

04020VA (1608VL)

DC Axial Fan

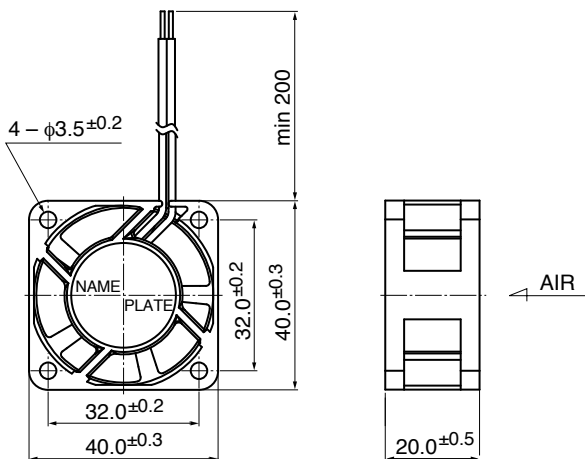
40[□]X20^L



General Specifications

Motor Protection Auto Restart / Polarity Protection
 Insulation Resistance 10M Ω or over with a DC500V Megger
 Dielectric Withstand Voltage : AC700V 1s
 : -10 $^{\circ}$ C ~ + 70 $^{\circ}$ C (Operating)
 Allowable Ambient -40 $^{\circ}$ C ~ + 70 $^{\circ}$ C (Storage)
 Temperature Range non-condensing environment

Outline



Expected Life

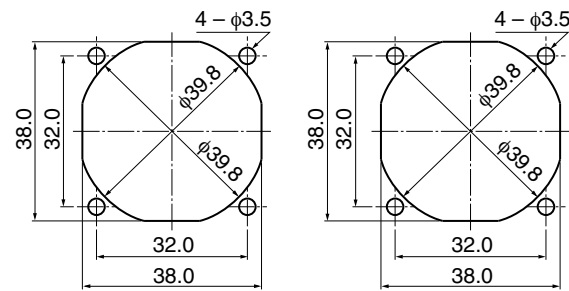
※ Failure Rate: 10% (L10 Life)

60 $^{\circ}$ C 40,000 (Hours)

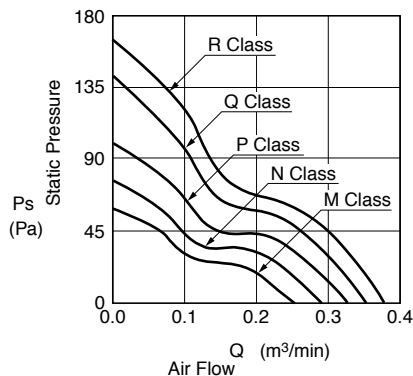
Panel Out-cuts

(Inlet Side)

(Outlet Side)



Characteristic Curves



Material

Casing : Plastic (Black) UL94V-0
 Impeller : Plastic (Black) UL94V-0
 Bearing : Ball Bearing
 Lead Wire : UL1007 AWG26 + : Red, - : Black

Customize service for IP compatible type and Oil-proof type is available for this item. Please contact to our sales representative for more detail.

Specifications

Model**	Product Number	Rating Voltage (V)	Operating Voltage (V)	Current (A)*1	Input Power (W)*1	Speed (min-1)*1	Max Air Flow (m ³ /min)*1	(CFM)*1	Max Static Pressure (Pa)	(In H ₂ O)*1	Noise (dB)*1	Mass (g)
04020VA-05Q-AA-	00	5	4.5 ~ 5.5	0.42	2.10	10,000	0.34	12.0	123	0.49	38.0	40
04020VA-12K-AA-	00	12	7.0 ~ 13.2	0.05	0.60	5,500	0.165	5.8	36.7	0.15	23.0	
04020VA-12L-AA-	00	12	7.0 ~ 13.2	0.21	0.08	6,500	0.21	7.4	47.7	0.19	26.0	
04020VA-12M-AA-	00	12	7.0 ~ 13.2	0.085	1.02	7,500	0.25	8.8	58.8	0.24	29.0	
04020VA-12N-AA-	00	12	7.0 ~ 13.2	0.11	1.32	8,500	0.29	10.2	76.6	0.31	32.5	
04020VA-12P-AA-	00	12	7.0 ~ 13.2	0.13	1.56	9,500	0.32	11.3	99.3	0.40	37.0	
04020VA-12Q-AA-	00	12	10.8 ~ 13.2	0.21	2.52	11,000	0.35	12.4	142.0	0.57	42.0	
04020VA-12R-AA-	00	12	10.8 ~ 13.2	0.18	2.16	12,000	0.38	13.4	165.0	0.66	46.0	
04020VA-24K-AA-	00	24	14.0 ~ 26.4	0.03	0.77	5,500	0.165	5.8	36.7	0.15	23.0	
04020VA-24L-AA-	00	24	14.0 ~ 26.4	0.04	0.96	6,500	0.21	7.4	47.7	0.19	26.0	
04020VA-24M-AA-	00	24	14.0 ~ 26.4	0.05	1.20	7,500	0.25	8.8	58.8	0.24	29.0	
04020VA-24P-AA-	00	24	14.0 ~ 26.4	0.10	2.40	9,500	0.32	11.3	99.3	0.40	37.0	
04020VA-24Q-AA-	00	24	14.0 ~ 26.4	0.11	2.64	11,000	0.35	12.4	142.0	0.57	42.0	

Rotation: Clockwise as seen from the label side
 Airflow Outlet: Label side

*1: Average Values in Free Air

General Specifications

Motor Protection:

Auto Restart/Polarity Protection

Insulation Resistance:

10M Ω or over with a DC500V Megger

Dielectric Withstand Voltage: AC 700V 1s

Allowable Ambient Temperature Range:

-10°C ~ +70°C (Operating)

-40°C ~ +70°C (Storage)

IP Code: IP69K

Expected Life

25°C 100,000 Hours (L10)

Material

Casing : Plastic (Black) UL94V-0

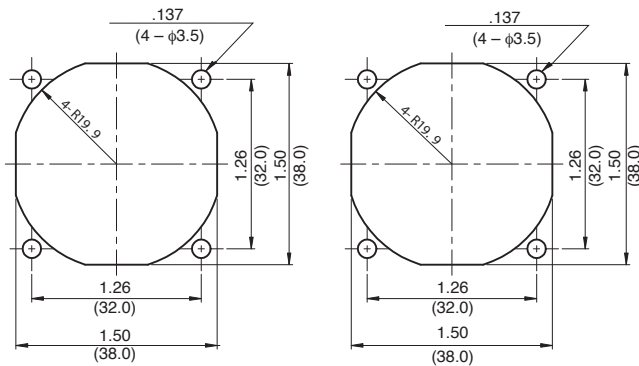
Impeller : Plastic (Black) UL94V-0

Bearing : Ball Bearing

Lead Wire : UL3385, AWG26, +Red, -Black

Panel Cut-Outs

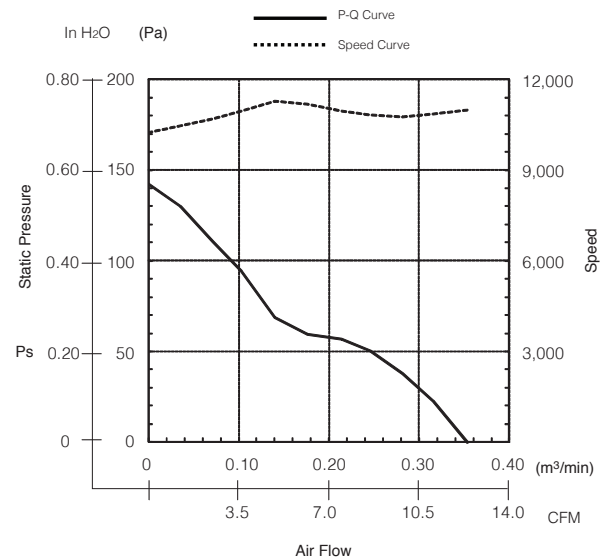
Units: $\frac{\text{inch}}{\text{mm}}$



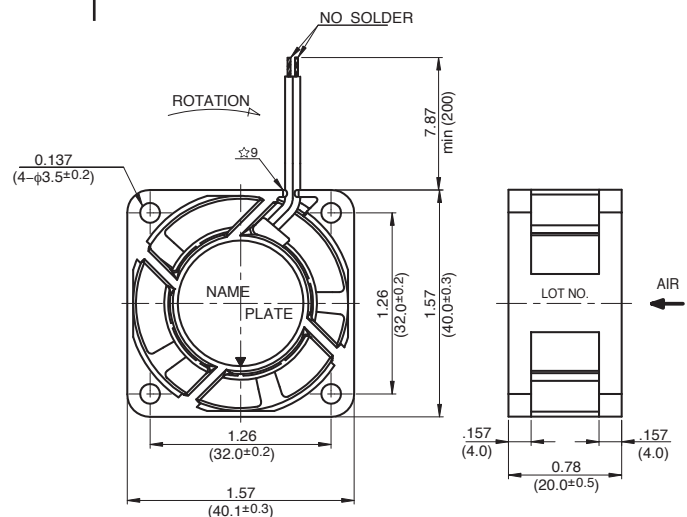
INLET SIDE

OUTLET SIDE

Characteristic Curves



Outline



Specifications

MODEL	Rated Voltage	Operating Voltage	Current	Input Power	Speed	Max. Air Flow		Max. Static Pressure		Noise	Mass
	(V)	(V)	(A) ^{*1}	(W) ^{*1}	(min ⁻¹) ^{*1}	CFM ^{*1}	(m ³ /min) ^{*1}	in H ₂ O	(Pa) ^{*1}	(dB) ^{*1}	(g)
04020VA-12Q-CA-00	12	9.0 ~ 13.2	0.13	1.56	11000	12.36	0.35	.57	142	42.0	40
04020VA-24Q-CA-00	24	14.0 ~ 26.4	0.09	2.16	11000	12.36	0.35	.57	142	42.0	40

Rotation: Clockwise

Airflow Outlet: Air Out Over Struts

*1: Average Values in Free Air

Note: PWM/Locked Rotor/Tach Available

PWM and Tach Output Brushless DC Fan

04020VA-12R-AU-01

NMB

General Specifications

Motor Type:

DC Brushless Single Phase Motor

Motor Protection:

Auto Restart / Polarity Protection (Motor withstands reverse connection for positive and negative leads.)

Insulation Resistance:

10MΩ or over with a DC 500V Megger

Dielectric Withstand Voltage:

AC 700V 1sec or 500V 1min

Allowable Ambient Temperature Range:

-10°C ~ + 70°C (Operating)

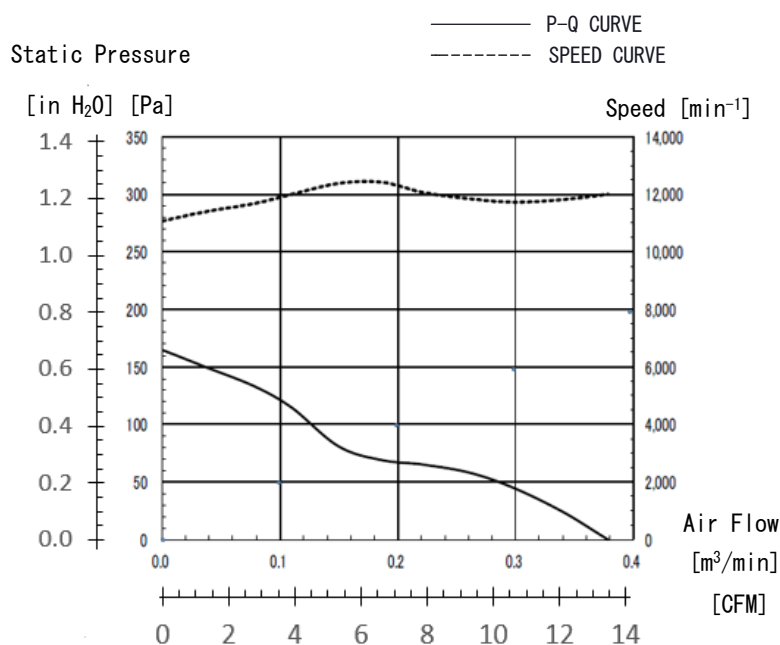
-40°C ~ + 70°C (Storage)

(non-condensing environment)



**For reference only. Please refer to fan outline for details*

Characteristic Curves



Features

- High Performance, four wire, PWM fan with tach signal
- Efficient motor technology, high torque, and aerodynamic impeller design
- Energy saving, low vibration, and increased life expectancy
- Available in 12 volts with tach output and PWM speed control
- Outfitted with NMB precision machined ball bearings for long life
- Single phase motor design for high speed and efficient cooling

Life Expectancy L10

40,000 Hours at 60°C

**Fan life expectation is based on free air operation at 60°C, rated voltage, and indoor benign lab environment*

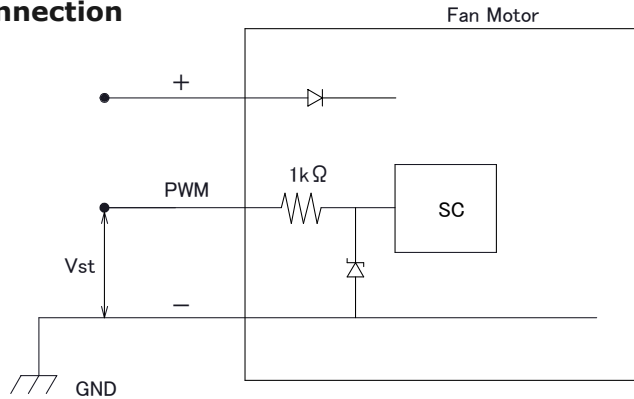
**1: Values in Free Air*

Specifications

MODEL	Rating Voltage	Operating Voltage	Current		Input Power		Speed	Max. Air Flow		Max. Static Pressure		Noise	Mass
	(V)	(V)	Avg	Max	Avg	Max		(CFM)	(m ³ /min)	(in H ₂ O)	(Pa)		
	(A) ^{*1}	(A) ^{*1}	(W) ^{*1}	(W) ^{*1}	(min ⁻¹) ^{*1}	(dB) ^{*1}		(g)					
04020VA-12R-AU-01	12	10.8 to 13.2	0.18	0.30	2.16	3.60	12,000	13.4	0.38	0.66	165	46.0	40.0

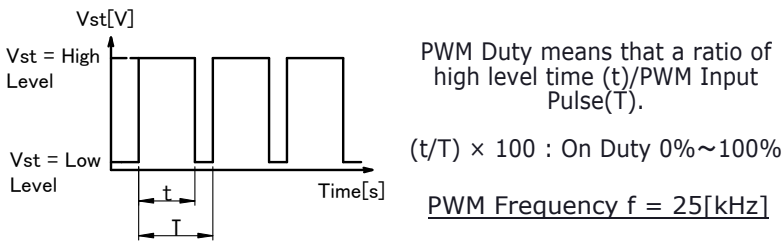
PWM Specifications

Connection



1. PWM Control
 $V_{st} = \text{Low Level (0V} \sim \text{0.4V)} \rightarrow \text{Stop (On Duty 0\%)}$
 $V_{st} = \text{High Level (4.0V} \sim \text{5.0V)} \rightarrow \text{Full Speed (On Duty 100\%)}$
 $V_{st} = \text{Open} \rightarrow \text{Full Speed}$

2. PWM Duty & PWM Input Pulse

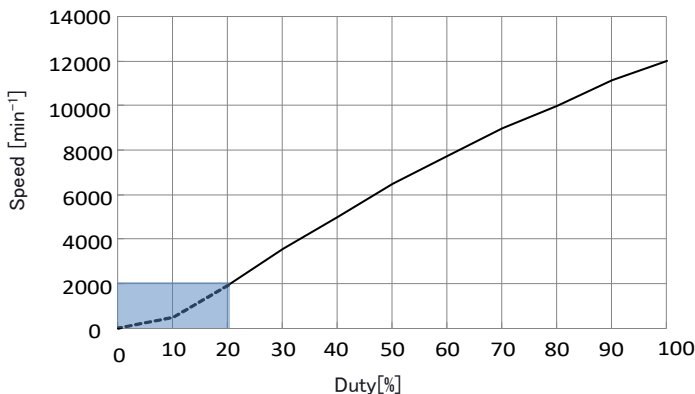


3. The condition for PWM control are as follows

- When you use this under PWM control, always be sure the motor's operation under practical mounting state. Fan motor may not start up caused by PWM control at very low speed condition.)
- To run at Rating Voltage
- Please use the start with Duty 20% or more at 25kHz.[At rated voltage input, Ambient temperature 25°C]

PWM Characteristic Curve

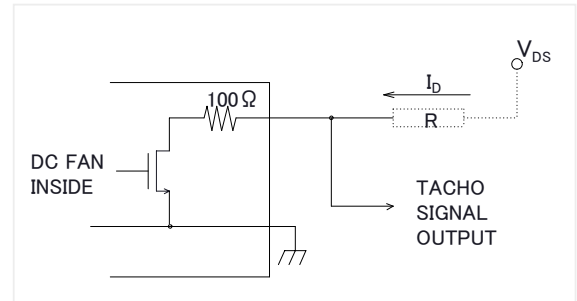
Reference PWM Duty VS Speed
 Conditions : At Rating Voltage, $V_{st(H)}=5.0V$, $f=25kHz$, $T_a=25^\circ C$



TACHO Specifications

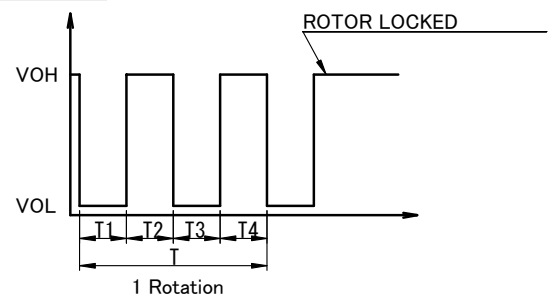
Tachometer Signal

1. Output Circuit: Open Drain
2. Specification
Absolute Maximum Ratings at $T_a=25^\circ C$
 $V_{DSmax}: +15V$
 $I_{Dmax}: 5mA [V_{DS(sat)max}=1.5V]$

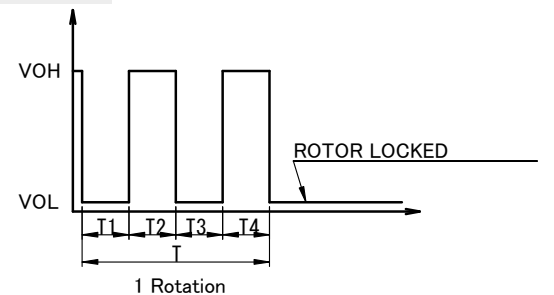


3. Output Waveform: At Rated Voltage Output Signal Voltage

Case-1



Case-2



- 1) When the rotor is locked at VOH position of signal, signal keeps VOH position.
- 2) When the rotor is locked at VOL position of signal, signal keeps VOL position.
- 3) $T=T_1+T_2+T_3+T_4=60/m=1 \text{ rotation}$

m : Fan Speed (min^{-1})

Tacho Duty Cycle= $50\% \pm 10\%$

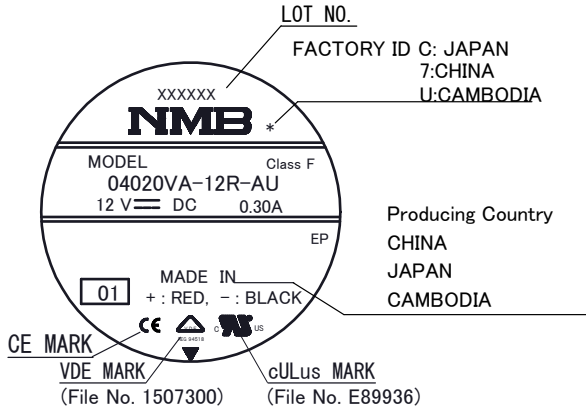
PWM and Tach Output Brushless DC Fan

04020VA-12R-AU-01

NMB

Outlines

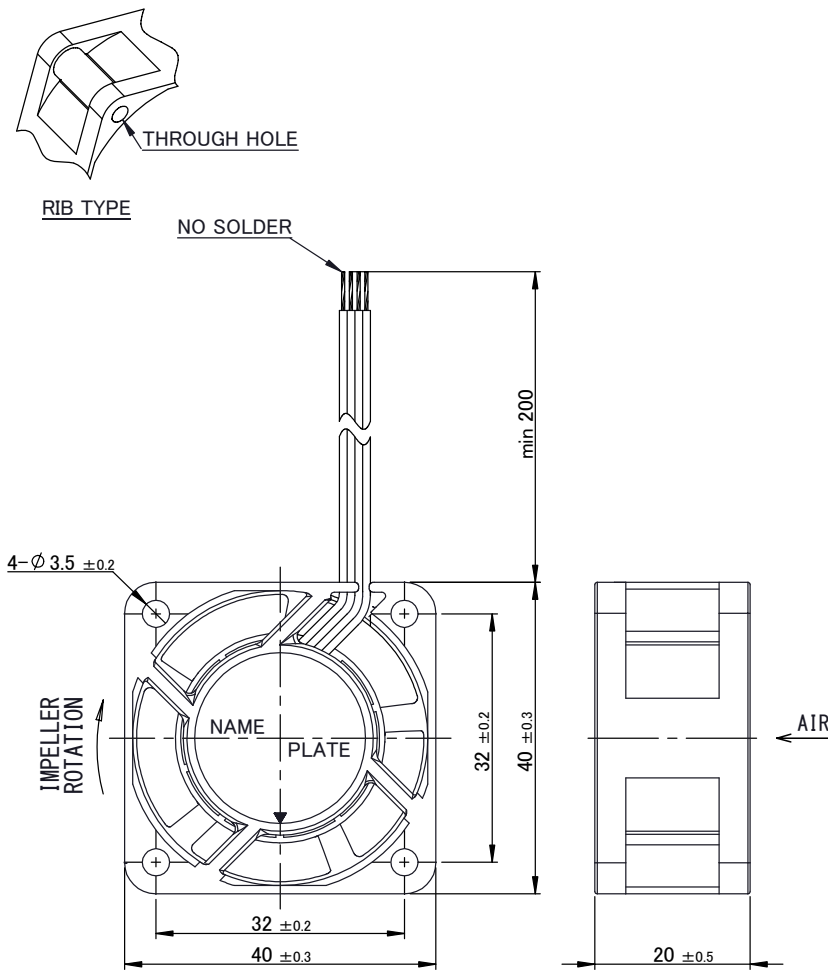
(Name Plate)



Materials

- Casing:** Plastic (Black UL94V-0)
- Impeller:** Plastic (Black UL94V-0)
- Bearing:** Steel Ball Bearing
- Lead Wire:** UL10368 or UL3443 AWG26
 - (+): Red
 - (-) Black
- Tacho:** White
- PWM:** Brown

(Outline)



(Panel Out-line)

