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 / Pulses per rotation) * 60
- Through external monitoring, Tach can be used as a rotation alarm if RPM is outside of predefined thresholds.
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. \( V_{\text{HIGH}} < 5.5V \), \( V_{\text{LOW}} < 0.5V \)
- RPM = \( \frac{\text{Tach Pulse Frequency}}{\text{Pulses per rotation}} \times 60 \)
- Through external monitoring, Tach can be used as a rotation alarm if RPM is outside of predefined thresholds.

![Circuit Diagram](image_url)
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.
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.
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 $T_2$
7. Thermistor / Temp Controlled Fans (Internal Thermistor)

- Standard part numbers containing 03.
- Uses NTC Thermistor installed inside motor housing.
- Customer can specify desired values for $T_1$ and $T_2$
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.
- 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.
- \[
    \text{RPM} = \frac{\text{Tach Pulse Frequency}}{\text{Pulses per rotation}} \times 60
    \]
- Through external monitoring, Tach can be used as a rotation alarm if RPM is outside of predefined thresholds.