



<b>Customer:</b>	
<b>Model:</b>	<b>MS1238E48B1+6-FTR</b>
<b>Customer Part Number:</b>	
<b>Revision:</b>	<b>4.29.21</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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**SPECIFICATIONS FOR APPROVAL**

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

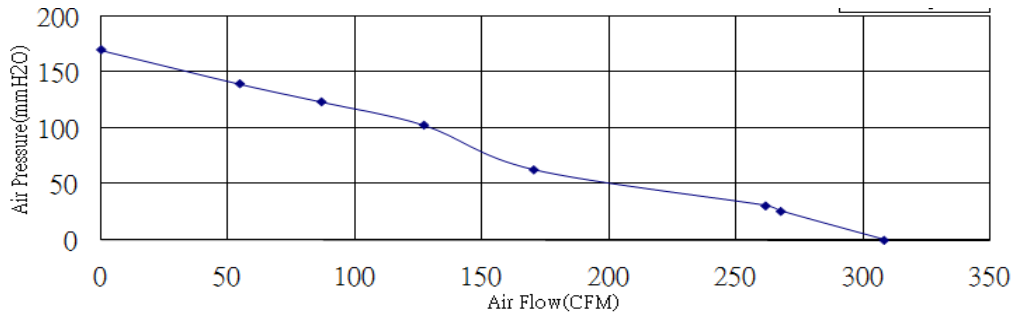
### 1. SCOPE

This specification applies to axial fan model: **MS1238E48B1+6-FTR**

### 2. SPECIFICATIONS

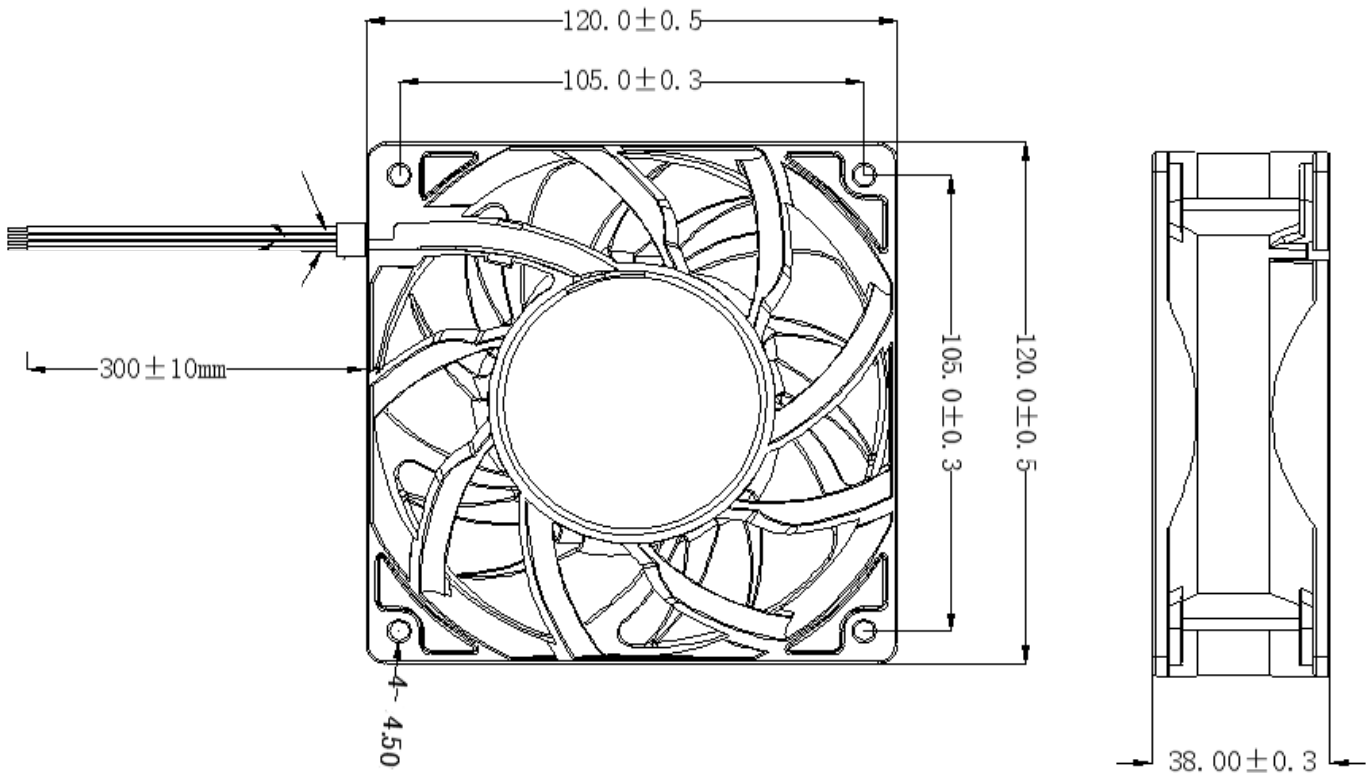
Motor Design	Brushless DC motor (8 Pole)
Frame Material	Aluminum
Impeller Material	UL94V-0 PBT
Mass	294g
Bearings	2 Ball Bearings
Motor Insulation	Class A
Maximum Free-Air Flow	308.52 CFM
Maximum Back Pressure	170.08mm H <sub>2</sub> O (6.69 In H <sub>2</sub> O)
Rated Voltage	48.0 VDC
Operating Voltage	36.0 ~ 54 VDC
Rated Current	2.2 A (2.3A Max)
Power	105.6 W (110.4W Max)
Rated Speed	12,000 RPM +/-10%
Operating Temperature	-10°C to +70°C
Storage Temperature	-40°C to +75°C
Sound Pressure Level	77 dB(A). As measured in a sound isolated room; background noise 20 dB or less; microphone distance 1m from intake side of fan
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
Shock Resistance	60G, 11 millisecond (1/2 sine), twice to all three axes
Lead Wire(s) UL1007 22AWG	(+) RED (-) BLACK (FG-Tach) YELLOW (PWM) BLUE
RoHS Compliance	RoHS Compliant
Motor Protection	Locked Rotor Protection and Auto-Restart Reverse Polarity Protection Over Voltage Protection (fan will stop operating >60VDC) Maximum input voltage not to exceed 65VDC
Ingress Protection	IP54

3. PERFORMANCE

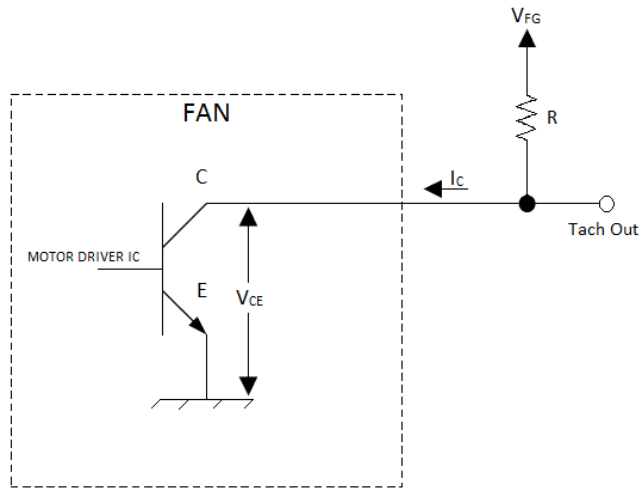


4. MECHANICAL

Dimensional Drawing – Unit: mm



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



**b. ELECTRICAL SPECIFICATIONS**

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

$V_{FG} = 48V \text{ MAX}$

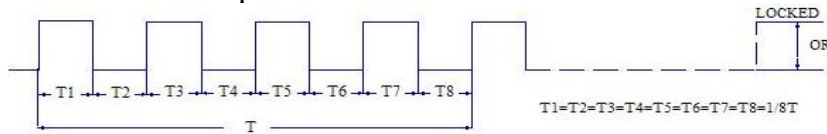
$I_C = 10mA \text{ MAX}$

$R = V_{FG} / I_C$

**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

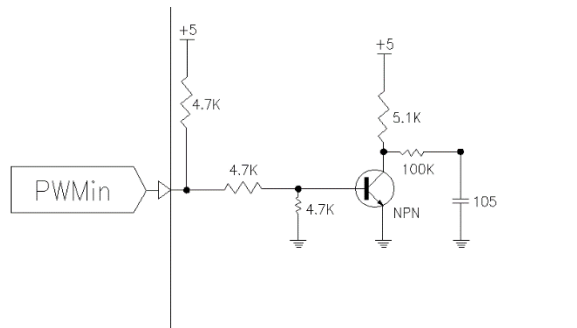


6. SPEED CONTROL SPECIFICATION: Pulse-Width Modulation Input

a. ELECTRICAL SPECIFICATIONS

PWM Control Signal Voltage Range: 0.5 VDC ~ 10 VDC

- The frequency for control signal of the fan shall be able to accept 300Hz to 30KHz
- $V_{inH} = 3.0VDC$  Minimum
- $V_{inL} = 0.8VDC$  Maximum
- Internal Circuit:



PWM(%)	0%	10%	50%	100%
(RPM)	0	1300±200RPM	6050±10%RPM	12000±10%RPM