



<b>Customer:</b>	
<b>Model:</b>	<b>MR4028W12B1+6-RSR</b>
<b>Customer Part Number:</b>	
<b>Revision:</b>	
<b>Description:</b>	<b>Brushless DC Fan</b>
<b>Issue Date:</b>	
<b>Revision Date:</b>	

<b>Drawn By:</b>	<b>Checked By:</b>	<b>Approved By:</b>
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Mechatronics is pleased to submit the following specifications for review. If these specifications are for a final approval, please sign, date, and return to:

Mechatronics  
 FAX (425) 222-5155

TEL (425) 222-5900

<b>Customer Approval (print):</b>	<b>Authorized Signature:</b>



## BRUSHLESS DC FAN SPECIFICATIONS

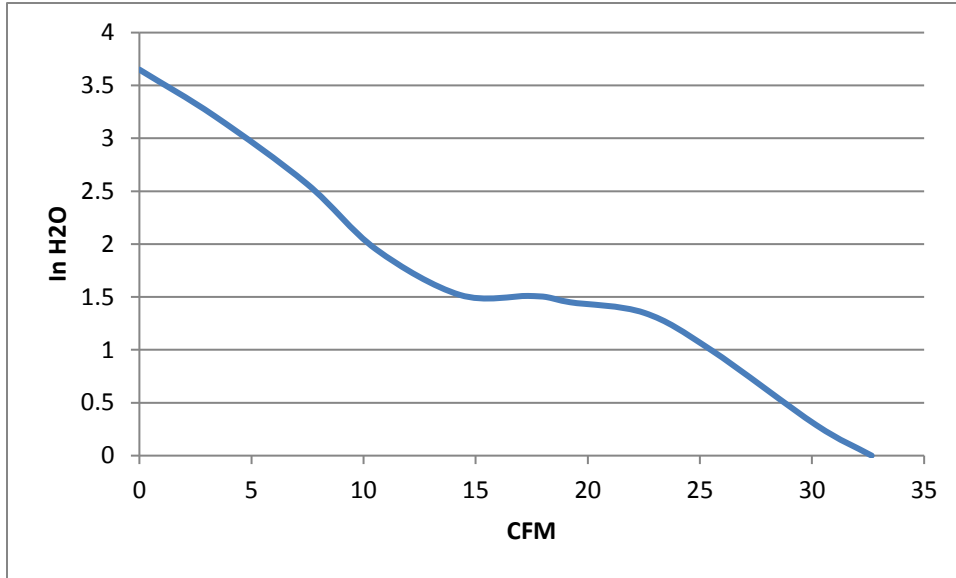
### 1. SCOPE

This specification applies to axial fan model: **MR4028W12B1+6-RSR**

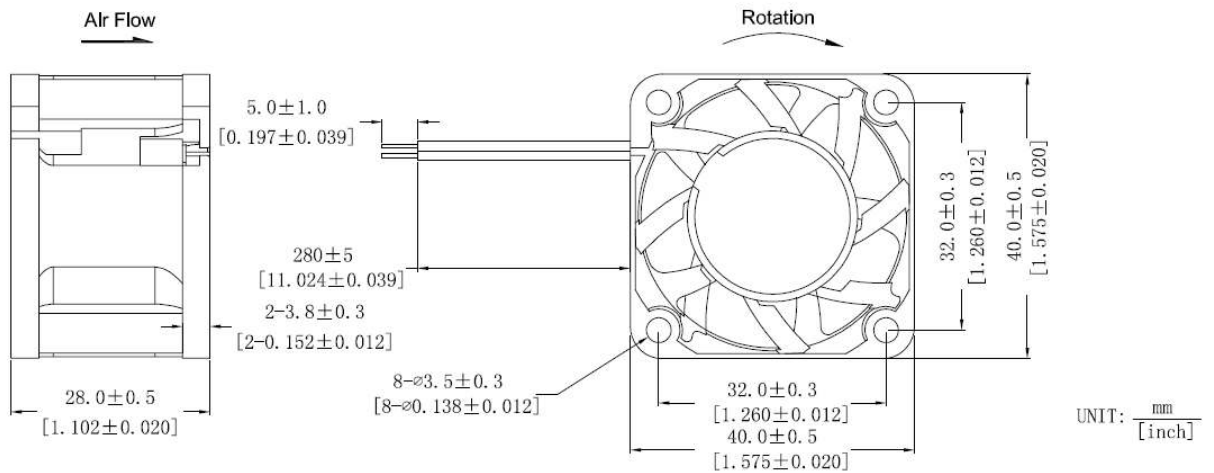
### 2. SPECIFICATIONS

Motor Design	Single phase Brushless DC motor
Frame Material	UL94V-0 PBT
Impeller Material	UL94V-0 PBT
Mass	50g
Bearings	2 Ball Bearings
Motor Insulation	Class A
Maximum Free-Air Flow	32.6 CFM
Maximum Back Pressure	3.65 In H <sub>2</sub> O
Rated Voltage	12.0 VDC
Operating Voltage	8 ~ 14 VDC
Rated Current	1.6 A
Power	19.2 W
Rated Speed	24,000 RPM
Operating Temperature	-10°C to +70°C, 10% to 90% RH
Storage Temperature	-10°C to +80°C, 5% to 95% RH
Sound Pressure Level	65 dBA
Insulation Resistance	Min 10M ohm between frame and (+) lead at 500 VDC
Dielectric Strength	Max 5 mA between frame and (+) lead at 500 VAC for 60sec
Life Expectancy	70,000 Hours at 30°C
Lead Wire(s)	(+) RED (-) BLACK (Tach) YELLOW (PWM) BLUE
Polarity Protection	Capable of withstanding 10 mins of reverse connection of (+) and (-) leads
Motor Protection	Locked Rotor Protection and Auto-Restart
	Reverse Polarity Protection
Additional Options	Contact Mechatronics for connector and environmental protection options.

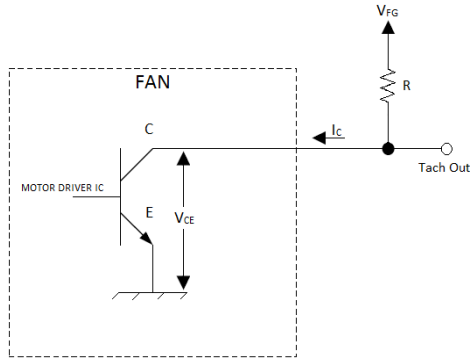
3. PERFORMANCE



4. MECHANICAL  
 Dimensional Drawing



8. SENSOR SPECIFICATION: Frequency Generator (Tachometer) Output  
 a. OUTPUT CIRCUIT



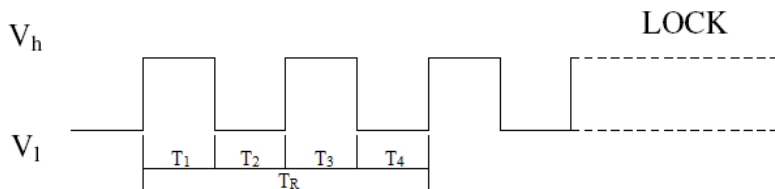
b. ELECTRICAL SPECIFICATIONS

$V_{CE(sat)} = 0.5 \text{ V MAX}$   
 $I_C = 5 \text{ mA MAX}$

$V_{FG} = 12 \text{ V MAX}$   
 $R = V_{FG} / I_C$

c. WAVEFORM OUTPUT

When the rotor is turned the output will take the form of a square wave  
 When the rotor is locked the output will be either HI or LO



$T_1 = T_2 = T_3 = T_4 = 1/4 T_R$   
 $N = \text{RPM}$   
 $T_R = 60/N$

9. SPEED CONTROL SPECIFICATION: Pulse-Width Modulation Input  
 a. ELECTRICAL SPECIFICATIONS

PWM Control Signal Voltage Range: 0.5 VDC ~ 5 VDC

- $V_{inH} = 3.5\text{VDC}$  Minimum
- $V_{inL} = 0.4\text{VDC}$  Maximum
- The frequency for control signal of the fan shall be able to accept 25Khz +/-5Khz.
- If PWM control is made electrically open, the rotor will spin at maximum speed