Specification For Approval

Customer : _____

Description : EC FAN

Customer Part No. : _____ Rev : ____

Delta Model No. : GTM031PHJ22M Rev : 08

Safety Model No. : CCC：MU084EP3SA0-030、UL / TUV：GTB031PHJ22M

Sample Issue No. : _____

Sample Issue Date : 09/16/2019

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：GTM031PHJ22M

REV	DESCRIPTION	DRAWN	CHECKED		APPROVED	ISSUE DATE
			ME	EE		
06	1. Label add TUV and CE mark, and modify barcode from 1D to 2D. 2. Add software label.	鍾明翰 10/26'18	鍾明翰 10/26'18	范姜朝洧 10/26'18	賴偉銘 10/26'18	10/26'18
07	Update software label code from DA0902 to DA0903.	鍾明翰 05/24'19	鍾明翰 05/24'19	范姜朝洧 05/24'19	郭智翔 05/24'19	05/24’19
08	Label add UL mark.	鍾明翰 09/16'19	鍾明翰 09/16'19	范姜朝洧 09/16'19	顏承偉 09/16'19	09/16’19

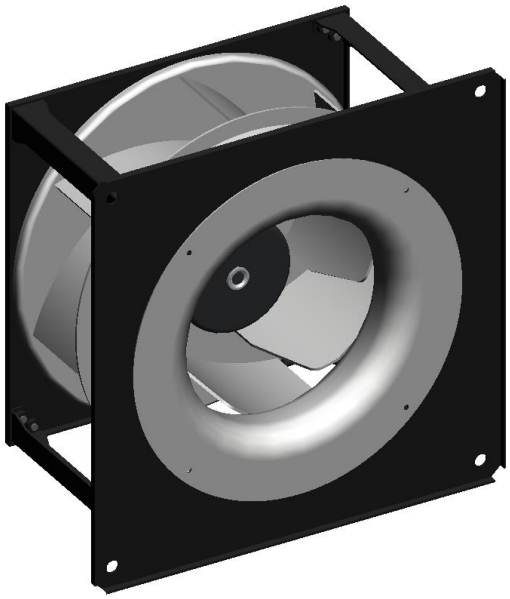
Smarter. Greener. Together.

GTM031PHJ22M

Electronically Commutated (EC) Fan

Centrifugal Fan

400 x 400 x 261.5 mm



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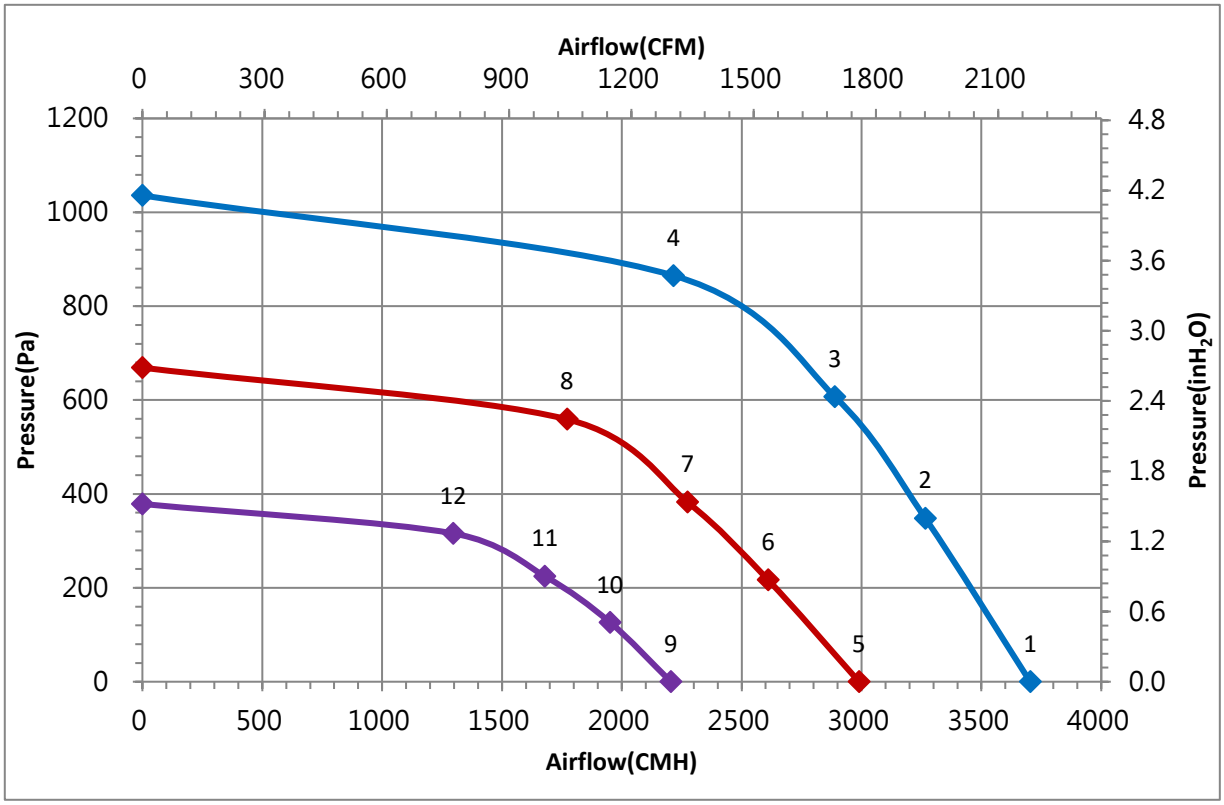
Technical features

Input Side	
Nominal Voltage	3~ 400Vac 50/60Hz
Input Source	3~ 380Vac - 480Vac
Power @ Free air	764 W
Power @ Max. load	1000 W
Output Side	
Speed (RPM)	3060
Qmax. (CMH / CFM)	3704 / 2180
Pmax. (Pa / inAq)	1035 / 4.157
Noise (dB-A) @ Qmax.	81.5
Functions	
Passive power factor correction	
Control input 0-10VDC / PWM / 4-20mA.	
Output +10VDC (±10%), max. 10mA.	
Control voltage output: 0-10VDC.	
RS485 control bus (MODBUS RTU / 8N1)	
Alarm relay, Locked rotor protection, Soft start.	
Speed telling, Frequency generator signal.	
Voltage / Current monitoring.	

Physical	
Rotation Direction	CW, Seen on rotor
Material (Impeller / Frame)	Aluminum sheet / Die-cast aluminum
Bearing system	Ball bearings
Weight (kg)	13
Electrical leads	Via terminal block
Environmental	
Operating temperature range	-30 ~ +60 ℃
Storage temperature range	-40 ~ +70 ℃
Safety	
Safety	CCC、UL、TUV
IP Level	IP54
EMC	EN61000-6-2/3 , EN61000-3-2/3
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



Measure data:

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	Lp [dB(A)]
1	0	3704	3060	764	1.34	81.5
2	349	3266	3060	892	1.52	
3	607	2888	3060	987	1.64	
4	865	2215	3060	989	1.64	
5	0	2989	2450	420	0.81	76.5
6	217	2610	2450	458	0.87	
7	383	2274	2450	522	0.98	
8	559	1771	2450	528	0.98	
9	0	2205	1840	185	0.39	68.5
10	127	1950	1840	203	0.42	
11	225	1679	1840	229	0.48	
12	316	1297	1840	226	0.48	

Test Condition：

- Input Voltage: Nominal Voltage
- Temperature : Room Temperature
- Humidity : 65%RH
- Measured with inlet cone.
- Noise (Lp) is measured at a distance of one meter from the inlet side.

Dimension drawing

Label :

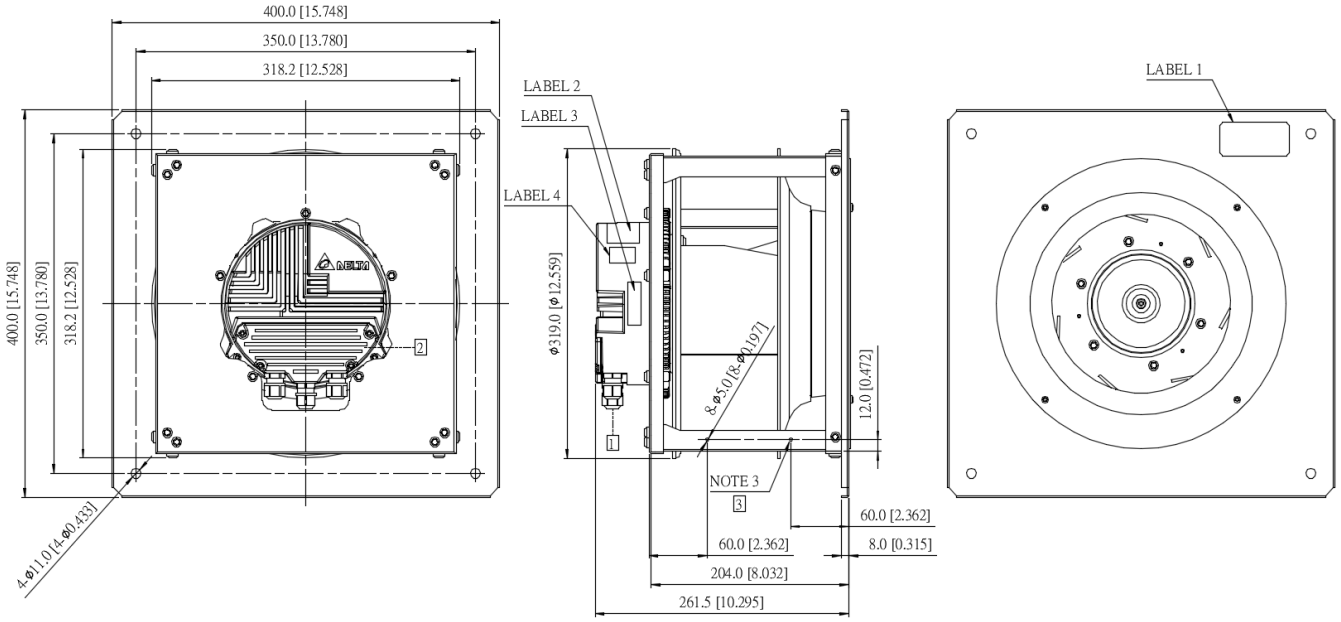
Label 1

Label 2

Label 3

Label 4

Fan :

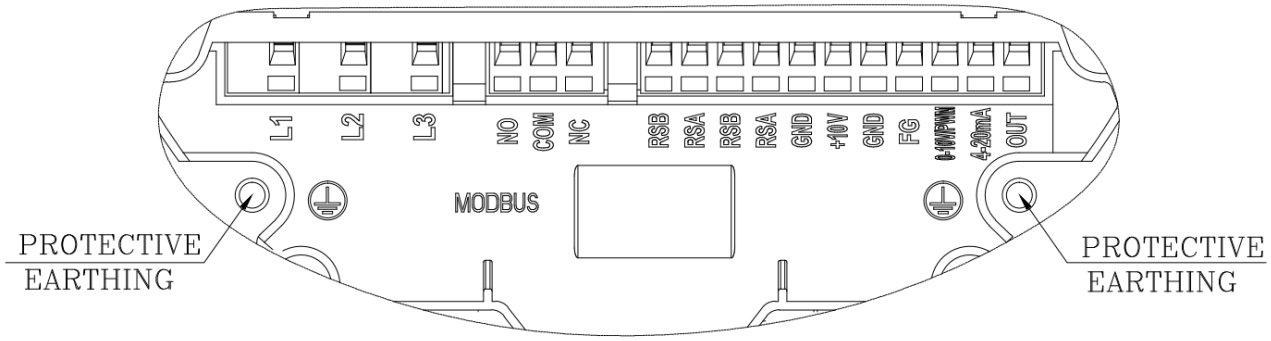


Note :

UNIT : mm[INCH]

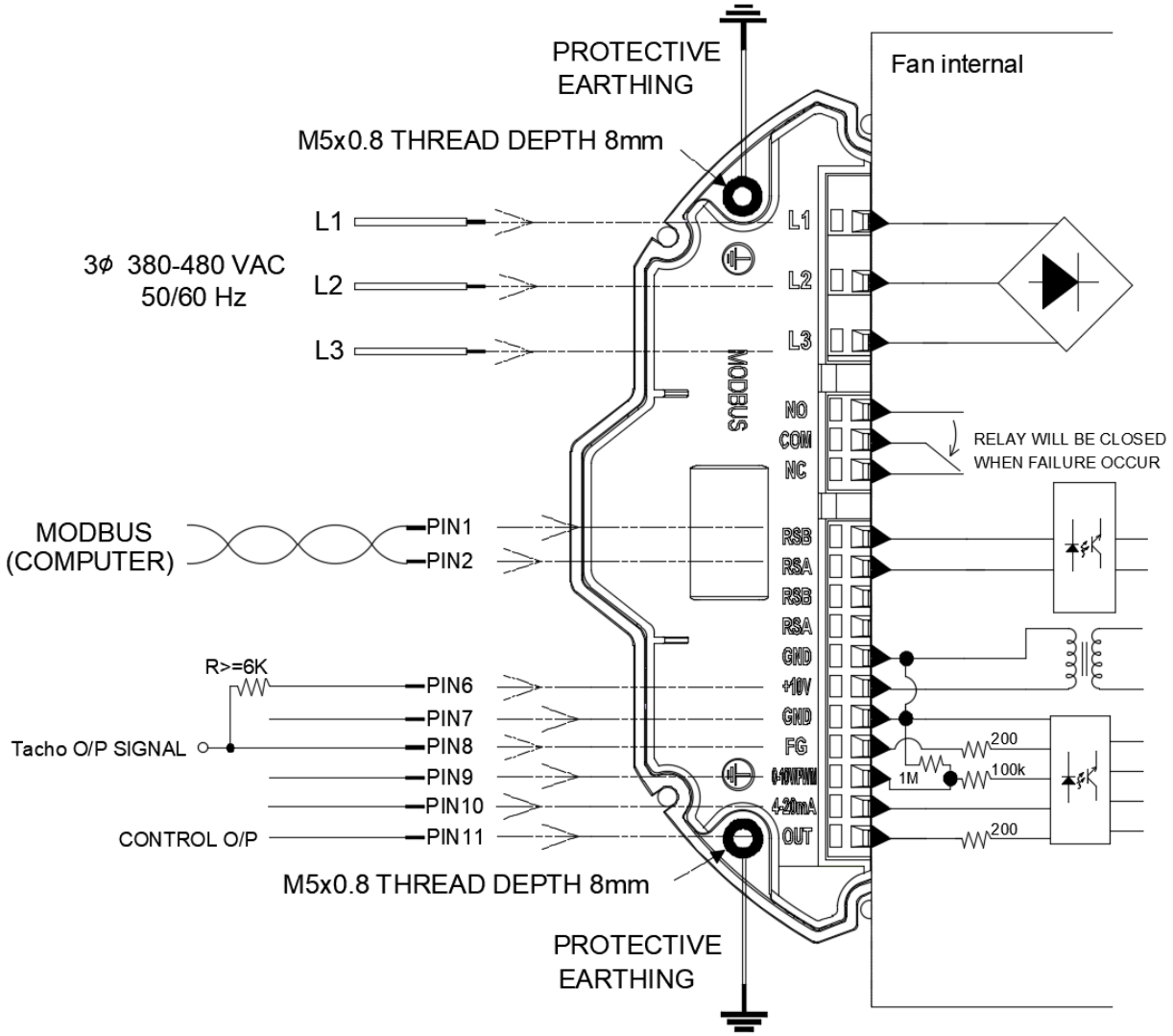
1. Cable Diameter : Ø 6.0 ~ Ø 10.0 mm.
2. Open the cover and refer to definition of terminal block.
3. 4 - support have 2 - Ø 5.0 mm holes.

Definition of terminal block



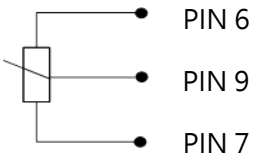
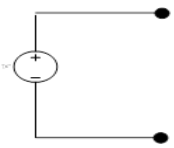
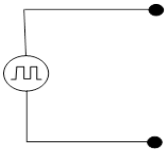
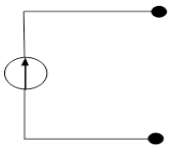
	Text	Functions
Power	L1	AC main (3~ 380-480VAC)
	L2	AC main (3~ 380-480VAC)
	L3	AC main (3~ 380-480VAC)
Status	NO	Alarm relay, open by failure
	COM	Alarm relay, common (2A/250VAC)
	NC	Alarm relay, close by failure
Signal	RSB	RS485-B
	RSA	RS485-A
	RSB	RS485-B
	RSA	RS485-A
	GND	Ground
	+10V	+10V output, 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 :

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 (NOTE5)  	**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 0-10V DC Source  	**Use voltage source support 0~10VDC voltage** DC+ : connector PIN9(+) DC - : connector PIN7(-)
PWM Control PWM Generator  	**PWM duty control** PWM amplitude is 10VDC(+-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 Source  	**4~20mA Current Control** Open 0-10V/PWM PIN - Lower than 4.8 mA → Fan Stop - Higher than 5.6 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>6.00</td></tr>
<tr><td>19.5</td><td>9.45</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>430 ± 50RPM</td></tr>
<tr><td>6.0</td><td>60</td><td>2060 ± 8%</td></tr>
<tr><td>9.5</td><td>95</td><td>3060 ± 5%</td></tr>
</table></td></tr>
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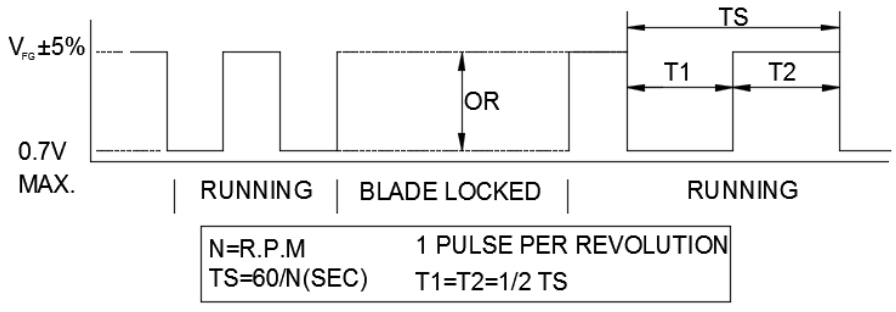
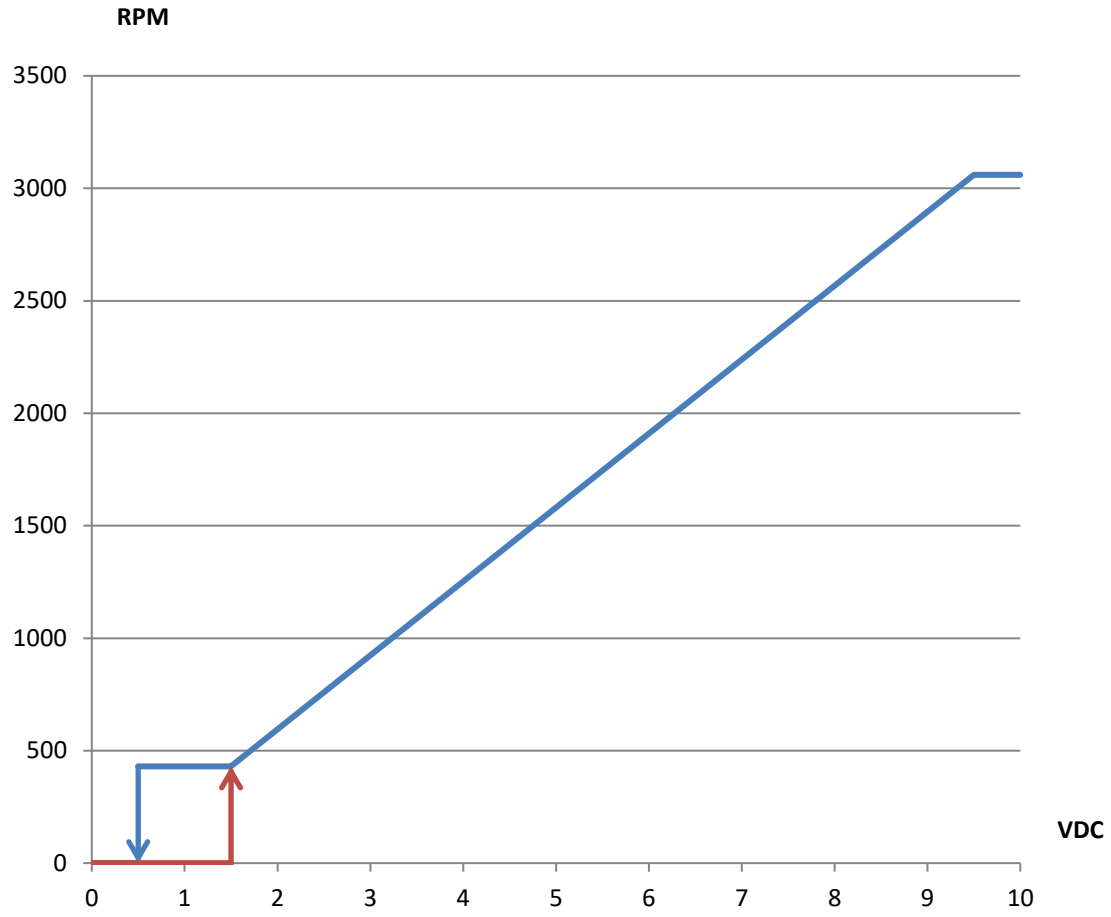
<tr><td>19.5</td><td>3060 ± 5%</td></tr>
</table></td></tr>
<tr><td>Alarm state</td><td>NO and COM will OPEN ; NC and COM will CLOSE.</td></tr>
<tr><td>FG</td><td>V_{CE}(sat) = 0.7V MAX. V_{FG} = 30.0V MAX.
I_C = 5mA MAX. R ≥ V_{FG} / I_C
Frequency generator waveform
 
</td></tr>
</table>

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	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