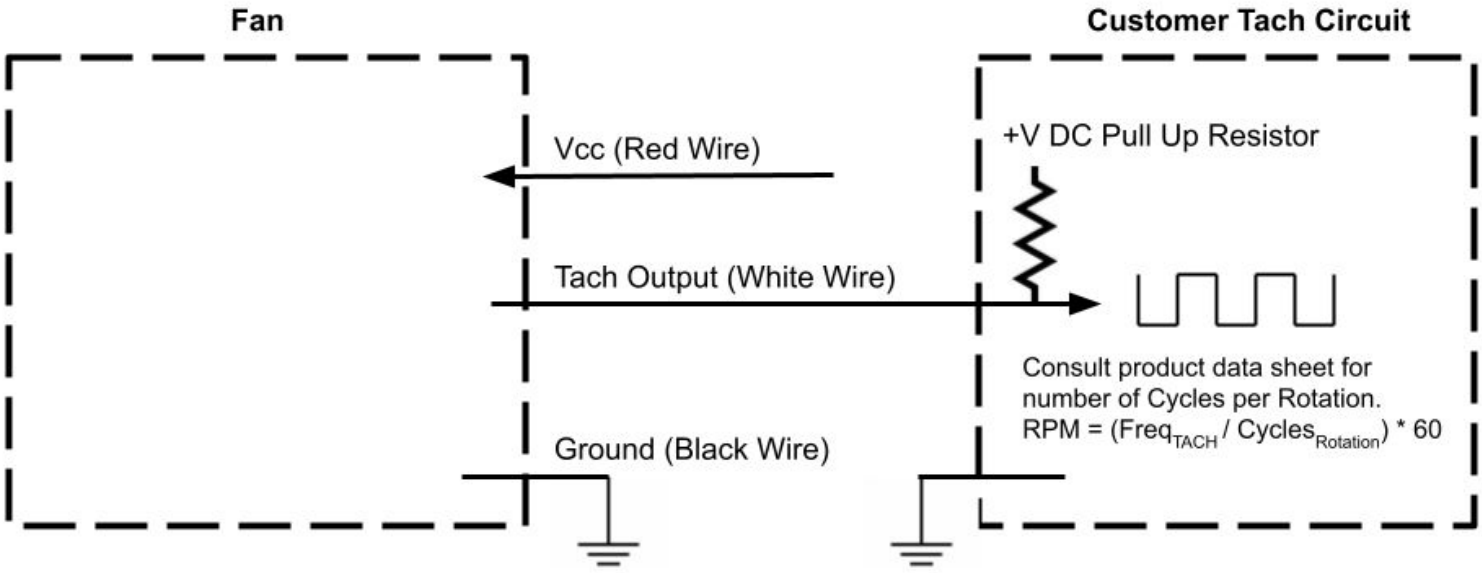
Special Function Information

**Consult individual product data sheets for electrical specifications per model.*

1. Tachometer Output Fans (Open Collector / Open Drain)

- Standard part numbers containing 01A, 08A, 09A, 10A, 11A, 15A, 16A
- Standard color of Tach output wire is White.
- Customer must supply an external pull up resistor required to enable Tach function.
- Tach Pull up current must not exceed 5 mA or value shown on data sheet.
- RPM = (Tach Pulse Frequency / Cycles per Rotation) * 60
- Through external monitoring, Tach can be used as a rotation alarm if RPM is outside of predefined thresholds.



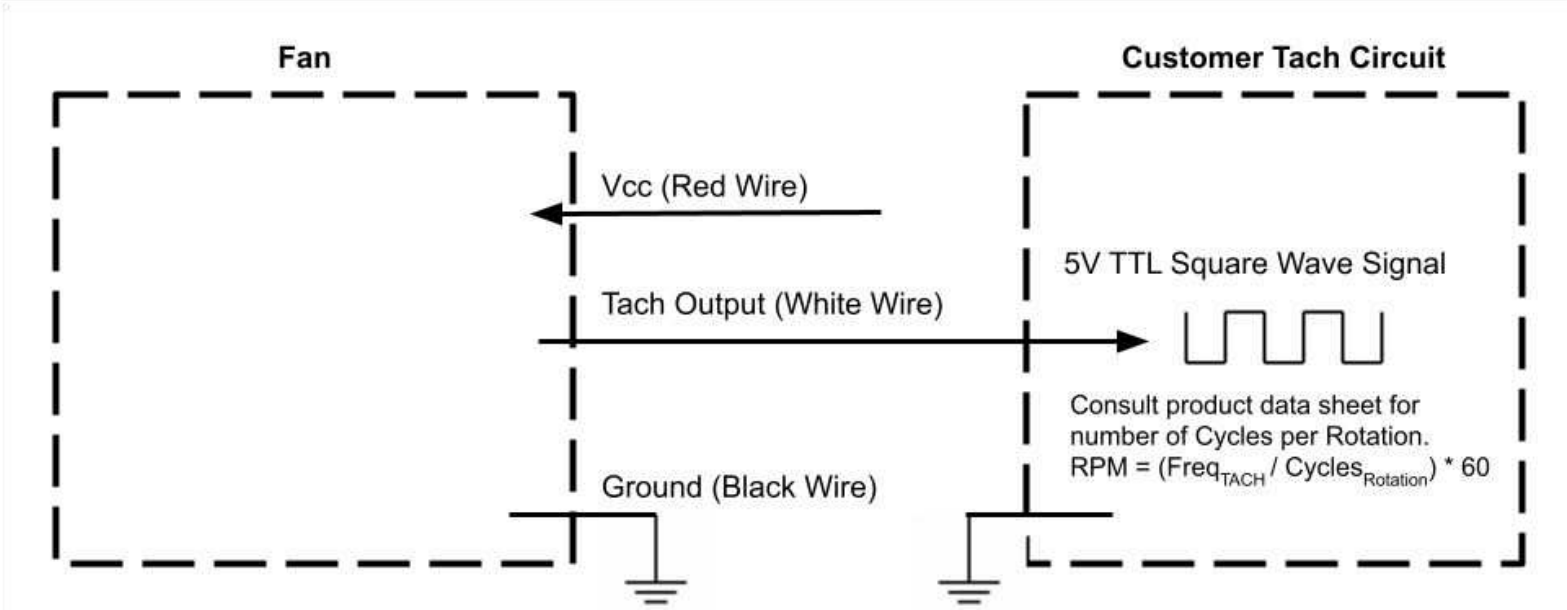
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2. Tachometer Output Fans (TTL 5V)

- Standard part numbers containing 01, 08, 09, 10, 11, 15, 16
- Standard color of Tach output wire is White.
- Tach output will be 5V square wave signal. $V_{HIGH} < 5.5V$. $V_{LOW} < 0.5V$
- RPM = (Tach Pulse Frequency / Cycles per Rotation) * 60
- Through external monitoring, Tach can be used as a rotation alarm if RPM is outside of predefined thresholds.

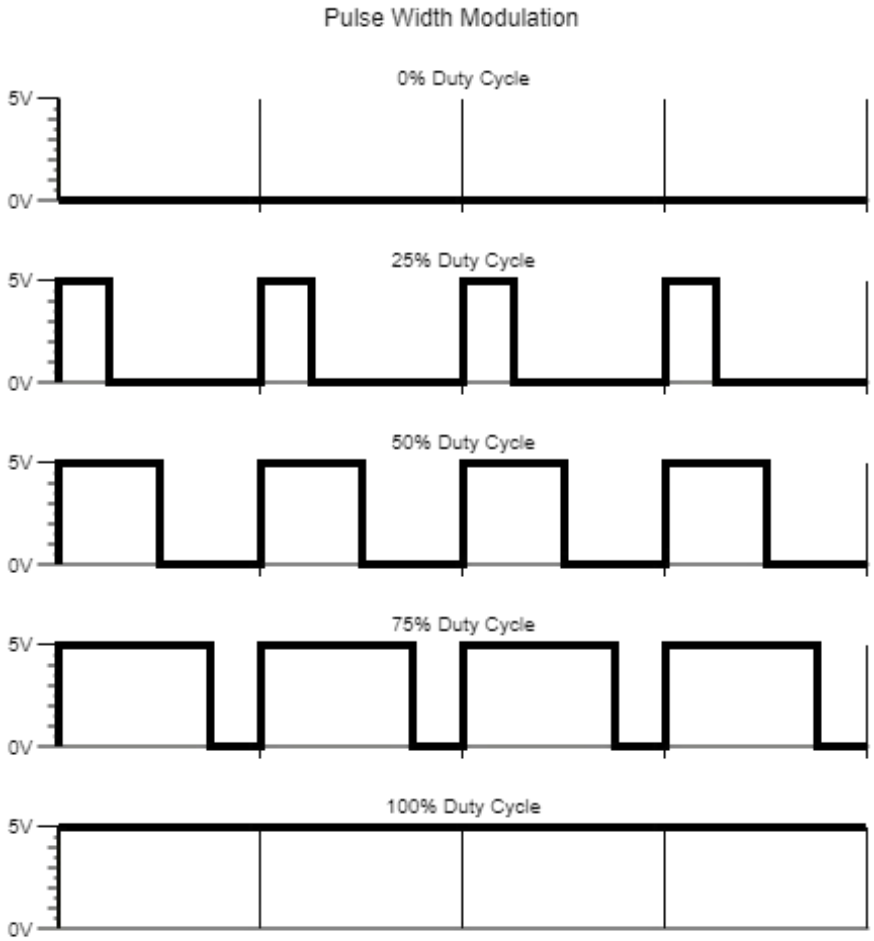


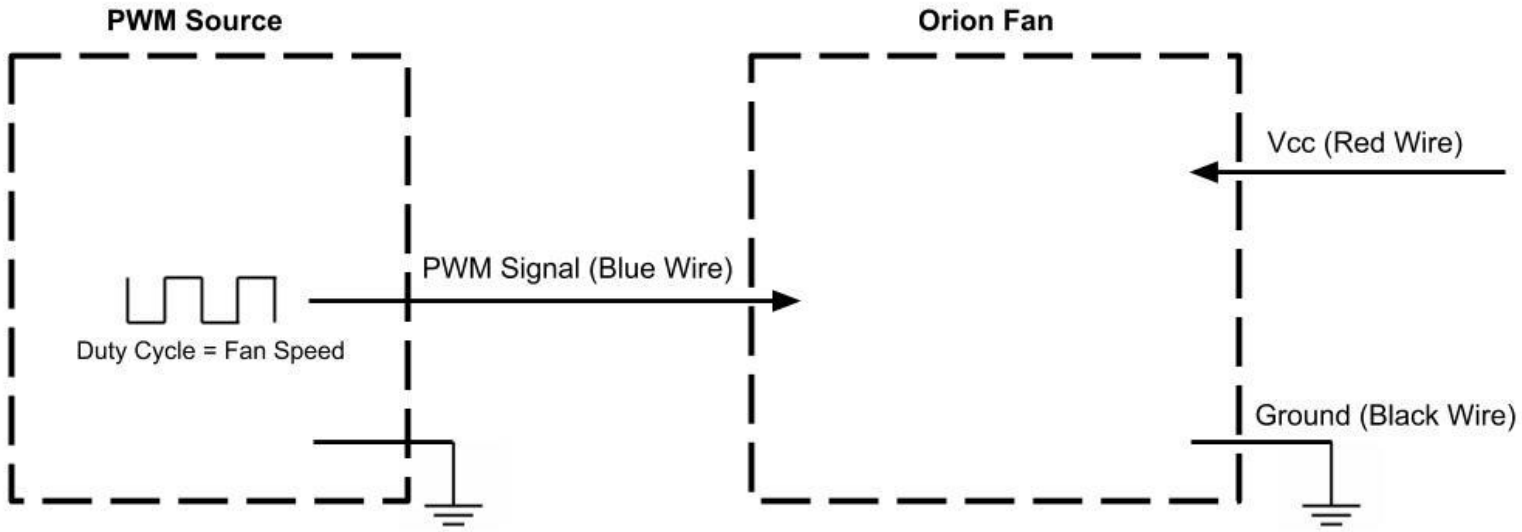
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3. PWM Input Fans

- Standard part numbers containing 05, 10, 13, 15
- Standard color of PWM Input wire is Blue.
- PWM input should be 5V square wave signal. MAX 5.5 V
- Duty Cycle of PWM signal controls impeller speed.
- 0% Duty Cycle will set either 0 RPM (aka Zero Stop) or a minimal rotation speed. Consult data sheet or sales rep for information on this design property.
- If PWM input wire is left disconnected fan will run at full speed.
- Typical PWM frequency of 25KHz is recommended.



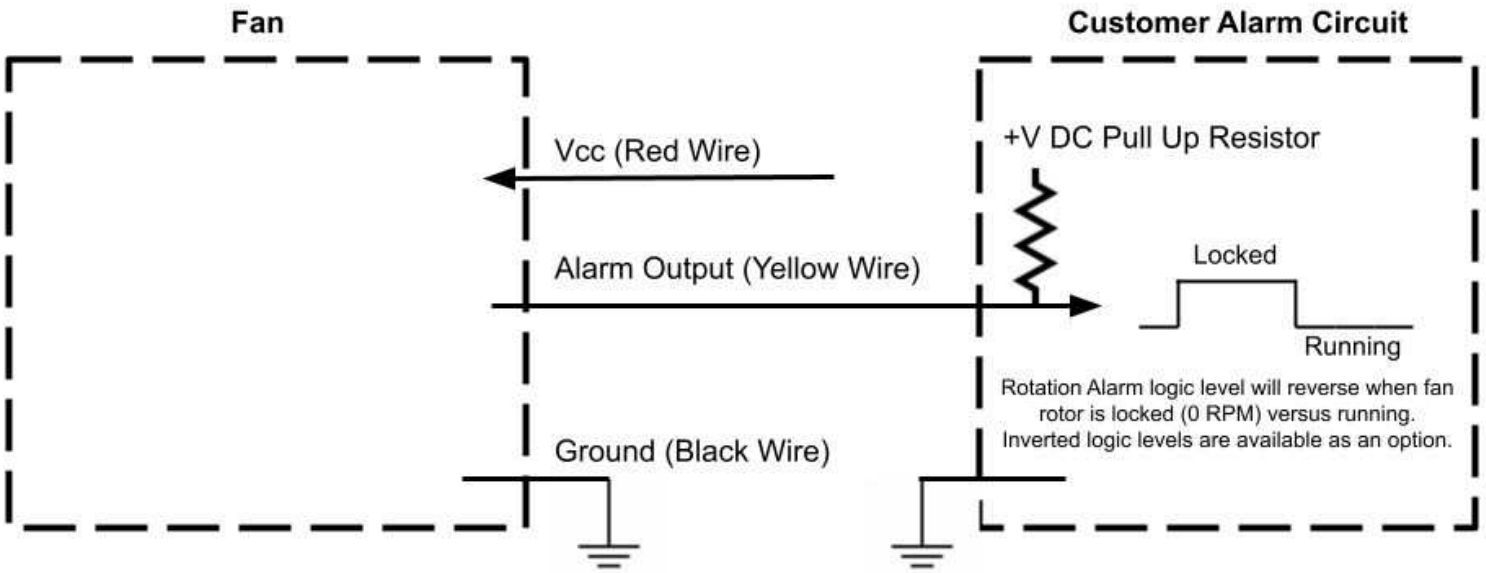


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4. Rotation Detection Alarm Output Fans (Open Collector / Drain)

- Standard part numbers containing 02A, 08A, 12A, 13A, 14A, 15A, 16A
- Inverted Alarm logic states are available upon request, part numbers containing 02Ai, 08Ai, 12Ai, 13Ai, 14Ai, 15Ai, 16Ai
- Standard color of Alarm output wire is Yellow.
- Customer-supplied external pull up resistor required to enable Alarm function.
- Alarm pull up current must not exceed 5 mA or value shown on data sheet.
- Alarm output is logic level LOW (≤0.5V DC) when rotation is present. Alarm output is logic level HIGH (Vcc of customer pull up) when rotation is 0 RPM. Inverted models have opposite logic states.

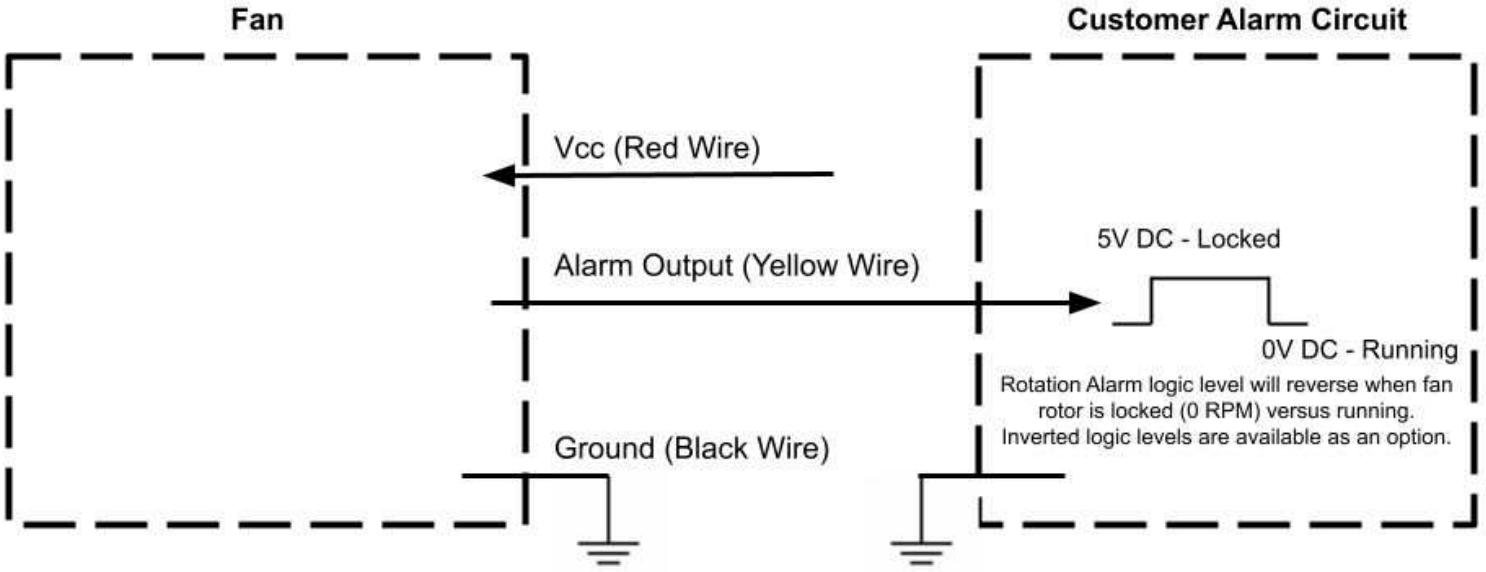


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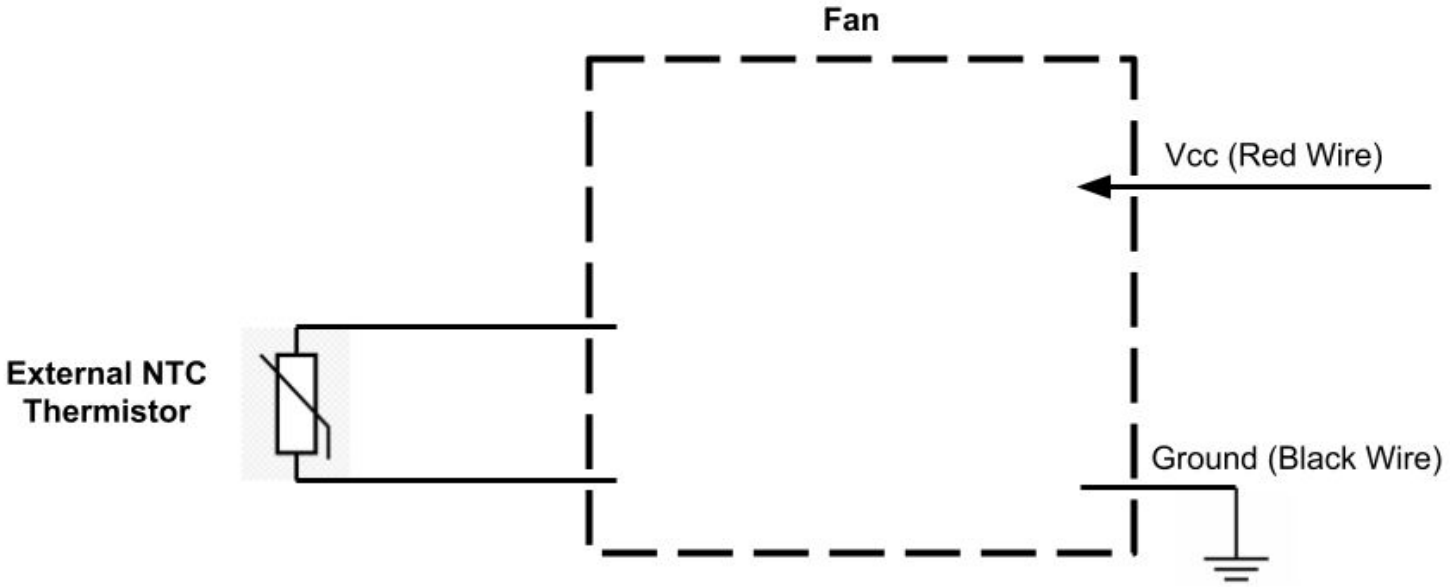
5. Rotation Detection Alarm Output Fans (TTL 5V)

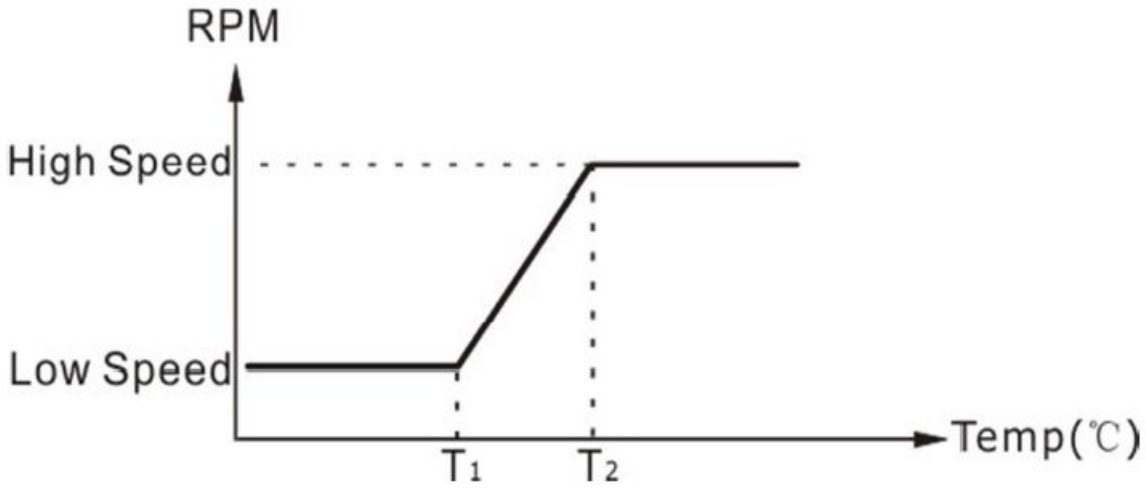
- Standard part numbers containing 02, 08, 12, 13, 14, 15, 16
- Inverted Alarm logic states are available upon request, part numbers containing 02i, 08i, 12i, 13i, 14i, 15i, 16i
- Standard color of Alarm output wire is Yellow.
- Alarm output suitable for driving LED indicator lights directly.
- Alarm output is logic level LOW (≤0.5V DC) when rotation is present. Alarm output is logic level HIGH (5V DC) when rotation is 0 RPM. Inverted models have opposite logic states.



6. Thermistor / Temp Controlled Fans (External Thermistor)

- Standard part numbers containing 04, 09, 12, 16
- Standard color of Thermistor wires is Black.
- Uses NTC Thermistor, connected to flying wire leads.
- Customer can use resistors to customize desired values for T_1 and T_2



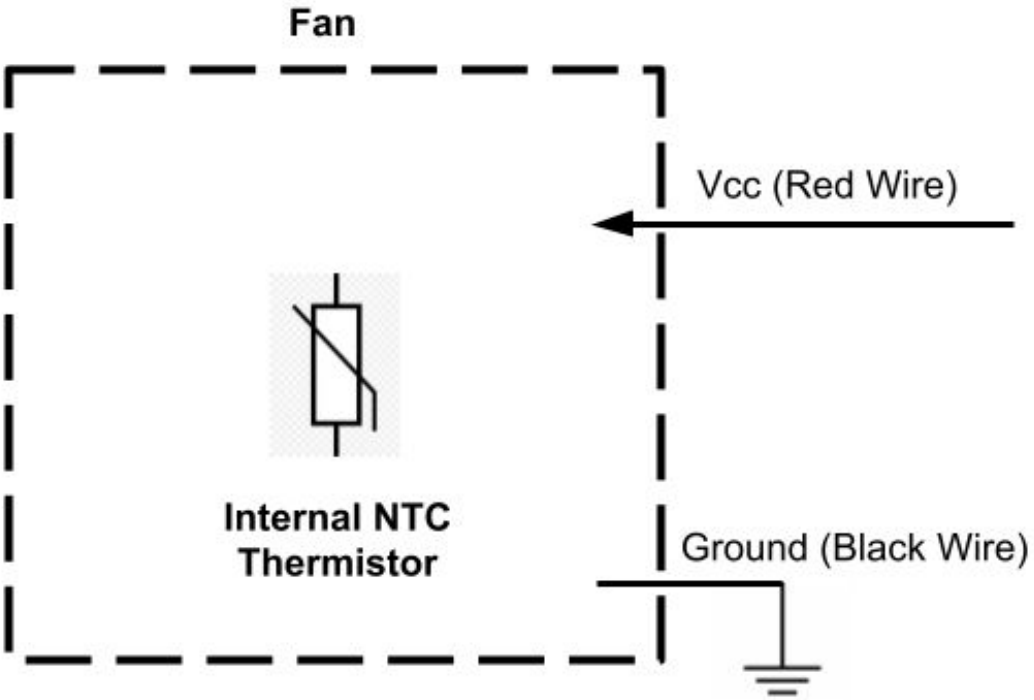


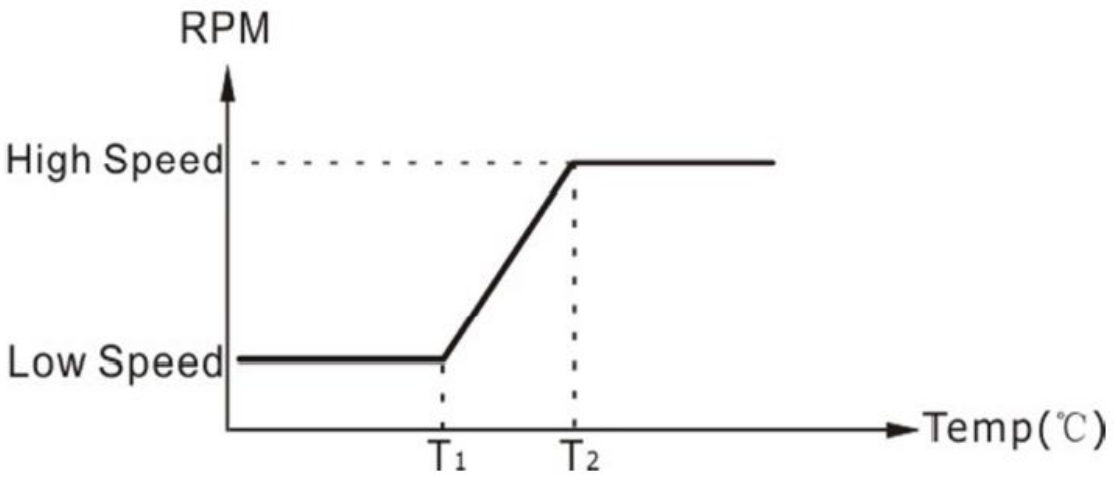
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7. Thermistor / Temp Controlled Fans (Internal Thermistor)

- Standard part numbers containing 03.
- Uses NTC Thermistor installed inside motor housing or on motor strut.
- Customer can specify desired values for T_1 and T_2



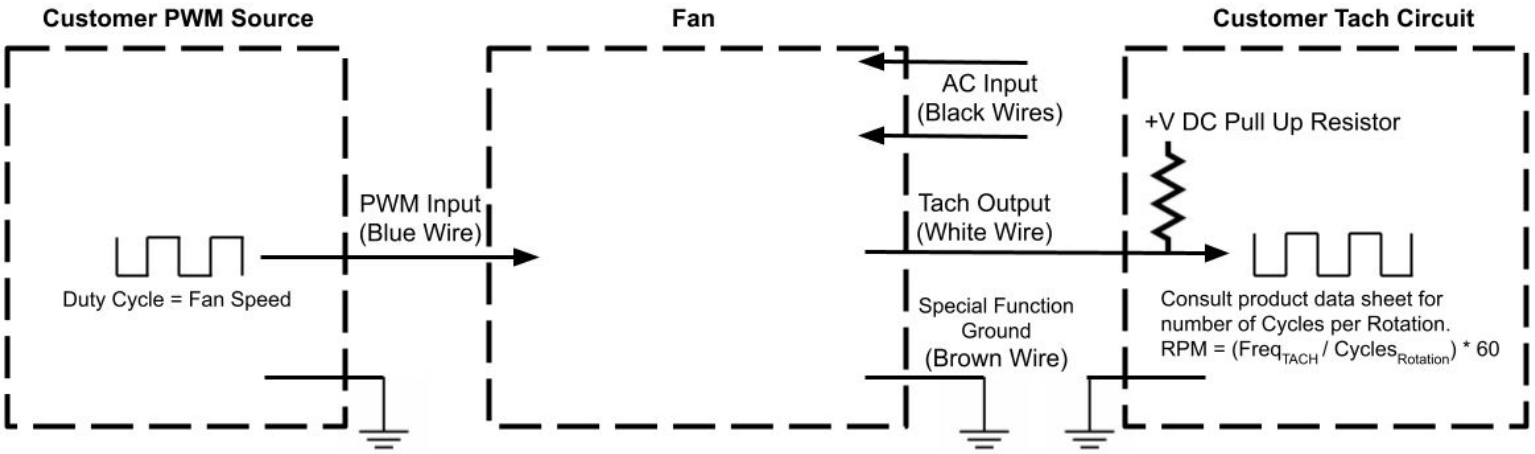


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8. AC Fan with PWM / Tach options

- AC power input wires are Black.
- Standard color of Tach output wire is White.
- Standard color of PWM input wire is Blue.
- Standard color of special function ground is Brown.
- For Open Collector models, the customer must supply an external pull up resistor required to enable Tach function. Pull up resistor may be omitted for TTL Tach models.
- Tach Pull up current must not exceed 5 mA, or value shown on data sheet.
- RPM = (Tach Pulse Frequency / Cycles per Rotation) * 60
- Through external monitoring, Tach can be used as a rotation alarm if RPM is outside of predefined thresholds.



9. 0-10V DC Speed Control Input

- Standard DC and EC fan part numbers containing 22, 23 (with 5V TTL Alarm), 23A (with Open Collector Alarm), 24 (with 5V TTL Tach), 24A (with Open Collector Tach).
- Standard color of 0-10V input wire is Orange.
- Speed is controlled by the application of a steady DC voltage between 0 and 10V.
- Standard behavior is 0V = Full Stop (0 RPM) and 10V = Maximum RPM.
- 0V RPM can be customized by special order.
- Refer to the product data sheet for RPM response details.

