Specification For Approval

Customer : STD

Description : EC FAN

Customer Part No. : N/A Rev :

Delta Model No. : GTW080NUT24E-M001 Rev : 02

Safety Model No. : Axial Fan: GTA080NUT24E (for UL)

Motor: MU150HA3FC6 (for TUV, CE)

Sample Issue No. :

Sample Issue Date : 01/03'20

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

Approved by : _____

Date : _____

Delta Electronics, Inc.
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Taoyuan City 333, Taiwan (R.O.C.)FAX : 886-(0)3-3591991

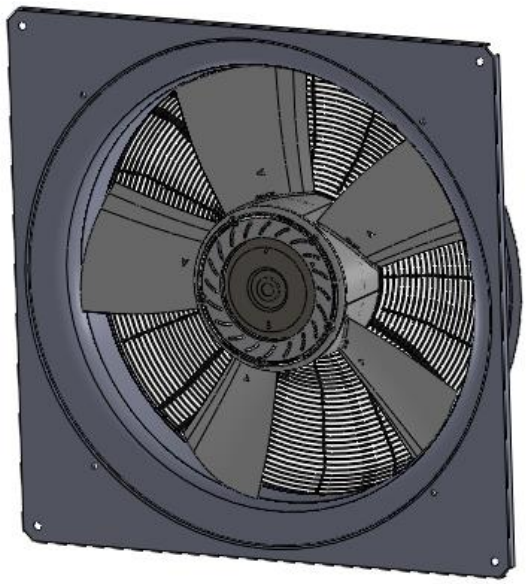
Smarter. Greener. Together.

GTW080NUT24E-M001

Electronically Commutated (EC) Fan

Axial Fan

970 x 970 x 268 mm



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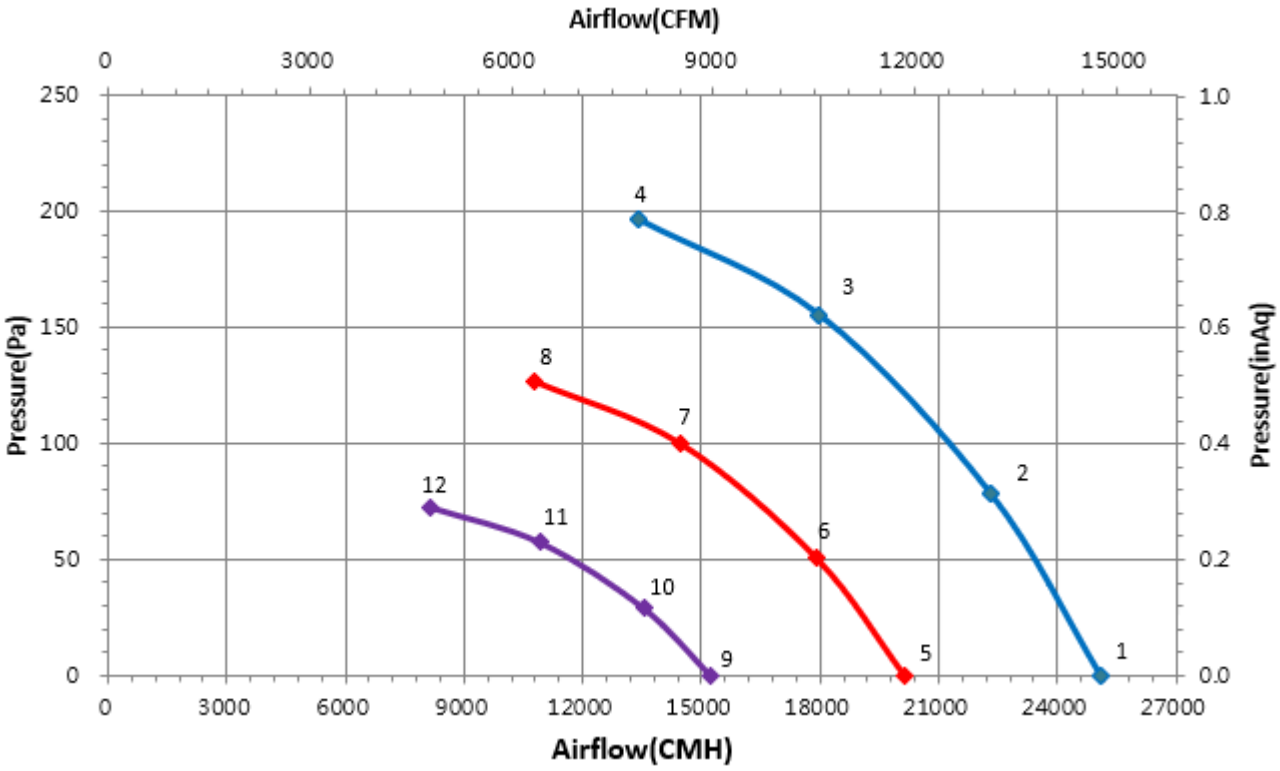
Technical features

Input Side	
Nominal voltage	3~ 400Vac 50/60Hz
Input source	3~ 380Vac - 480Vac
Power @ free air	1690 W
Power @ max. load	2200 W
Output Side	
Speed (RPM)	1020
Qmax. (CMH / CFM)	25077 / 14770
Pmax. (Pa / inAq)	196 / 0.787
Noise (Lw , dB-A) @ Qmax	75 (Max 80)
Functions	
Active power factor correction	
Control input 0~10V_{DC} / PWM pattern.	
Output +10V_{DC} (±10%), max. 10mA.	
RS485 control bus (MODBUS (VA5) RTU/ 8N1)	
Alarm relay, Locked rotor protection, Soft start.	
Voltage / Current monitoring.	

Physical	
Rotation direction	CCW, seen on rotor
Material (impeller)	Plastic
Bearing system	Ball bearings
Weight (kg)	49
Electrical leads	cable
Environmental	
Operating temperature range	-25 ~ +60 ℃
Storage temperature range	-40 ~ +70 ℃
Safety	
Safety	UL, cUL, TUV
IP Level	IP54
EMC	EN61000-6-2/4 , EN61000-3-2
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 : Delta reserves the right to change specifications and other product information without prior notice.

P & Q curves (Without fanguard condition)



Measure data:

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	Lp [dB(A)]
1	0	25077	1020	1686	2.60	75
2	78	22293	1020	1928	2.92	
3	155	17987	1020	2016	3.09	
4	196	13403	1020	2082	3.18	
5	0	20160	820	876	1.33	70
6	51	17921	820	1002	1.52	
7	100	14460	820	1047	1.59	
8	127	10775	820	1082	1.64	
9	0	15243	620	379	0.58	64
10	29	13550	620	433	0.66	
11	57	10933	620	453	0.69	
12	72	8147	620	468	0.71	

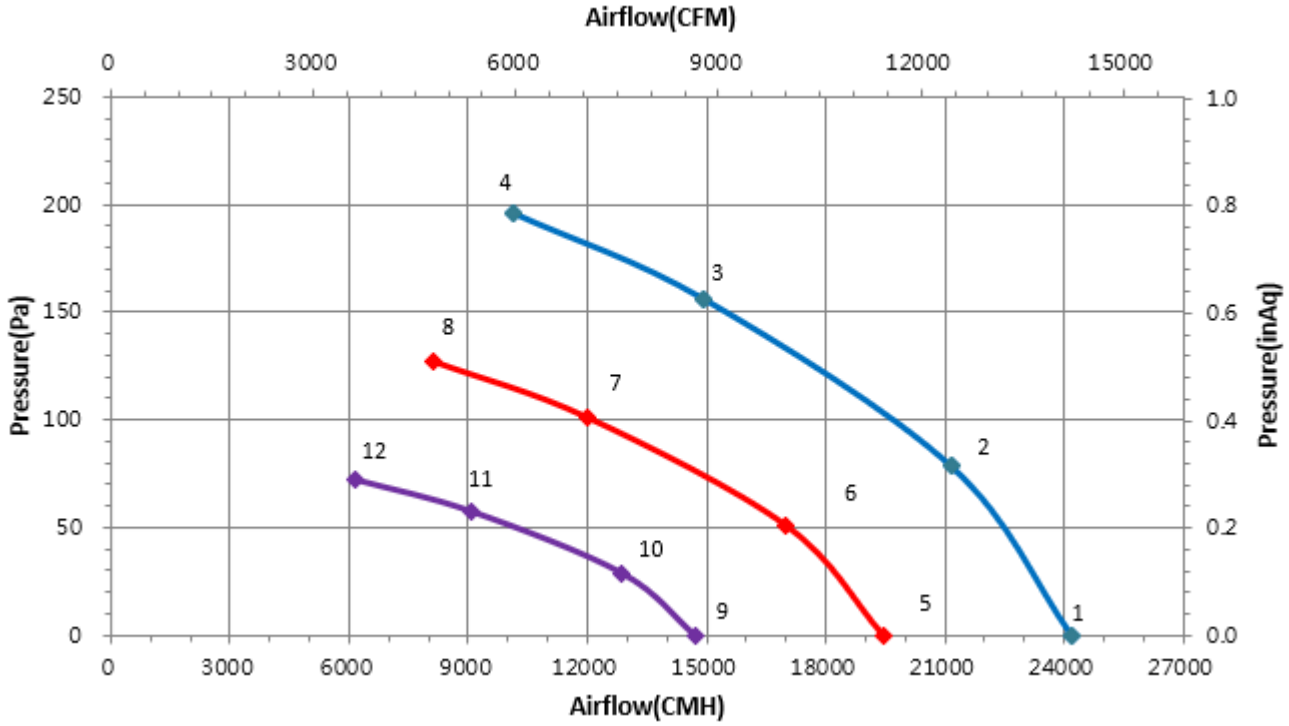
Test condition:

- Input Voltage: 3~400Vac
- Temperature : Room Temperature
- Humidity : 65%RH
- 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 (%)	41.6	35.7
Eff Grade N	46.0	40
Power (kW)	2.04	
Air flow (CMH)	16212	
Pressure (Pa)	177	
Speed (RPM)	1020	

P & Q curves (With fanguard condition)



Measure data:

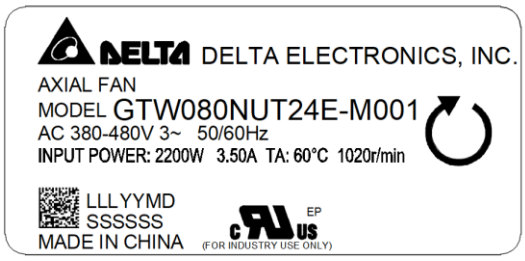
	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	Lp [dB(A)]
1	0	24177	1020	1753	2.69	76
2	78	21153	1020	1947	2.94	
3	156	14946	1020	2028	3.06	
4	196	10119	1020	1926	2.91	
5	0	19436	820	911	1.38	72
6	51	17005	820	1012	1.54	
7	101	12015	820	1054	1.60	
8	127	8135	820	1001	1.52	
9	0	14696	620	394	0.60	66
10	29	12857	620	437	0.66	
11	58	9085	620	455	0.69	
12	72	6151	620	433	0.66	

Test condition:

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

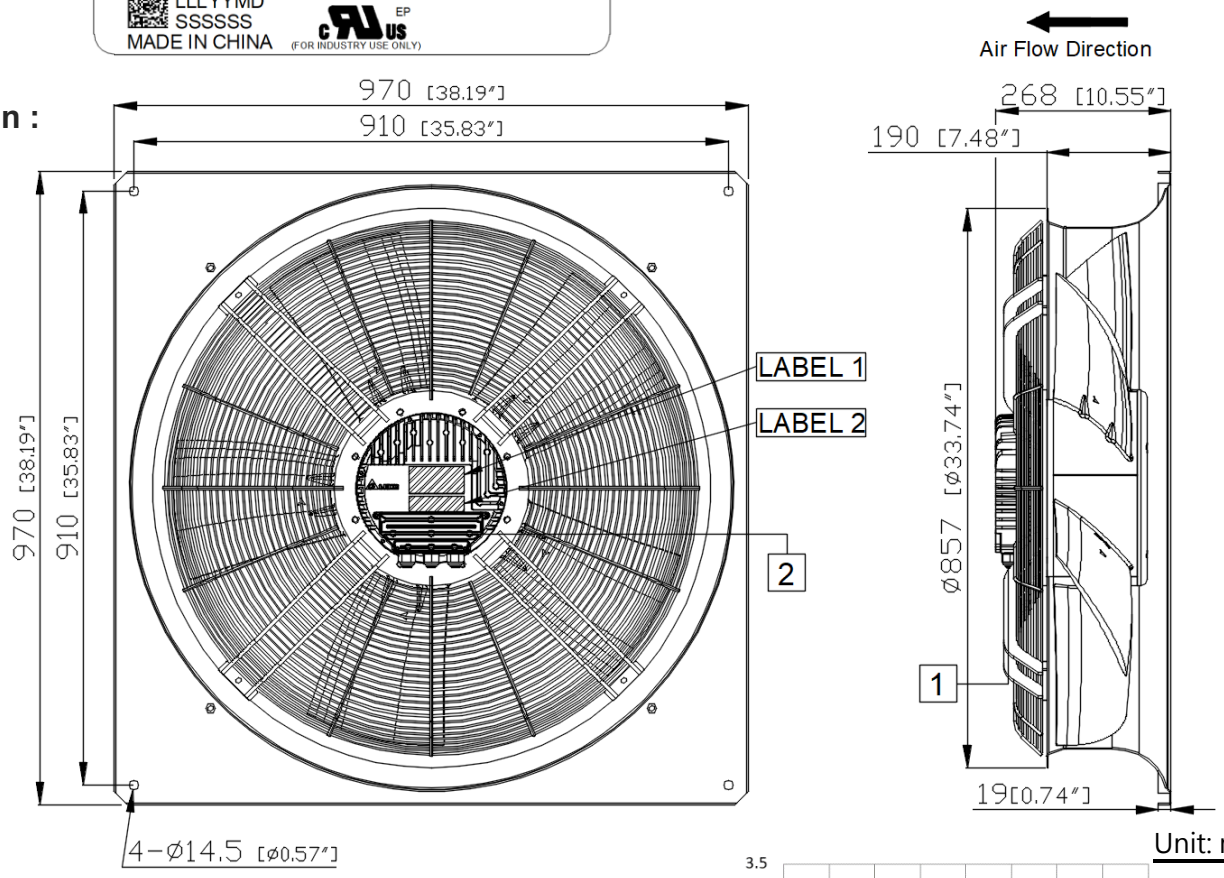
Dimension drawing

Label : LABEL 1:



LABEL 2:

Fan :



Unit: mm [inch]

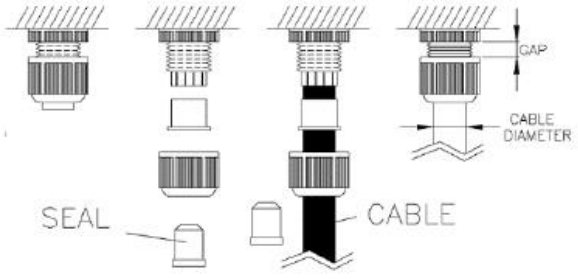


Fig.1

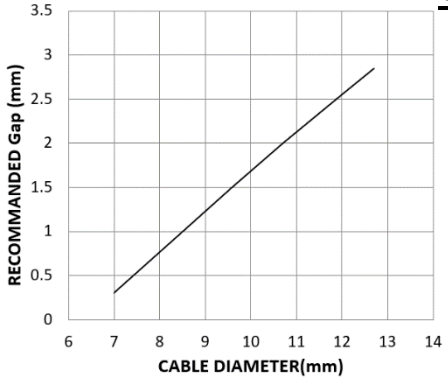
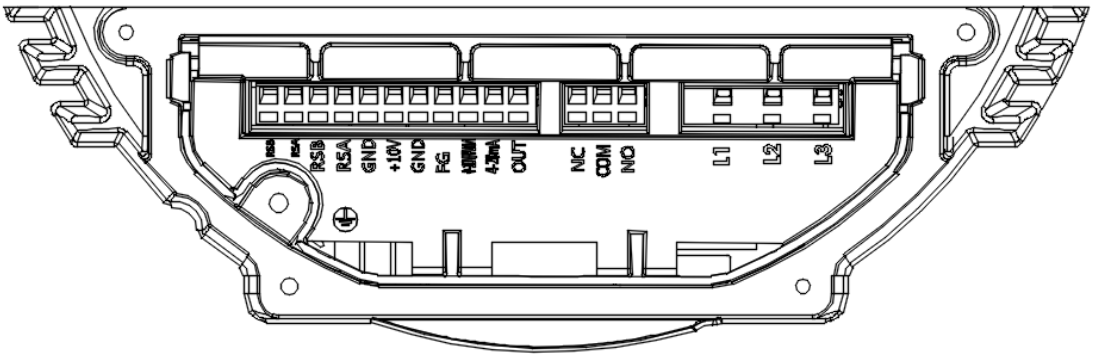


Fig.2

Note:

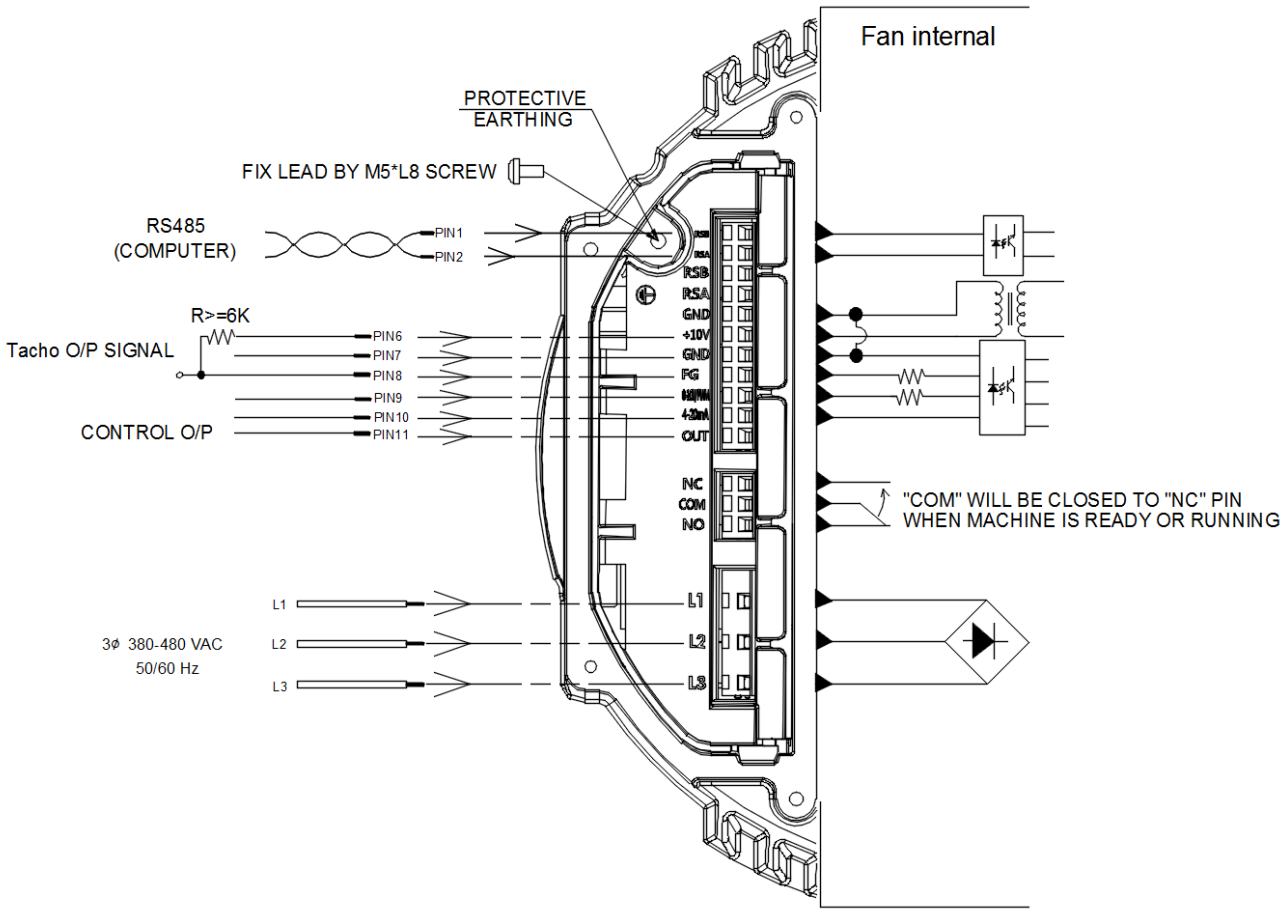
1. Cable gland: M20xP1.5 (3 pcs), Material: Nylon, Cable Diameter: ϕ 7.0~ ϕ 12.7mm
   Cable gland nut's gap refer Fig.1 & 2.
2. Open the cover and refer to definition of terminal block, screw tightening torque 17±10% kgf-cm.

Definition of Terminal Block



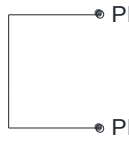
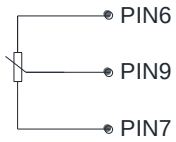
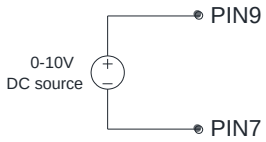
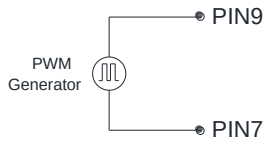
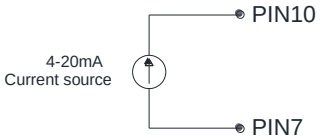
	Text	Functions
Signal	RSB	RS485-B
	RSA	RS485-A
	RSB	RS485-B
	RSA	RS485-A
	GND	Ground
	+10V	+10V output, MAX 10mA (For external potentiometer)
	GND	Ground
	FG	Frequency generator (FG) signal
	0-10V/PWM	Speed control ,input 0-10VDC
	4-20mA	Speed control ,input 4-20mA
	OUT	Control voltage output 0-10VDC (For external potentiometer)
Status	NC	Alarm relay, open by failure
	COM	Alarm relay, common (2A/250VAC)
	NO	Alarm relay, close by failure
Power	L1	AC main (3~ 380-480VAC)
	L2	AC main (3~ 380-480VAC)
	L3	AC main (3~ 380-480VAC)

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+**10VDC** 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 0~10VDC voltage** DC+ : connector PIN9(+) DC - : connectorPIN7(-)
PWM Control  	**PWM duty control** PWM amplitude is 10VDC(+-5%) Frequency Range is100Hz...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 - Lower than 4.3 mA → Fan Stop - Higher than 6 mA → Fan Start up - Higher than 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>Control O/P</td><td>The analog signal level is the derivative of current control level.
<table>
<tr><th>Current (mA)</th><th>Control O/P (VDC) (REF)</th></tr>
<tr><td>4.0</td><td>0</td></tr>
<tr><td>6.3</td><td>1.50</td></tr>
<tr><td>14.0</td><td>6.10</td></tr>
<tr><td>19.5</td><td>9.38</td></tr>
</table></td></tr>
<tr><td>Voltage/PWM control</td><td>The speed comparison will control level
<table>
<tr><th>Voltage (V)</th><th>PWM (%)</th><th>Speed (RPM) (REF)</th></tr>
<tr><td>0</td><td>0</td><td>0</td></tr>
<tr><td>1.5</td><td>15</td><td>100±50</td></tr>
<tr><td>9.5</td><td>95</td><td>1020 ±5%</td></tr>
</table></td></tr>
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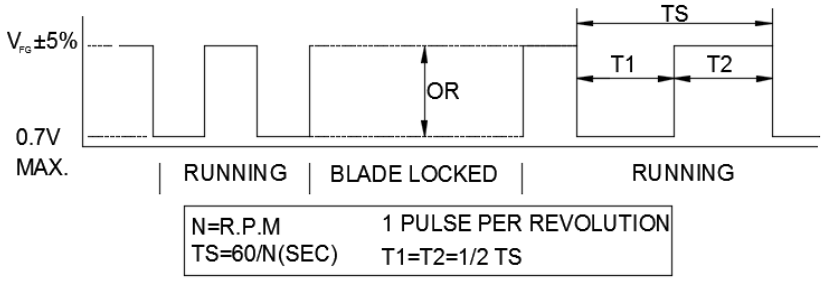
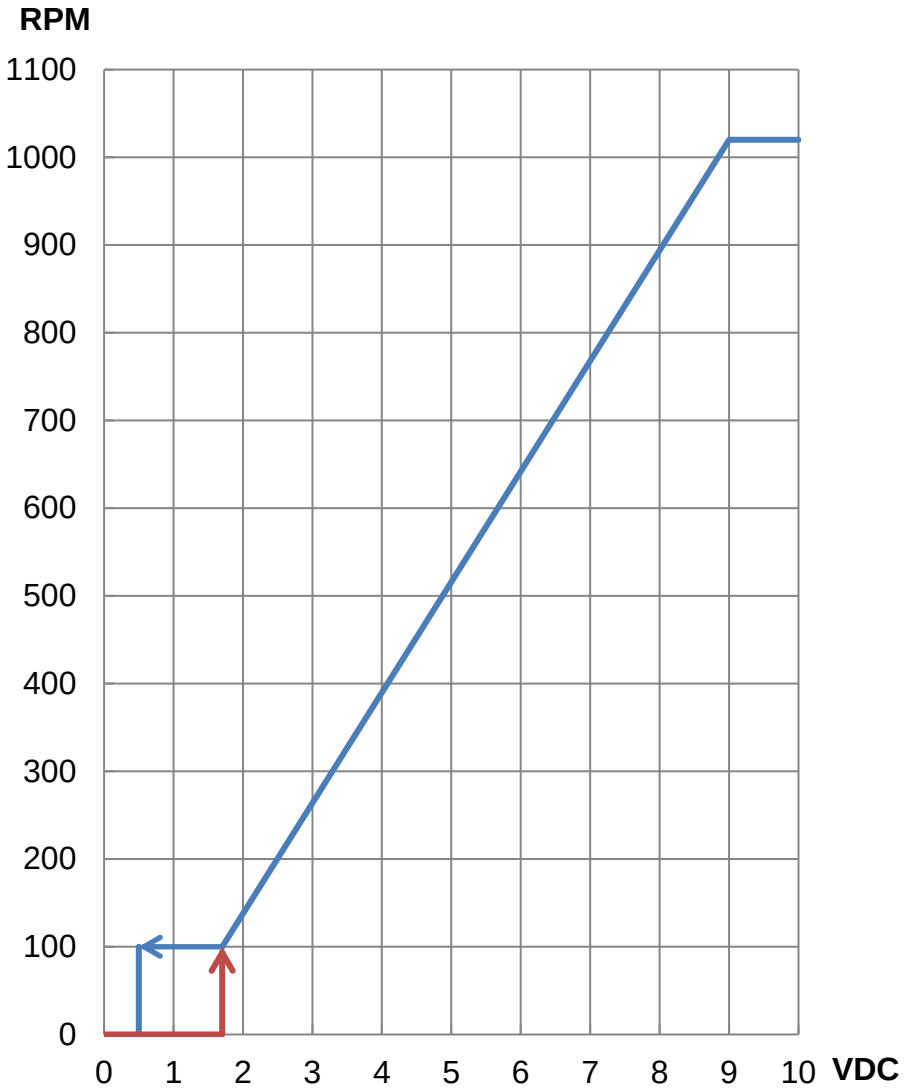
<tr><td>19.5</td><td>1020±5%</td></tr>
</table></td></tr>
<tr><td>Alarm state</td><td>NC and COM will OPEN; NO and COM will CLOSE.</td></tr>
<tr><td>FG</td><td>V_{CE}(sat) = 0.7V MAX. V_{FG} = 30.0V MAX.
I_C = 5mA MAX. R ≥ V_{FG} / I_C

Frequency generator waveform
 
</td></tr>
</table>

Control Voltage VS. RPM Curve



Voltage(VDC) ,PWM duty(%), 4~20mA table

Voltage	0	0.5	1	1.5	2	3	4	5	6	7	8	9	10	VDC
PWM duty	0	5	1	15	20	30	40	50	60	70	80	90	100	%
4~20 mA	4	4.3	5.2	6	6.9	8.5	10.2	11.9	13.6	15.2	16.9	18.6	20	mA