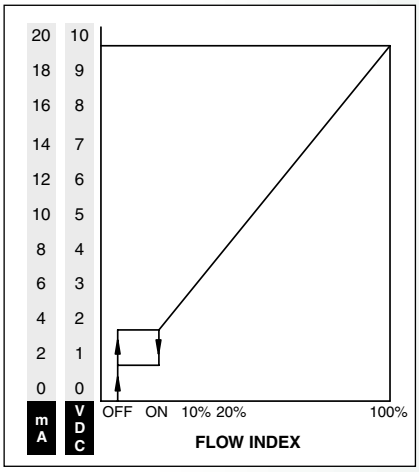
• Fan/Motor Flow Controllers

Fan terminals with ECM motors require an input signal generated by a Pulse Width Modulating (PWM) controller to vary fan flow from minimum to maximum (aka Flow Index from 0-100%). All Anemostat Model EST fan terminals include the newest generation of our A-Pulse (PWM) controllers as standard. This does not replace the need for pneumatic, analog, or direct digital controllers to control the terminal primary flow and heating accessories, but rather, provides the interface to allow the fan to be controlled. Unlike conventional PSC motors, ECM motors are pressure independent and allow for COMPLETE control of the fan terminal when a Building Management System (BMS) is connected to it via a DDC system. Because the terminal FAN air volume is predictable, control strategies incorporating BOTH VAV fan and primary flow can reduce energy consumption significantly. Contact your local Anemostat representative to exploit these characteristics.

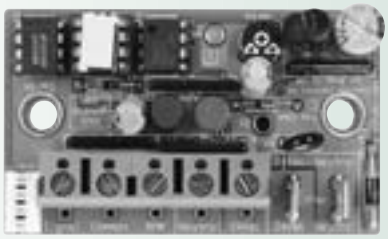
There are (4) A-Pulse fan motor controller configurations to choose from and specify to meet specific project requirements:

K1 CONTROLLER (0-10 VDC INPUT)

- DDC and Analog control systems
- Accepts a 0-10 vdc analog input (0-2 vdc used for on-off control)
- VAV terminal fan control capability (DDC)
- Allows complete balancing of the air terminal via the BMS (no access required to balance)
- Integral fan on-off feature that allows the fan to be shut down via the BMS, without the added cost and clutter of an additional on-off relay
- Power 24 vac (2 W, 5va)
- Flow indicator lamp on circuit board continuously flashes flow index %



K1, K3 Input vs. Output



K1, K3 Controller

K3 CONTROLLER (4-20 mA INPUT)

- DDC control systems
- Accepts a 0-20mA analog input (0-4mA used for on-off control)
- Provides the same features as the K1 controller above

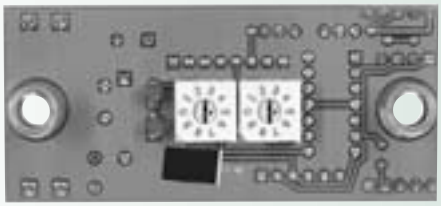
K2 CONTROLLER (MANUAL ADJUST - SCREWDRIVER)

- Manually adjusted controller to change the fan air flow rate from minimum to maximum (includes off position)
- 4 digit numeric display alternates between fan RPM and Flow Index values.
- Compatible with Pneumatic, Analog, and DDC control systems
- Balancer must access the terminal unit in the ceiling to adjust the fan air flow using a screwdriver.
- Integral fan on-off feature with DDC controls by switching the K2 controller's 24vac power supply to 0 vac - eliminates the added cost and clutter of an additional on-off relay.
- Power requirement: 24 vac (4 W, 6 va)

K2 Controller

K4 CONTROLLER (MANUAL ADJUST – ROTARY SWITCHES)

- Manually adjusted controller to change the fan air flow rate from minimum to maximum (does not include an off position)
- Setting two dials to represent the percentage of flow (e.g. 5 & 5 or 55%)
- Provides the other same features as the K2 controller above
- Power requirement: 24 vac (1 W, 3 va)



K4 Controller