

Limiting the top and bottom speeds of ebm-papst EC fans

Overview

- Within the ebm-papst EC range are a number of fans that are speed controlled by a 0-10 volt or PWM control signal. Zero volts = zero RPM, 10 volts = full speed.
- In many applications the fan is not required to operate over its full speed range, and therefore supply of a full 0-10 volt signal range is not required. E.g. if the application is noise sensitive and controlled by a 10k ohm potentiometer, it may be required to limit the top speed to less than 100%, whilst still allowing the speed to be varied.
- Similarly an application may require the fans bottom speed to be greater than zero.

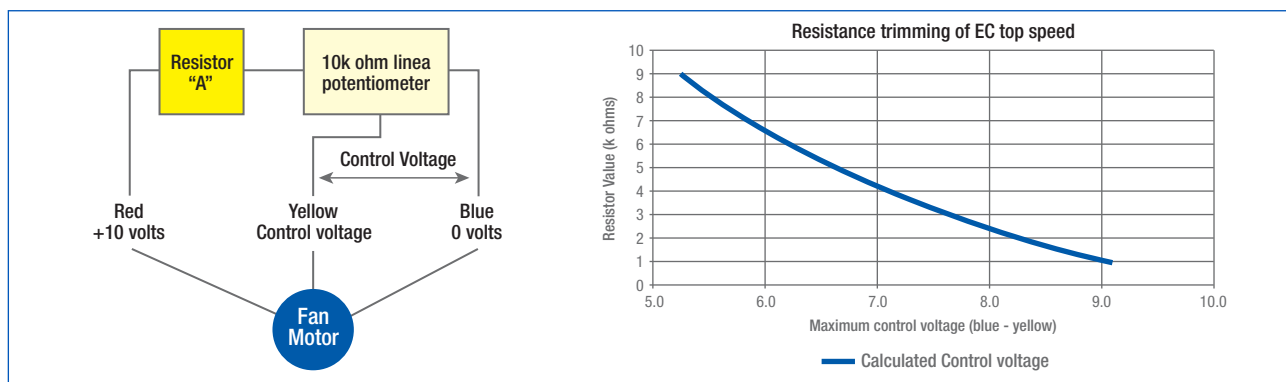
The Method

- By selecting resistors and wiring them into the potentiometer circuit it is possible to limit either the top speed or the bottom speed.
- The below graphs and associated wiring diagrams allow the selection of resistors to limit the voltage applied to the control circuit of the motor.

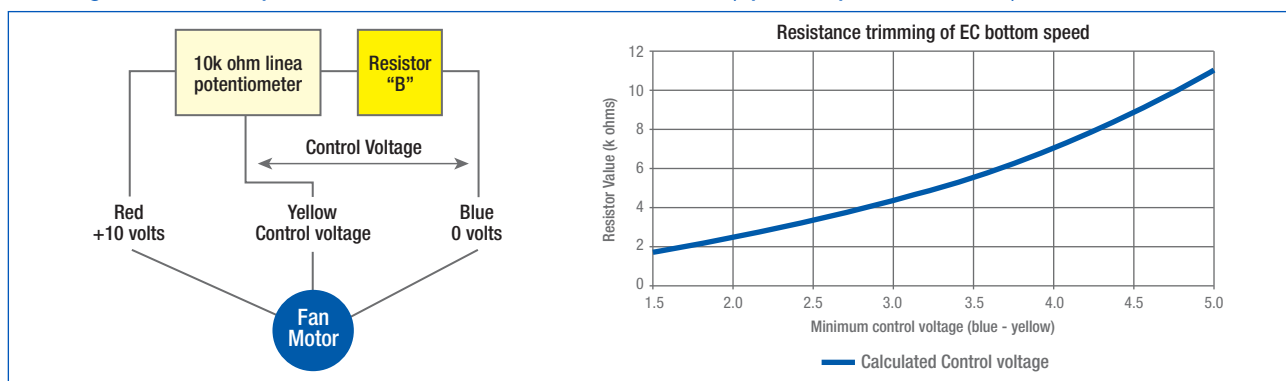
Qualifiers

- The graphs are theoretical; the actual voltage will vary as a result of a number of factors. Therefore a specific voltage and associated speed can not be guaranteed.
- This application applies to ebm-papst EC fans with internal electronics but without a built in PID controller.
- The diagrams are to be read in conjunction with the relative ebm-papst diagram for the specific product.

Limiting the top speed of EC fans, with 0-10 volt control (open loop PWM control), with resistors.



Limiting the bottom speed of EC fans, with 0-10 volt control (open loop PWM control), with resistors.



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