



## Specification For Approval

Customer : \_\_\_\_\_ STD  
Description : \_\_\_\_\_ EC FAN  
Customer Part No. : \_\_\_\_\_ N/A \_\_\_\_\_ Rev : \_\_\_\_\_  
Delta Model No. : \_\_\_\_\_ GTW071PUD22R \_\_\_\_\_ Rev : 03  
Safety Model No. : \_\_\_\_\_  
Sample Issue No. : \_\_\_\_\_  
Sample Issue Date : \_\_\_\_\_ 11/16/2017 \_\_\_\_\_

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,  
Taoyuan City, 33341, Taiwan

TEL : +886-3-359-1968

FAX : +886-3-359-1991

## Electronically Commutated (EC) Fan

Axial Fan

850 x 850 x 216 mm



DELTA ELECTRONICS, INC.  
 No.252, Shangying Road, Guishan  
 Industrial Zone, Taoyuan City, 33341,  
 Taiwan  
 TEL: +886-3-359-1968  
 FAX: +886-3-359-1991  
[www.deltaww.com](http://www.deltaww.com)

ROHS

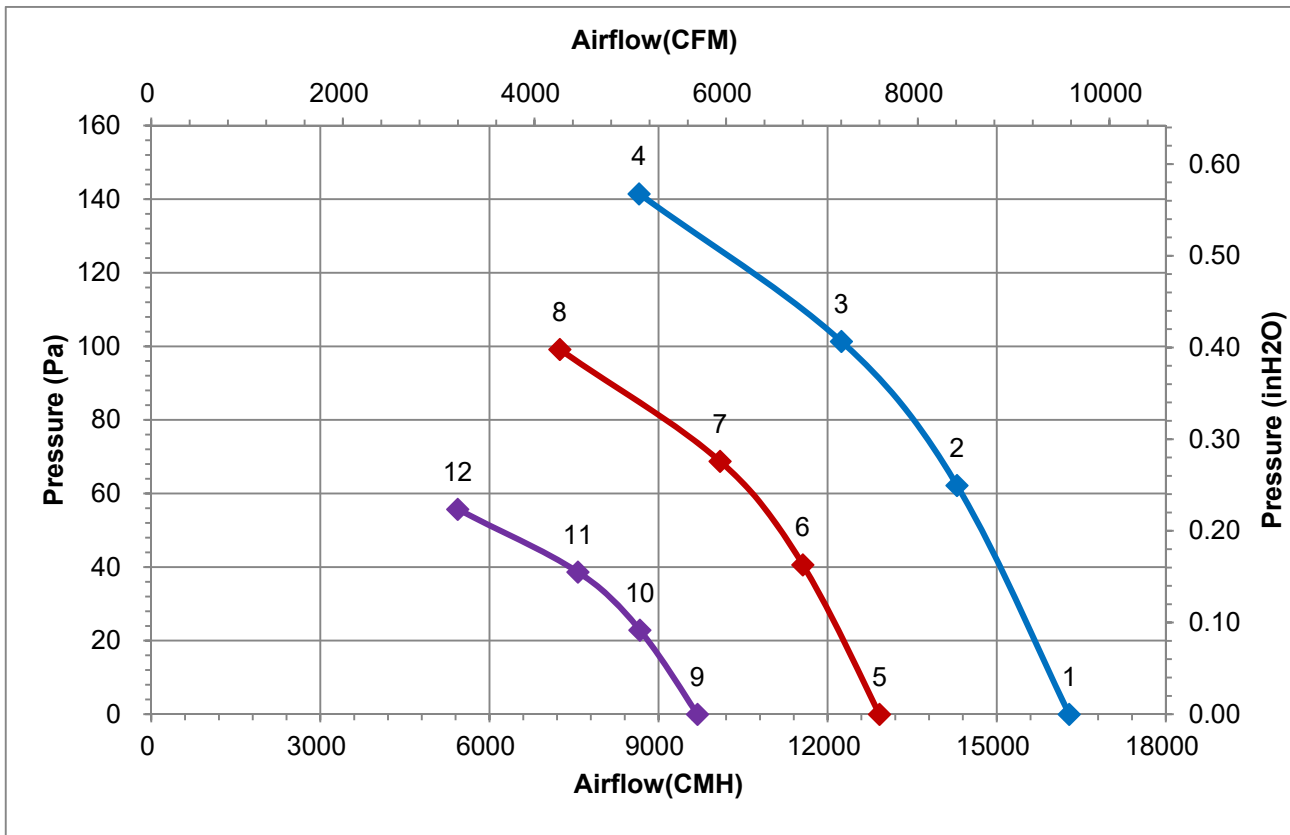
### Technical features

Input Side	
Nominal Voltage	3~ 400Vac 50/60Hz
Input Source	3~ 380Vac - 480Vac
Power @ Free air	840 W
Power @ Max. load	1000 W
Output Side	
Speed (RPM)	850
Qmax. (CMH / CFM)	16287 / 9580
Pmax. (Pa / inAq)	141.5 / 0.56
Noise (dB-A) @ Qmax	71.8
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	
Alarm relay, Locked rotor protection, Soft start.	
Speed telling, frequency generator signal.	
Voltage / Current monitoring.	

Physical	
Rotation Direction	CCW, seen on rotor
Material (Impeller / Frame)	Plastic / Steel
Bearing system	Ball bearings
Weight (kg)	35
Electrical leads	Via terminal block
Environmental	
Operating temperature range	-25 ~ +60 °C
Storage temperature range	-40 ~ +70 °C
Safety	
Safety	CCC (in progress)
IP Level	IP54
EMC	EN61000-6-2/3 , EN61000-3-2/3 (in progress)
Protection class	I
Insulation class	F
Leakage current	≤ 3.5 mA
Motor protection	Over temperature protected
Life expectancy	60,000 hrs at 40 °C / 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	0.0	16287	850	840	1.51	71.8
2	62.2	14297	841	935	1.60	69.8
3	101.3	12245	825	950	1.68	68.3
4	141.5	8656	812	975	1.71	68.5
5	0.0	12922	680	419	0.75	67.0
6	40.6	11560	680	494	0.89	65.2
7	68.8	10093	680	532	0.96	64.1
8	99.2	7249	680	572	1.03	64.4
9	0.0	9692	510	177	0.32	60.7
10	22.9	8670	510	208	0.37	60.5
11	38.7	7570	510	224	0.40	59.9
12	55.7	5437	510	241	0.43	60.7

Test Condition:

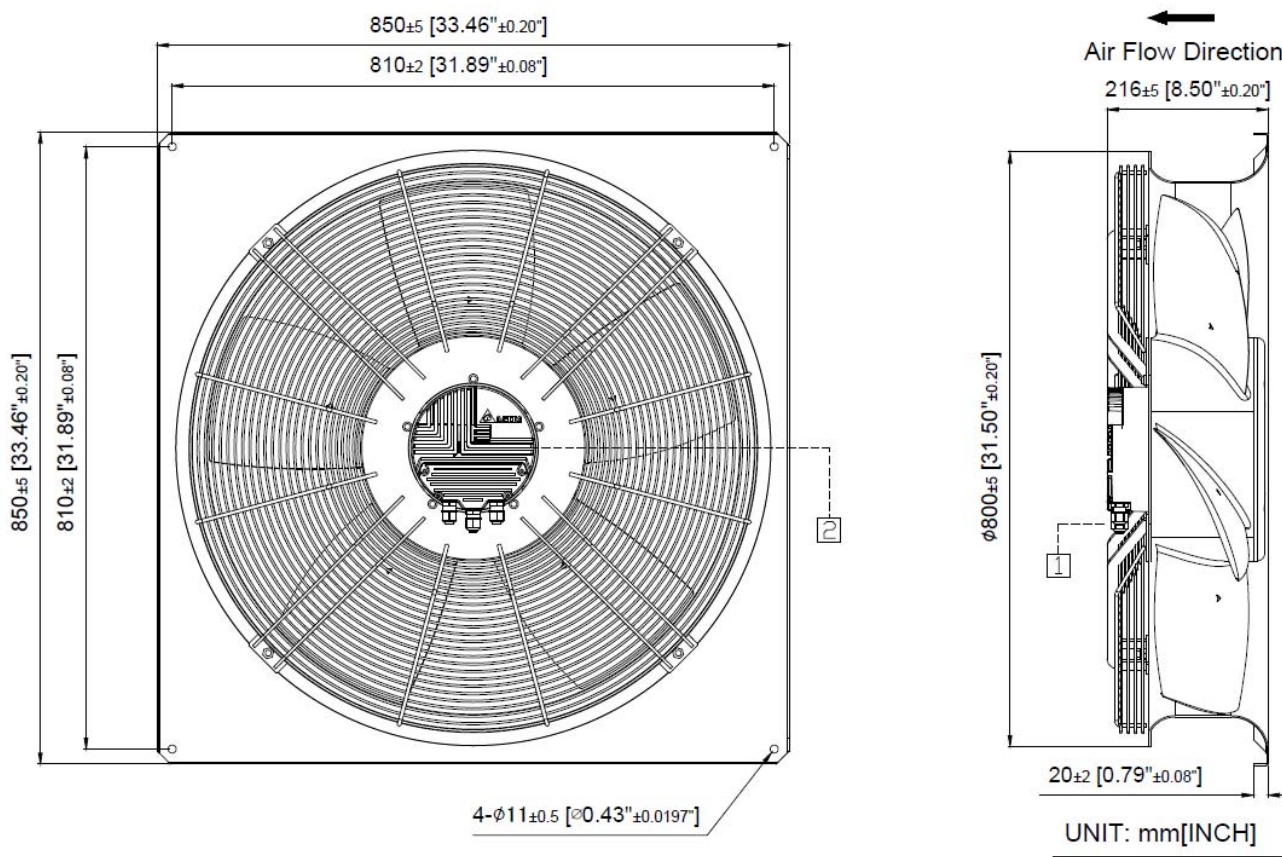
- Input Voltage: Nominal Voltage
- Temperature : Room Temperature
- Humidity : 65%RH
- Measured without Fanguard
- Noise is measured at a distance of one meter from the fan intake with a sound level meter in anechoic chamber.

Dimension drawing

Label :



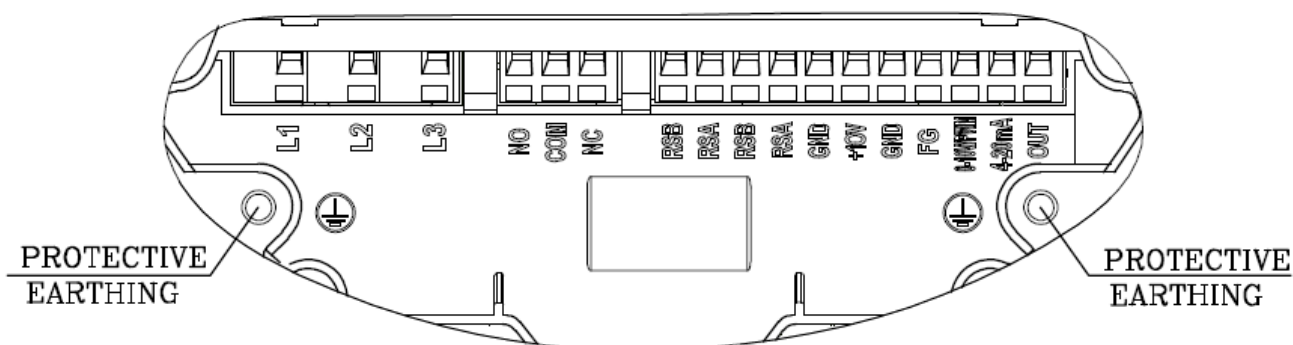
Fan :



Note:

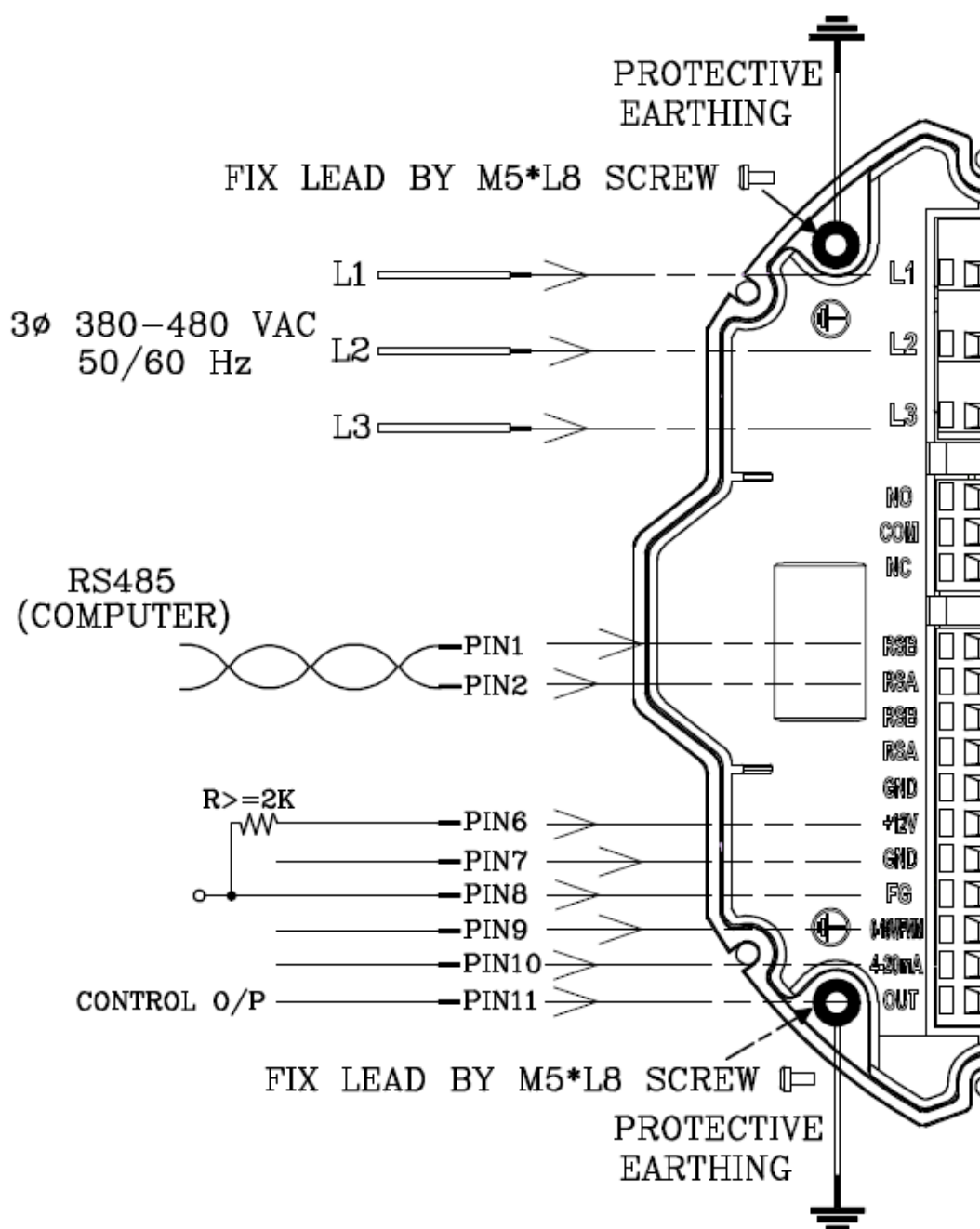
1. Cable Diameter :  $\phi$  6.6~  $\phi$  10.0 mm
2. Open the cover and refer to definition of terminal block.


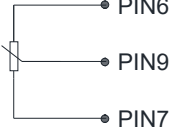
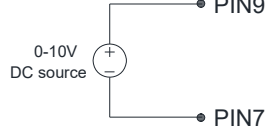
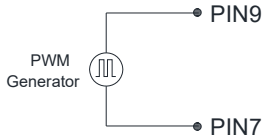
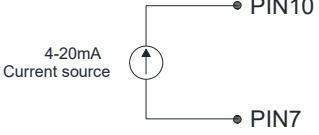
## Definition of terminal block

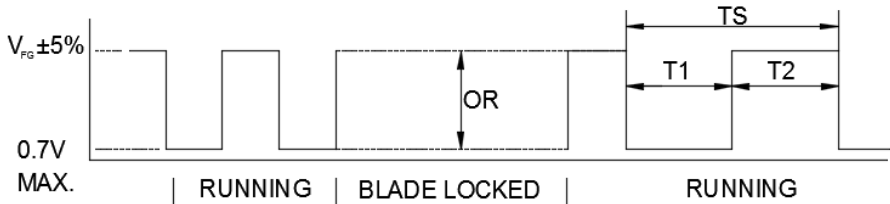


	Text	Functions
Power	L1	AC main (3~ 380-48VAC)
	L2	AC main (3~ 380-48VAC)
	L3	AC main (3~ 380-48VAC)
Status	NO	Alarm relay, open by failure
	COM	Alarm relay, common (2A/250VAC)
	NC	Alarm relay, close by failure
Signal	RSB	RS485-B
	RSA	RS485-A
	RSB	RS485-B
	RSA	RS485-A
	GND	Ground
	+10V	+10V output, MAX 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 output0-10VDC (For external potentiometer)	

Lead wire connection:

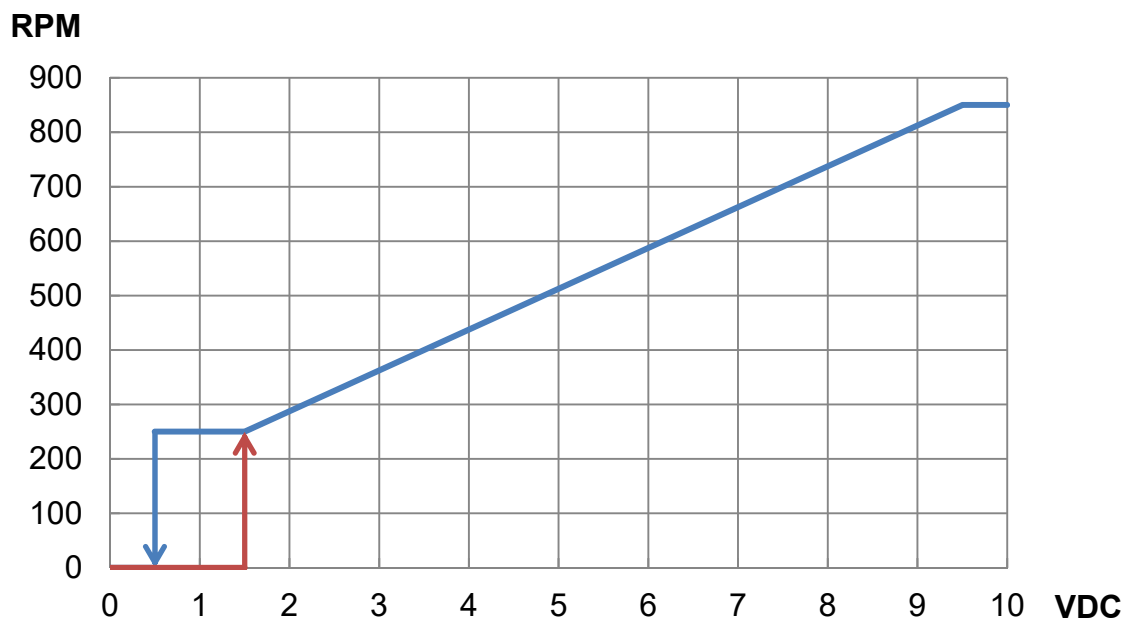


Speed setting	
<p>Full Speed</p> 	<p><b>Short PIN6&amp; PIN9</b> Fan will run full speed.</p>
<p>Voltage Control A</p> 	<p><b>Connector 1-10kΩ variable resistor</b> Between +10VDC with GND and 0-10V/PWM Turn the variable resistor, can change the '0-10V/PWM' voltage (0...10V).</p>
<p>Voltage Control B</p> 	<p><b>Use voltage source support 0~10VDC voltage</b> DC+ : connector PIN9(+) DC - : connector PIN7(-)</p>
<p>PWM Control</p> 	<p><b>PWM duty control</b> 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 °</p>
<p>Current Control</p> 	<p><b>4~20mA Current Control</b> Open 0-10V/PWM PIN -4.5 mA → Fan Stop -6.0mA → Fan Start up -19.5 mA → Maximum Speed</p>

Signal function										
RS485 control function	<p><b>RS485 control function</b></p> <ul style="list-style-type: none"> <li>-Select the control mode of speed, fixed speed or fixed PWM duty</li> <li>-Speed and power consumption feedback.</li> <li>-Allow multiple FANs control and status patrol.</li> </ul>									
Control O/P	<p>The analog signal level is the derivative of current control level.</p> <table border="1"> <thead> <tr> <th>Current (mA)</th> <th>Control O/P (VDC) (REF)</th> </tr> </thead> <tbody> <tr> <td>4.0</td> <td>0</td> </tr> <tr> <td>19.5</td> <td>9.46</td> </tr> </tbody> </table>	Current (mA)	Control O/P (VDC) (REF)	4.0	0	19.5	9.46			
Current (mA)	Control O/P (VDC) (REF)									
4.0	0									
19.5	9.46									
Voltage/PWM control	<p>The speed comparison will control level</p> <table border="1"> <thead> <tr> <th>Voltage (V)</th> <th>PWM (%)</th> <th>Speed (RPM) (REF)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>9.5</td> <td>95</td> <td>850±5%</td> </tr> </tbody> </table>	Voltage (V)	PWM (%)	Speed (RPM) (REF)	0	0	0	9.5	95	850±5%
Voltage (V)	PWM (%)	Speed (RPM) (REF)								
0	0	0								
9.5	95	850±5%								
Current control	<p>The speed comparison will control level</p> <table border="1"> <thead> <tr> <th>Current (mA)</th> <th>Speed (RPM) (REF)</th> </tr> </thead> <tbody> <tr> <td>4.0</td> <td>0</td> </tr> <tr> <td>19.5</td> <td>850</td> </tr> </tbody> </table>	Current (mA)	Speed (RPM) (REF)	4.0	0	19.5	850			
Current (mA)	Speed (RPM) (REF)									
4.0	0									
19.5	850									
NC COM NO	<ul style="list-style-type: none"> <li>● Normal State <ul style="list-style-type: none"> <li>-- NC and COM will --- OPEN.</li> <li>-- NO and COM will --- CLOSE.</li> </ul> </li> <li>● Alarm State <ul style="list-style-type: none"> <li>-- NC and COM will --- CLOSE.</li> <li>-- NO and COM will --- OPEN.</li> </ul> </li> </ul>									
FG	<p> <math>V_{CE(sat)} = 0.7V \text{ MAX.}</math>      <math>V_{FG} = 20.0V \text{ MAX.}</math>  <math>I_C = 5mA \text{ MAX.}</math>      <math>R \geq V_{FG} / I_C</math> </p> <p><b>Frequency generator waveform</b></p>  <p> <math>V_{FG} \pm 5\%</math>  <math>0.7V \text{ MAX.}</math> </p> <p>     RUNNING   BLADE LOCKED   RUNNING   </p> <table border="1"> <tr> <td><math>N = R.P.M</math></td> <td>1 PULSE PER REVOLUTION</td> </tr> <tr> <td><math>TS = 60/N(\text{SEC})</math></td> <td><math>T1 = T2 = 1/2 TS</math></td> </tr> </table>	$N = R.P.M$	1 PULSE PER REVOLUTION	$TS = 60/N(\text{SEC})$	$T1 = T2 = 1/2 TS$					
$N = R.P.M$	1 PULSE PER REVOLUTION									
$TS = 60/N(\text{SEC})$	$T1 = T2 = 1/2 TS$									



## 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	5	5.6	6	7.2	8.8	10.4	12	13.6	15.2	16.8	19	20	mA