Specification For Approval

Customer : _____

Description : EC FAN

Customer Part No. : _____ Rev : ____

Delta Model No. : GTB052KUT34R-M E1 Rev : 00

Safety Model No. : _____

Sample Issue No. : _____

Sample Issue Date : 08/28/2018

Please send one copy of this specification back after you signed approval for production pre-arrangement

Approved by : _____

Date : _____

Delta Electronics, Inc.
No.252, Shangying Road, Guishan Industrial Zone, TEL : +886-3-359-1968
Taoyuan City, 33341, Taiwan FAX : +886-3-359-1991

*** SAMPLE HISTORY ***

CUSTOMER：

CUSTOMER P/N：

DELTA MODEL：GTB052KUT34R-M E1

REV	DESCRIPTION	DRAWN	CHECKED		APPROVED	ISSUE DATE
			ME	EE		
00	Issue spec.	鍾明翰 08/28’18	鍾明翰 08/28’18	游曜陽 08/28’18	賴偉銘 08/28’18	08/28’18

Smarter. Greener. Together.

GTB052KUT34R-M E1

Electronically Commutated (EC) Fan

Centrifugal Fan

ϕ 525 x 340 mm

Delta Electronics, Inc.
No.252, Shangying Road, Guishan Industrial Zone, Taoyuan City, 33341, Taiwan
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Technical features

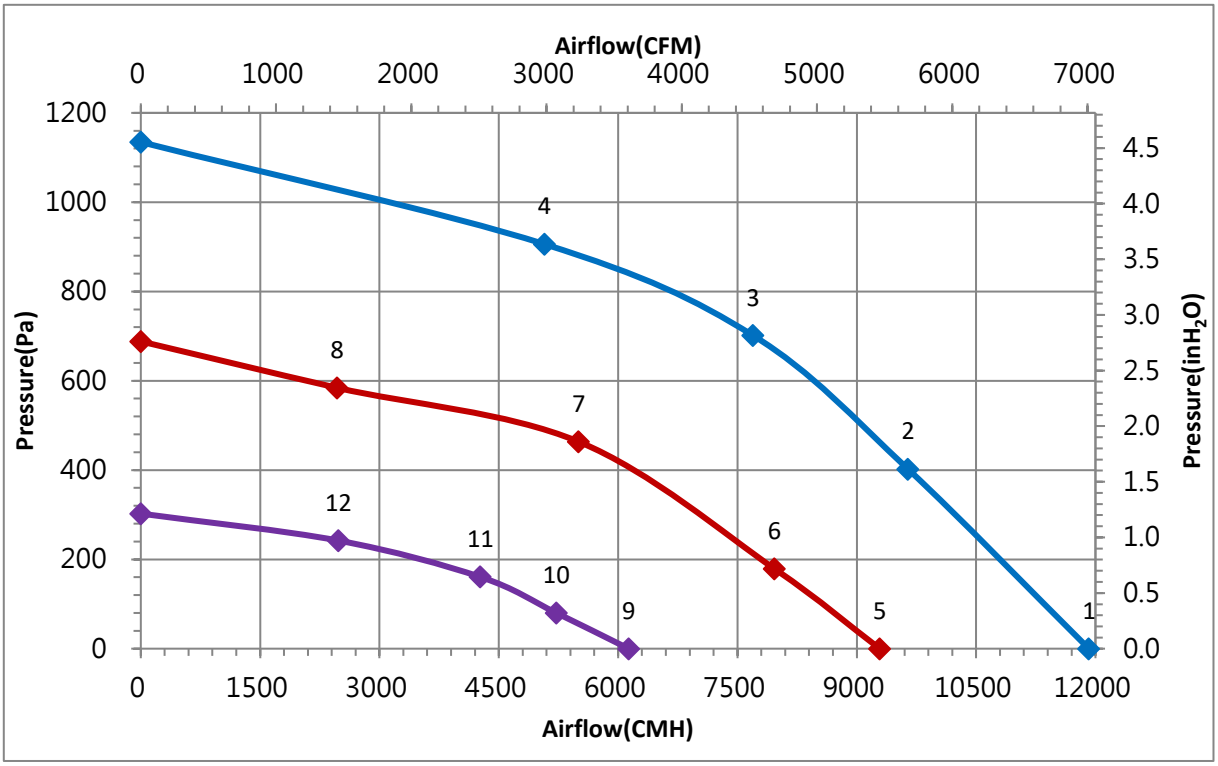
Input Side	
Nominal Voltage	3~ 230/400V_{ac} 50/60Hz
Input Source	3~ 200V_{ac} - 480V_{ac}
Inrush Current	I_{peak} < 60A, duration < 2mS
Power @ Free air	1520 W
Power @ Max. load	2600 W
Output Side	
Speed (RPM)	1930
Qmax. (CMH / CFM)	11917 / 7010
Pmax. (Pa / inAq)	1135 / 4.556
Noise (dB-A) @ Qmax.	88.5
Functions	
Active power factor correction	
Control input 0-10V_{DC} / PWM / 4-20mA.	
Output +10V_{DC} (±10%), max. 10mA.	
Control voltage output: 0-10V_{DC}.	
RS485 control bus (MODBUS RTU / 8N1)	
Alarm relay, Locked rotor protection, Soft start.	
Speed telling, Frequency generator signal.	
Voltage / Current monitoring.	
Over voltage protection 538Vac (±8 Vac).	
Under voltage protection 170Vac (±8Vac).	
IGBT over temperature protection 120 ℃ (±10 ℃).	

Physical	
Rotation Direction	CW, Seen on rotor
Material (Impeller / Frame)	Plastic PP / Die-cast aluminum
Bearing system	Ball bearings
Weight (kg)	27.1
Electrical leads	Via terminal block
Environmental	
Operating temperature range	-25 ~ +60 ℃
Storage temperature range	-40 ~ +70 ℃
Safety	
Safety	UL , cUL
IP Level	IP54
EMC	EN61000-6-2/4
Protection class	I
Insulation class	F
Leakage current	<= 3.5 mA
Motor protection	Over temperature protected
Life expectance	60,000 hrs at 40 ℃ / 15 ~ 65 %RH

NOTE :

1. Delta reserves the right to change specifications and other product information without prior notice.
2. Product can work normally and safety for 180V_{ac}~528V_{ac} input voltage, but it may impact product lifetime if operating voltage is lower than 200V_{ac} for a long time.

P & Q curves



Measure data:

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	Lp [dB(A)]
1	0	11917	1930	1520	2.34	88.5
2	402	9643	1930	2045	3.12	
3	702	7696	1930	2307	3.50	
4	906	5074	1930	2320	3.52	
5	0	9288	1500	753	1.16	82.0
6	179	7964	1500	935	1.46	
7	464	5503	1500	1123	1.77	
8	584	2468	1500	990	1.56	
9	0	6133	1000	257	0.47	77.0
10	82	5222	1000	314	0.54	
11	161	4267	1000	350	0.60	
12	242	2483	1000	363	0.62	

Test Condition :

- Input Voltage: Nominal Voltage (3~ 400Vac 50/60Hz)
- Temperature : Room Temperature
- Humidity : 65%RH
- Measured with inlet cone.
- Noise (Lp) is measured at a distance of one meter from the inlet side.
- Testing method is compliance with ISO 3745.

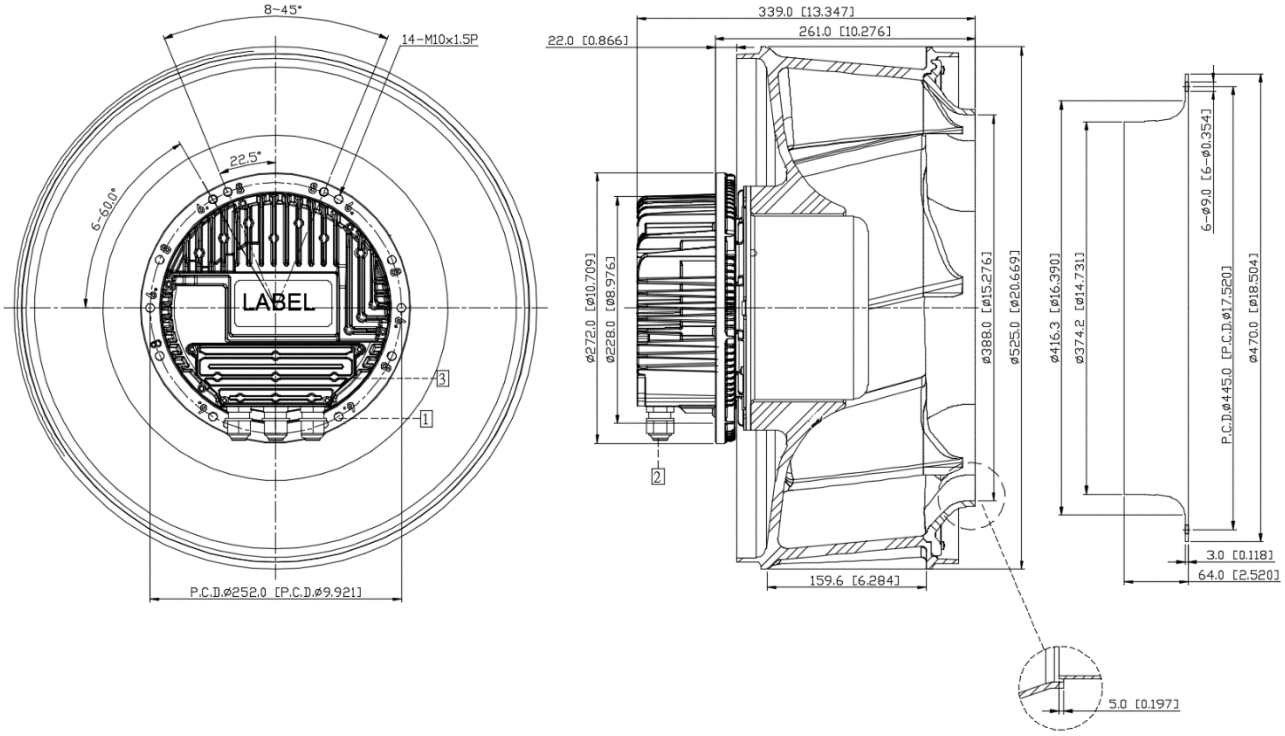
ErP Directive:

	Actual	2015
Over all Eff (%)	68.7	55.3
Eff Grade N	75.3	62
Power (kW)	2.307	
Air flow (CMH)	7696	
Pressure (Pa)	702	
Speed (RPM)	1930	

Dimension drawing

Label :

Fan :

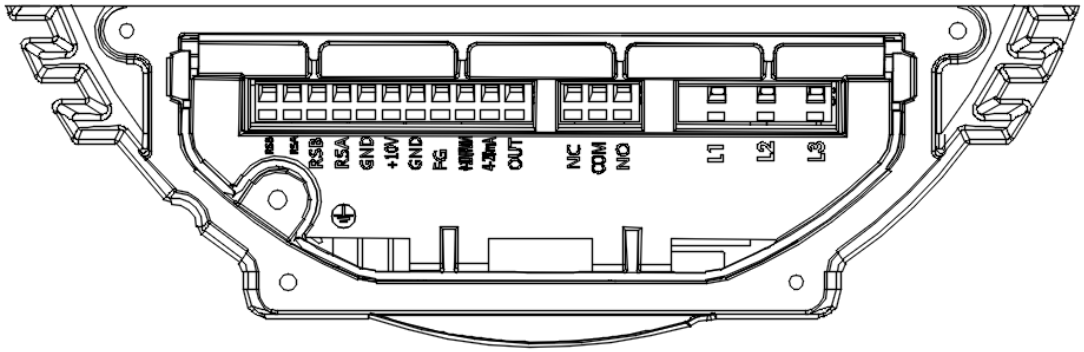


Note :

UNIT : mm[INCH]

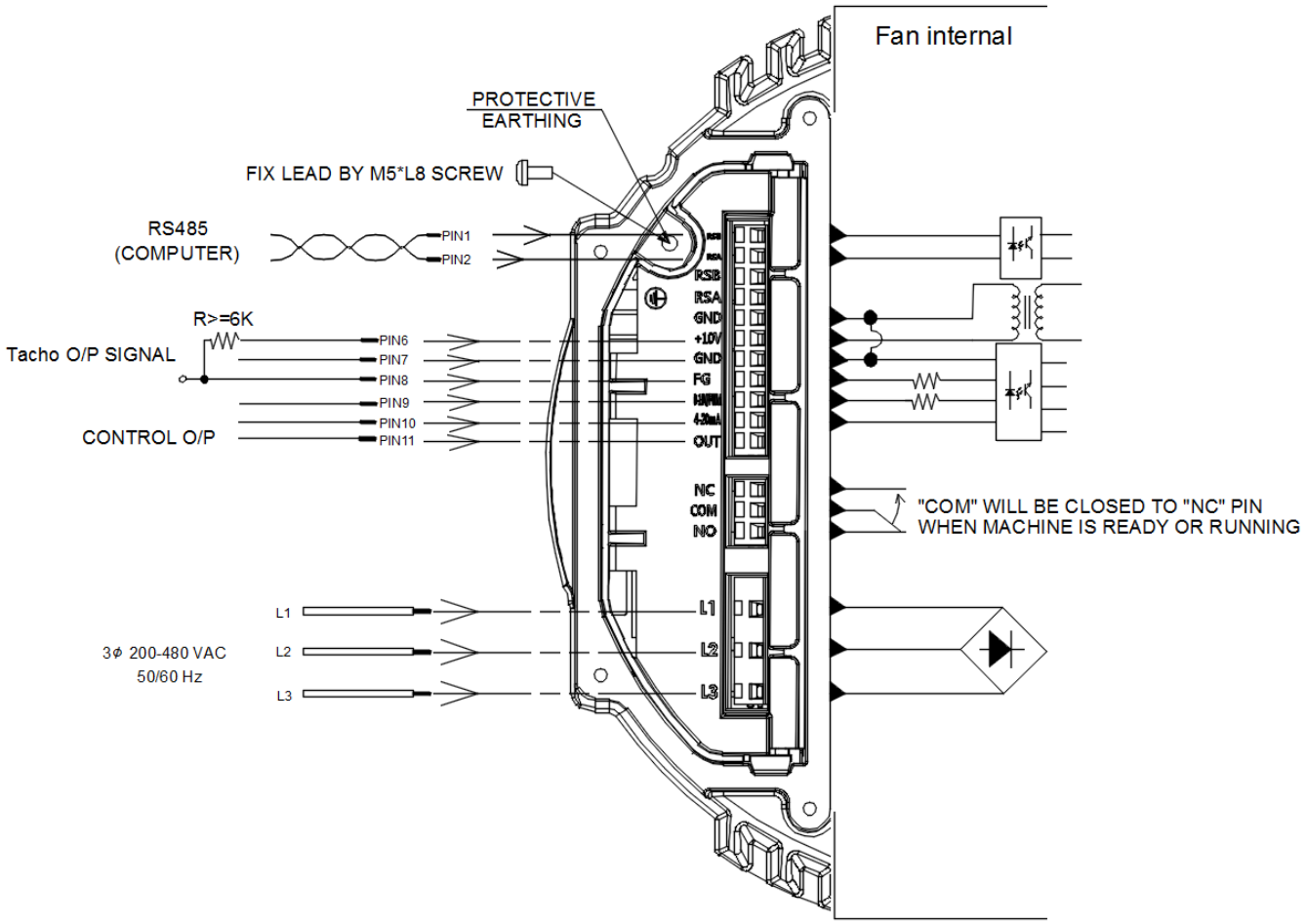
1. Depth of screw : 20 ~ 24mm.
2. Cable diameter : ϕ7.0 ~ ϕ12.7mm.
3. Open the cover and refer to definition of terminal block.

Definition of terminal block



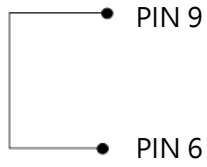
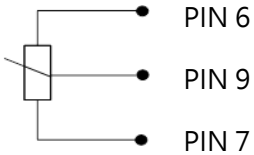
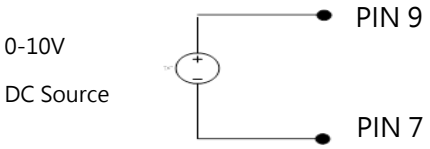
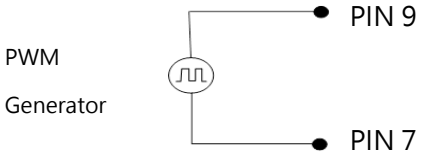
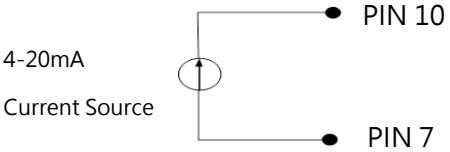
	Text	Functions
Power	L1	AC main (3~ 200-480VAC)
	L2	AC main (3~ 200-480VAC)
	L3	AC main (3~ 200-480VAC)
Status	NC	Alarm relay, open by failure
	COM	Alarm relay, common (2A/250VAC)
	NO	Alarm relay, close by failure
Signal	RSB	RS485-B
	RSA	RS485-A
	RSB	RS485-B
	RSA	RS485-A
	GND	Ground
	+10V	+10V output, MAX 10mA (For external potentiometer)
	GND	Ground
	FG	Frequency generator (FG) signal
	0-10V/PWM	Speed control, input 0-10VDC
	4-20mA	Speed control, input 4-20mA
	OUT	Control voltage output 0-10VDC (For external potentiometer)

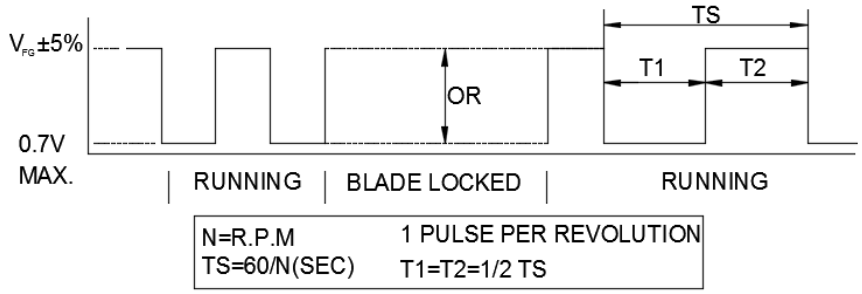
Lead wire connection:



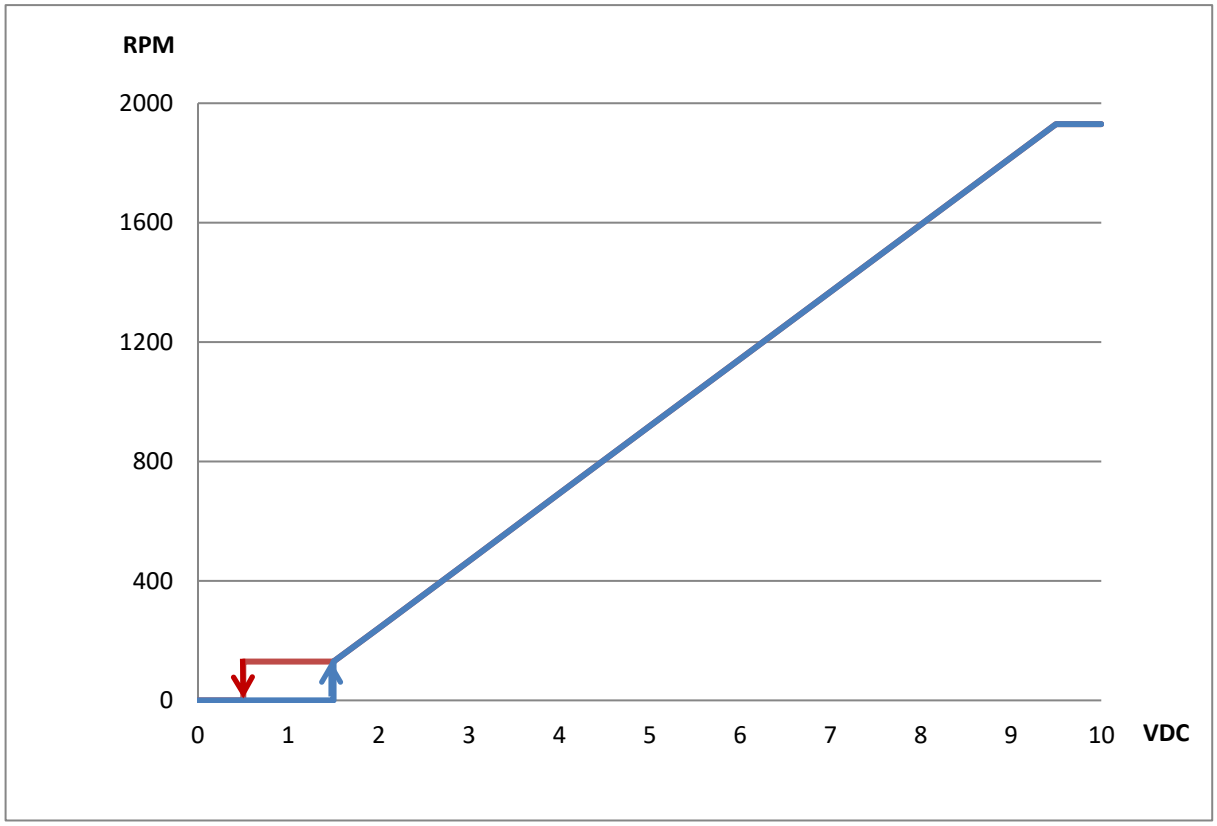
Note:

1. A MODBUS over Serial Line Cable must be shielded. At one end of each cable its shield must be connected to protective ground.

Speed setting	
Full Speed  	**Short PIN6 & PIN9** Fan will run full speed.
Voltage Control A  	**Connector 1-10kΩ variable resistor** Between **+10V** with **GND** and **0-10V/PWM** Turn the variable resistor，can change the '**0-10V/PWM**' voltage (0...10V)。
Voltage Control B  	**Use voltage source support 0~10V_{DC} voltage** DC+ : connector PIN9(+) DC - : connector PIN7(-)
PWM Control  	**PWM duty control** PWM amplitude is 10V_{DC}(+-5%) Frequency Range is 100Hz...100kHz -PWM duty higher than 15%, fan start up。 -PWM duty lower than 5%, fan stop。
Current Control  	**4~20mA Current Control** Open 0-10V/PWM PIN - 4.3 mA → Fan Stop - 6.1 mA → Fan Start up - 19.5 mA → Maximum Speed

<table>
<tr><th colspan="2">Signal function</th></tr>
<tr><td>RS485 control function</td><td>RS485 control function
-Select the control mode of speed, fixed speed or fixed PWM duty
-Speed and power consumption feedback.
-Allow multiple FANs control and status patrol.</td></tr>
<tr><td>Voltage/PWM/Current control</td><td>The speed comparison will control level.
<table>
<tr><th>Voltage (V)</th><th>PWM (%)</th><th>Current (mA)</th><th>Speed (RPM) (REF)</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>1.5</td><td>15</td><td>6.1</td><td>130 ± 50 RPM</td></tr>
<tr><td>6.0</td><td>60</td><td>13.6</td><td>1143 ± 8%</td></tr>
<tr><td>9.5</td><td>95</td><td>19.5</td><td>1930 ± 5%</td></tr>
</table></td></tr>
<tr><td>Control O/P</td><td>The analog signal level is the derivative of current control level.
The signal will be 0 ~ 10VDC.
<table>
<tr><th>Voltage (V)</th><th>PWM (%)</th><th>Current (mA)</th><th>Control O/P VDC (REF)</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0.2</td></tr>
<tr><td>1.5</td><td>15</td><td>6.1</td><td>1.4</td></tr>
<tr><td>6.0</td><td>60</td><td>13.6</td><td>5.9</td></tr>
<tr><td>9.5</td><td>95</td><td>19.5</td><td>9.3</td></tr>
<tr><td>10</td><td>100</td><td>20</td><td>9.7</td></tr>
</table></td></tr>
<tr><td>Alarm state</td><td>NC and COM will OPEN; NO and COM will CLOSE.</td></tr>
<tr><td>FG</td><td>V_{CE}(sat) = 0.7V MAX. V_{FG} = 20.0V MAX.
I_C = 5mA MAX. R ≥ V_{FG} / I_C
Frequency generator waveform
 
</td></tr>
</table>

Control Voltage VS. RPM Curve



Voltage	0	0.5	1	1.5	2	3	4	5	6	7	8	9	10	V_{DC}
PWM duty	0	5	10	15	20	30	40	50	60	70	80	90	100	%
4~20 mA	4	5	5.6	6	7.2	8.8	10.4	12	13.6	15.2	16.8	19	20	mA

Protection Standard

ITEM	Standard
Rain	IEC 60529 IPX4
Dust/sand	IEC 60529 IP5X
Gas corrosion	GR-63-CORE
Salt mist	IEC 60068-2-11

FAN MATERIAL:

① Blades: Plastic (PA66+30%GF)

② Rotor: Steel with black electrodeposition coating

③ Pillow: Die-cast aluminum

④ Bottom Cover: Die-cast aluminum