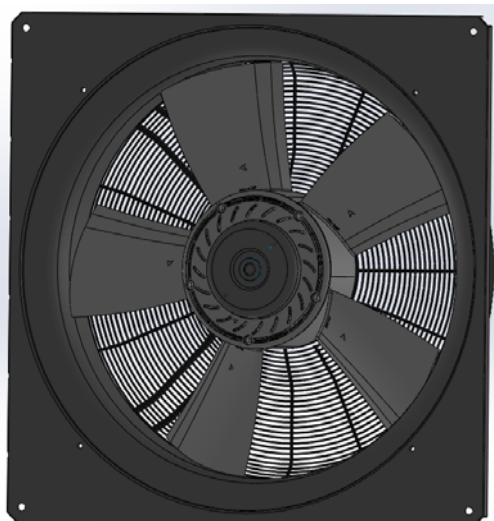




## Electronically Commutated (EC) Fan

Axial Fan

970 x 970 x 268 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)



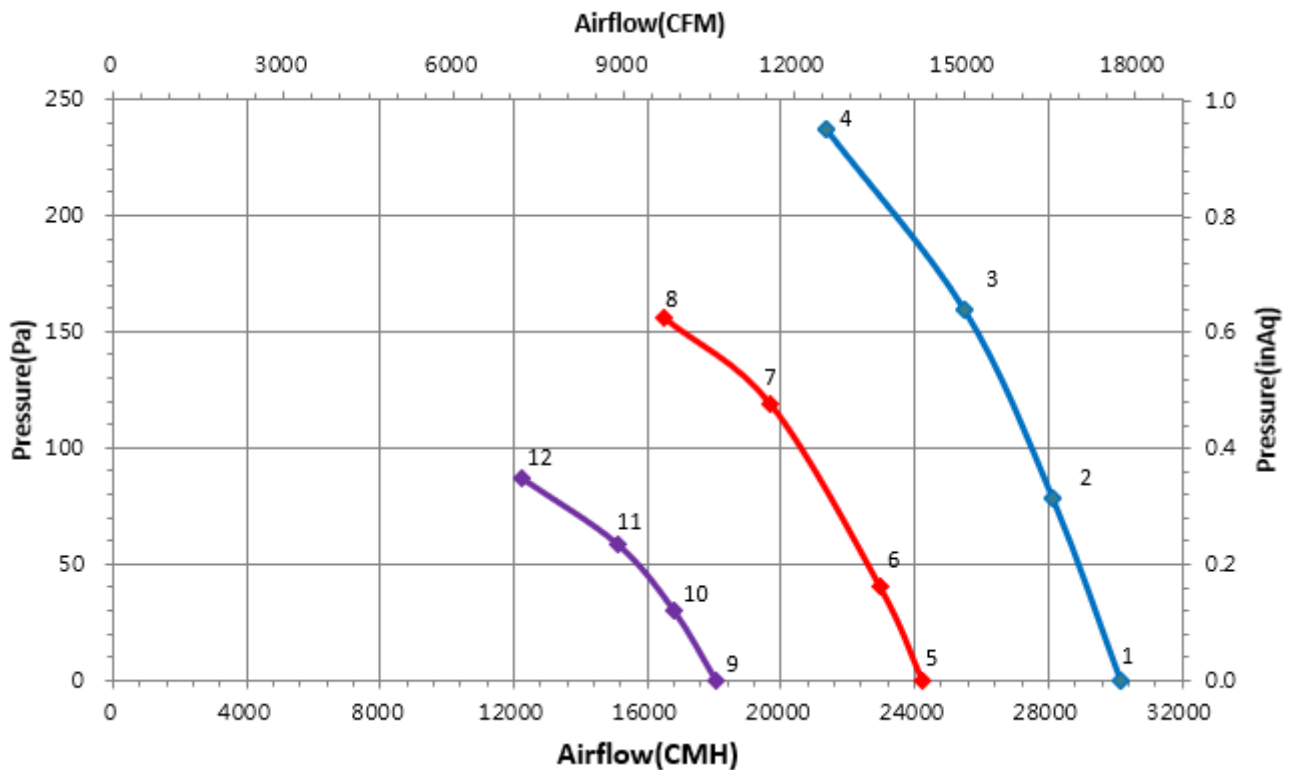
### Technical features

Input Side	
Nominal Voltage	3~ 400Vac 50/60Hz
Input Source	3~ 380Vac - 480Vac
Power @ Free air	2453 W
Power @ Max. load	3100 W
Output Side	
Speed (RPM)	1200
Qmax. (CMH / CFM)	30178 / 17752
Pmax. (Pa / inAq)	237 / 0.95
Noise (dB-A) @ Qmax	78
Functions	
Passive power factor correction	
Control input 0-10VDC / PWM PATTERN / 4-20mA.	
Output +10VDC (±10%), max. 10mA.	
Control voltage output: 0-10VDC.	
RS485 control bus ( MODBUS (V1.1) RTU/ 8N1)	
Alarm relay, Locked rotor protection, Soft start.	
Speed telling, Enable function.	
Voltage / Current monitoring.	

Physical	
Rotation Direction	CCW, seen on rotor
Material (Impeller / Frame)	Plastic / Steel
Bearing system	Ball bearings
Weight (kg)	50
Electrical leads	Via terminal block
Environmental	
Operating temperature range	-25 ~ +60 °C
Storage temperature range	-40 ~ +70 °C
Safety	
Safety	TUV
IP Level	IP54
EMC	EN61000-6-2, EN61000-6-4 (in process)
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 (without fanguard condition)



Measure data:

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	Lp [dB(A)]
1	0	30178	1200	2453	4.67	78
2	78	28134	1200	2768	5.26	
3	160	25468	1200	3028	5.77	
4	237	21324	1200	3085	5.90	
5	0	24204	960	1311	2.48	74
6	40	22940	960	1431	2.71	
7	119	19671	960	1616	3.07	
8	156	16479	960	1639	3.09	
9	0	18052	720	532	1.09	67
10	30	16779	720	656	1.23	
11	59	15097	720	706	1.31	
12	87	12228	720	718	1.36	

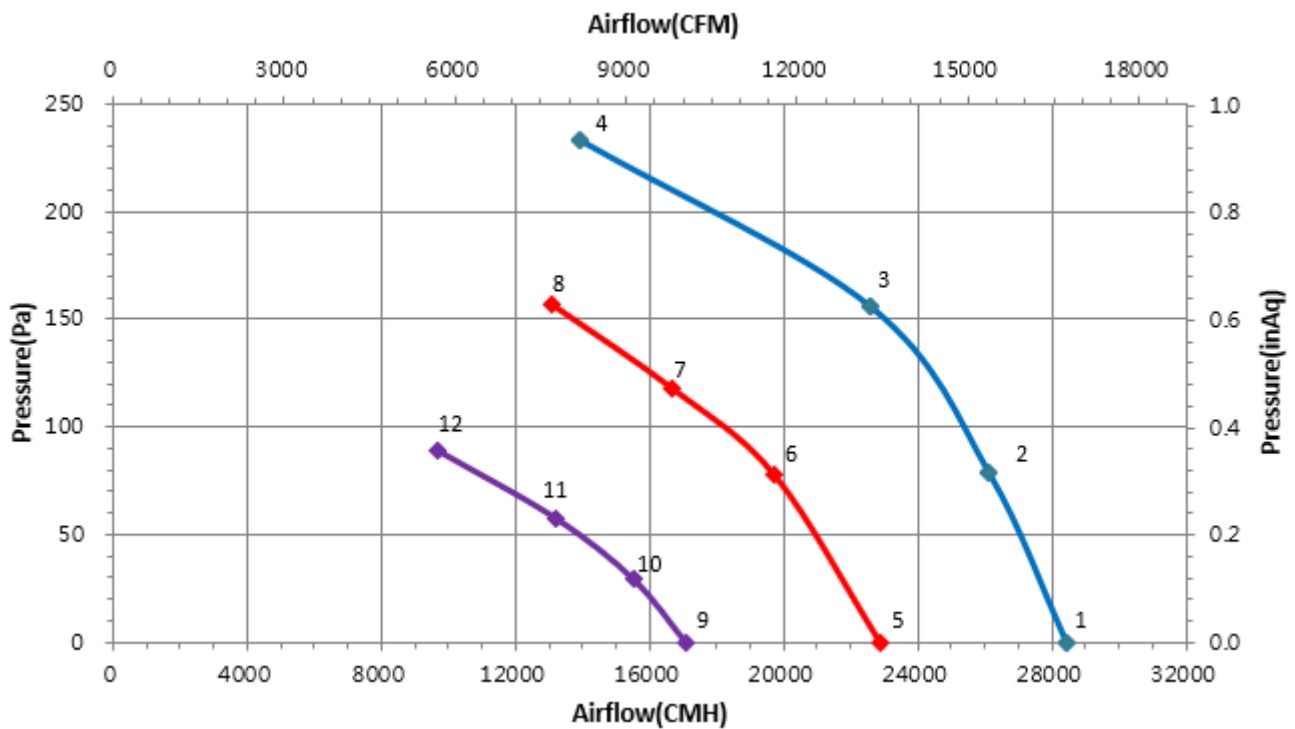
Test Condition:

- 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 (%)	47.9	36.8
Eff Grade N	51.1	40
Power (kW)	3.08	
Air flow (CMH)	21324	
Pressure (Pa)	237	
Speed (RPM)	1200	

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	28429	1200	2670	5.11	80
2	78	26132	1200	2918	5.57	
3	156	22597	1200	3039	5.81	
4	196	16472	1191	3099	5.93	
5	0	22869	960	1416	2.69	75
6	77	19730	960	1618	3.04	
7	118	16689	960	1622	3.08	
8	157	13079	960	1671	3.16	
9	0	17116	620	645	1.22	69
10	29	15544	620	689	1.30	
11	58	13201	620	717	1.33	
12	89	9669	620	741	1.39	

Test Condition:

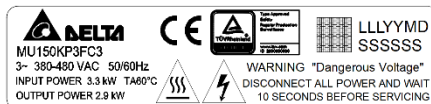
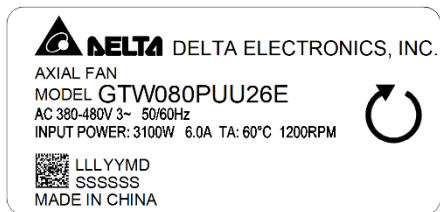
- Input Voltage: 3~400Vac
- Temperature : Room Temperature
- Humidity : 65%RH
- Noise (Lp) is measured at a distance of one meter from the inlet side.
- Testing method is compliance with ISO 3745

Dimension drawing

Label :

Label 1

Label 2



Fan :

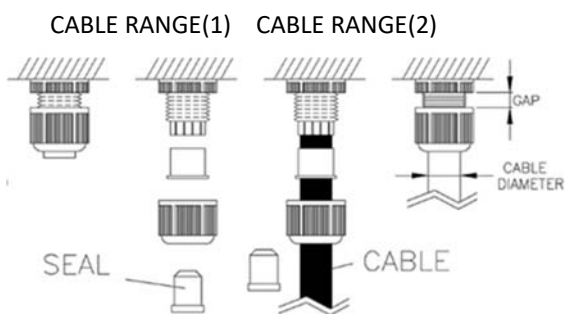
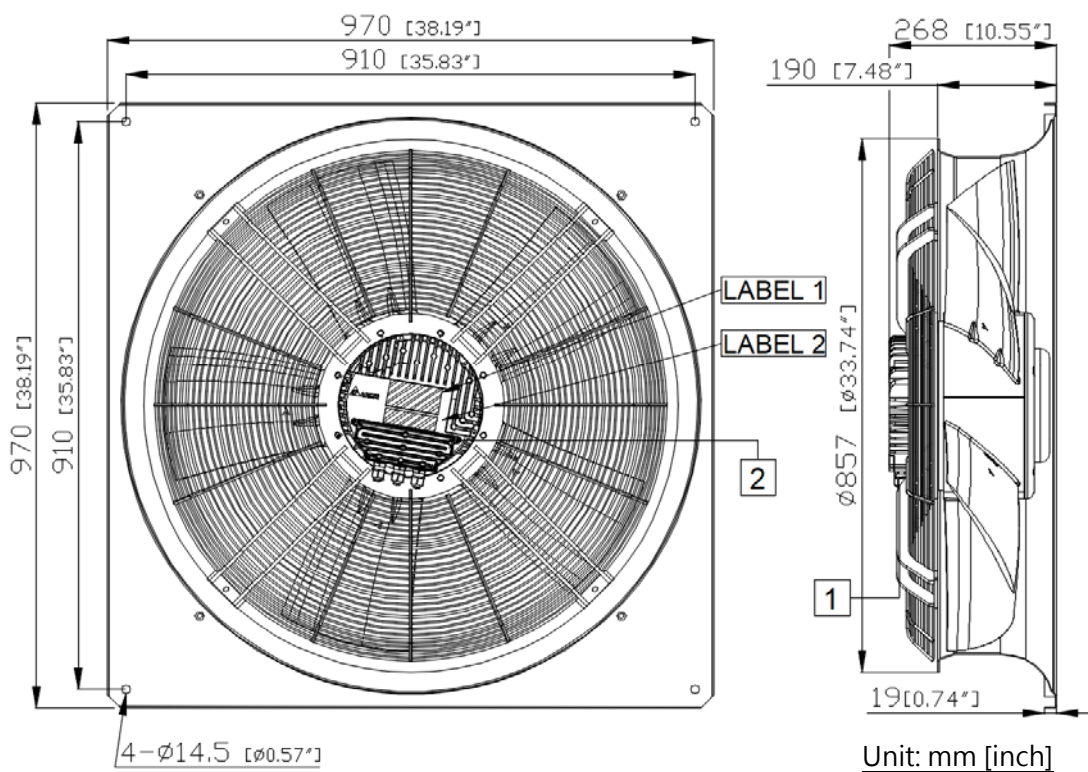


Fig1

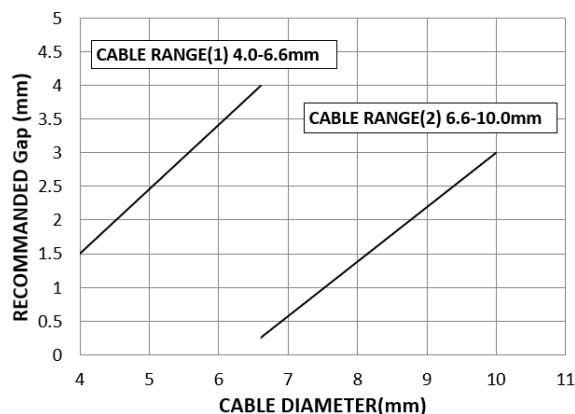
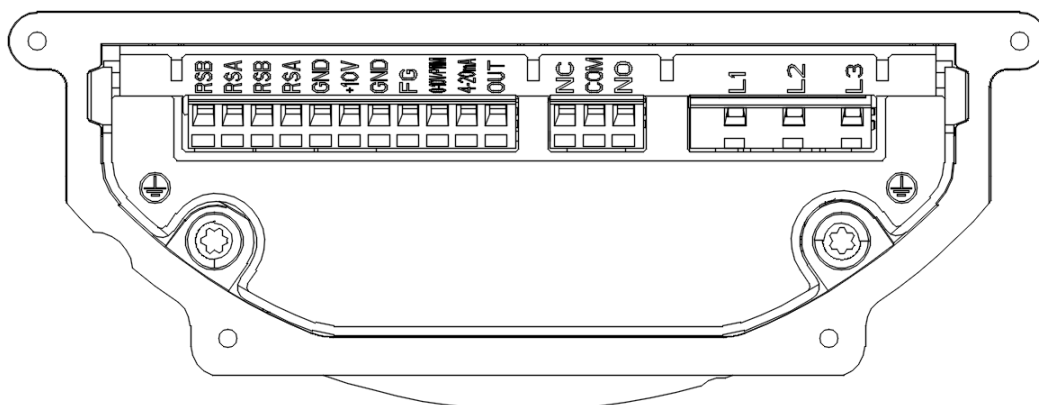


Fig2

Note :

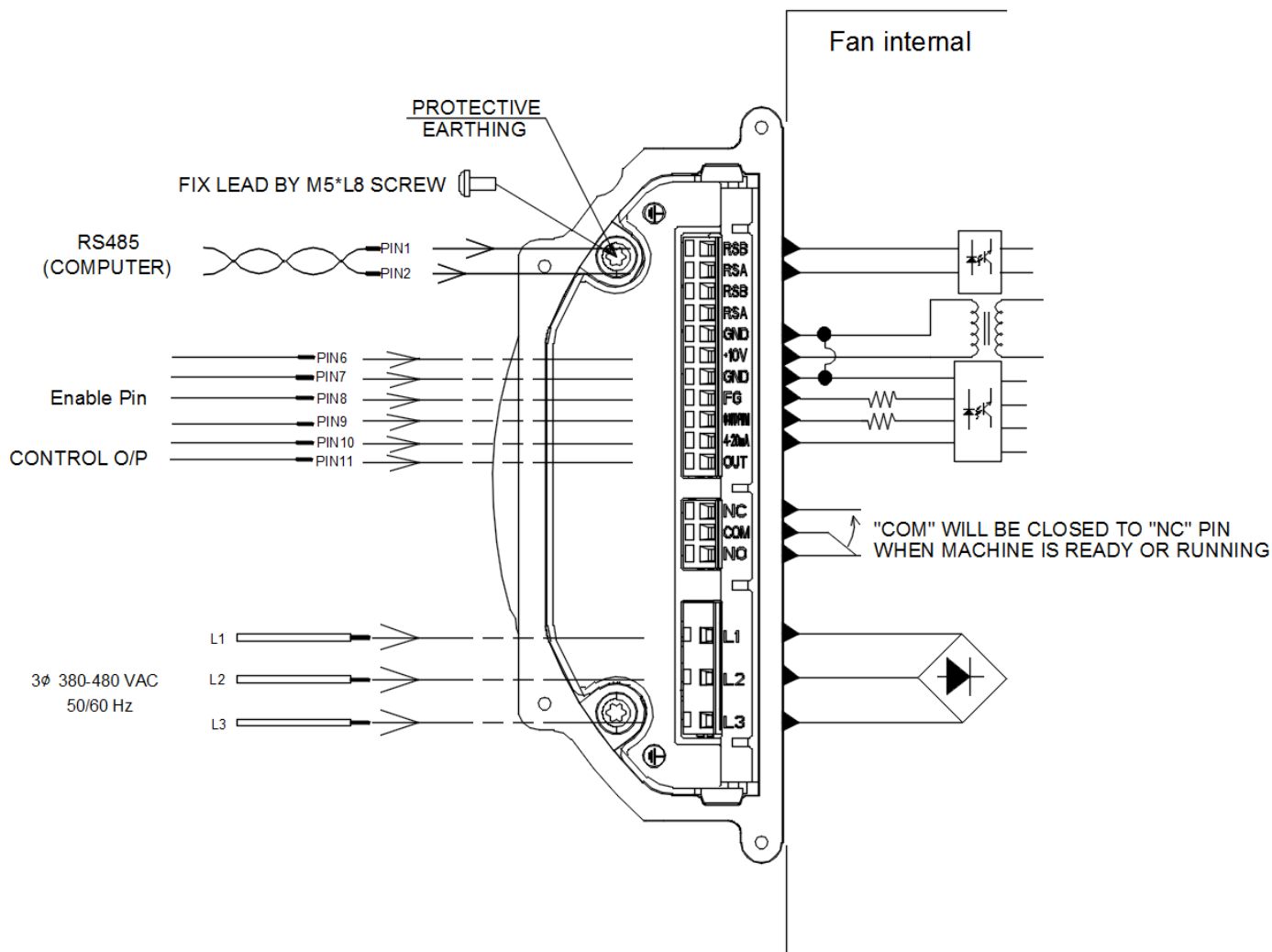
- 1 Cable gland: M16xP1.5 (3 pcs), Material: Nylon, Cable Diameter:  $\phi$  4.0~  $\phi$  10mm  
Cable gland nut's gap refer Fig.1 & 2.
2. Open the cover and refer to definition of terminal block, screw tightening torque  $20 \pm 10\%$  kgf-cm

## Definition of terminal block



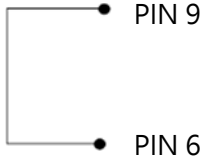
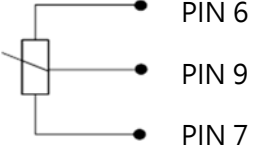
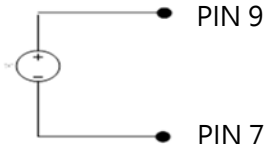
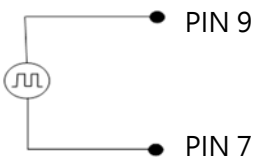
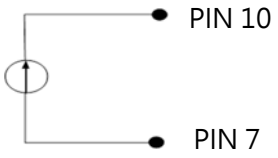
	Text	Functions
Power	L1	AC main (3~ 380-480VAC)
	L2	AC main (3~ 380-480VAC)
	L3	AC main (3~ 380-480VAC)
Status	NC	Alarm relay, open by failure
	COM	Alarm relay, common (2A/250VAC)
	NO	Alarm relay, close by failure
Signal	RSB	RS485-B
	RSA	RS485-A
	RSB	RS485-B
	RSA	RS485-A
	GND	Ground
	+10V	+10V output,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



Note:

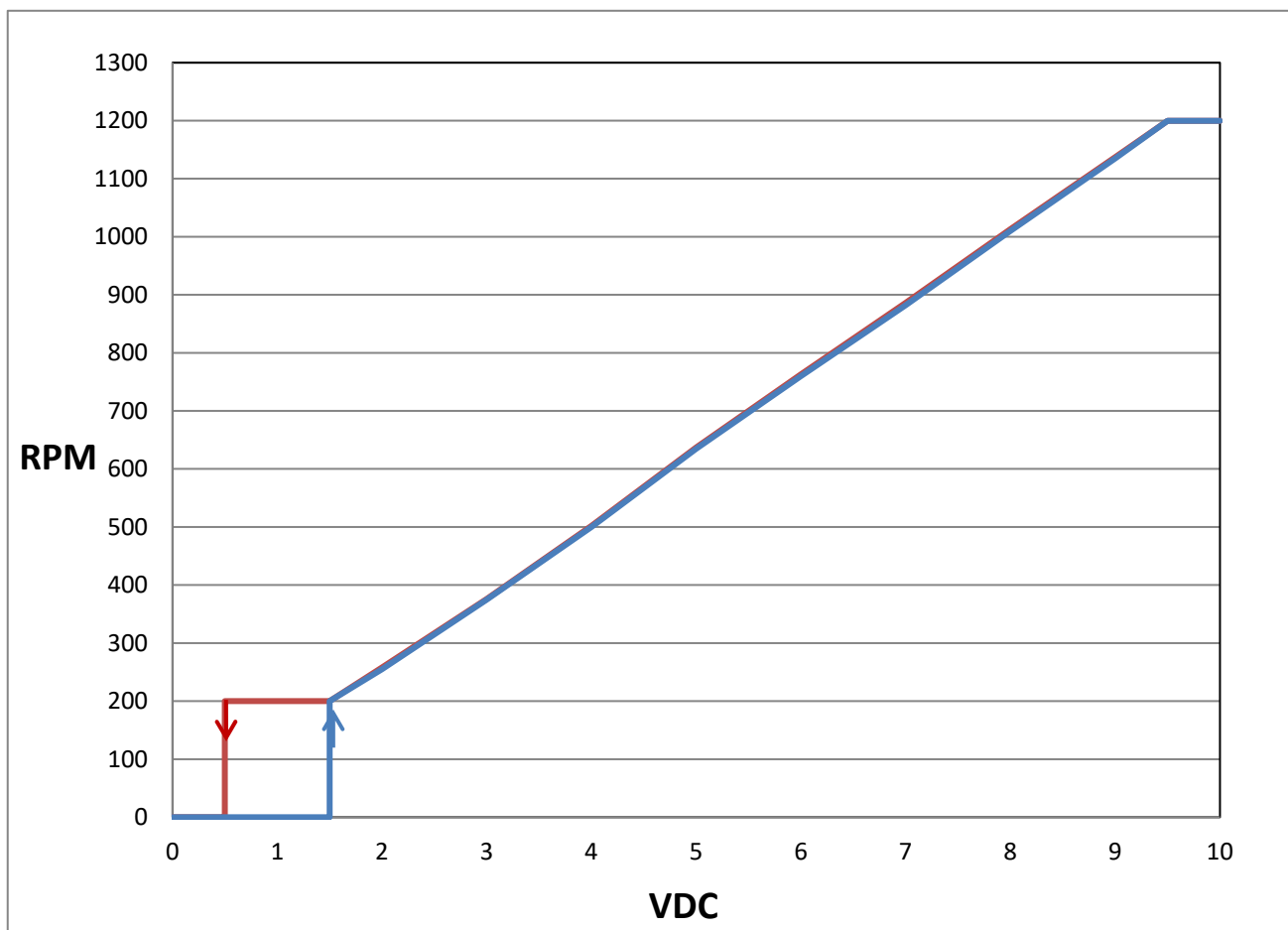
1. A MODBUS over Serial Line Cable must be shielded. At one end of each cable its shield must be connected to protective ground.

Speed setting	
<p><b>Full Speed</b></p> 	<p><b>Short PIN6 &amp; PIN9</b> Fan will run full speed.</p>
<p><b>Voltage Control A (NOTE-1/P7)</b></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><b>Voltage Control B</b></p> <p>0-10V DC Source</p> 	<p><b>Use voltage source support 0~10VDC voltage</b> DC+ : connector PIN9(+) DC - : connector PIN7(-)</p>
<p><b>PWM Control</b></p> <p>PWM Generator</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><b>Current Control</b></p> <p>4-20mA Current Source</p> 	<p><b>4~20mA Current Control</b> Open 0-10V/PWM PIN - 4.5 mA → Fan Stop - 6.0 mA → 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> <p>Cable: A MODBUS over Serial Line Cable must be shielded. At one end of each cable its shield must be connected to protective ground.</p>		
Control O/P	The analog signal level is the derivative of current control level.		
	Current (mA)	Control O/P (VDC) (REF)	
	4.0	0	
	6.3	1.65	
	14.0	6.30	
	19.5	9.45	
Voltage/PWM control	The speed comparison will control level		
	Voltage (V)	PWM (%)	Speed (RPM)
	0	0	0
	1.5	15	200 ± 50 RPM
	6.0	60	760 ± 10%
	9.5	95	1200± 5%
Current control	The speed comparison will control level		
	Current (mA)	Speed (RPM)	
	4.0	0	
	6.1	200 ± 50 RPM	
	13.5	760 ± 10%	
	19.5	1200± 5%	
Alarm state	<ol style="list-style-type: none"> <li>1. NC and COM will OPEN</li> <li>2. NO and COM will CLOSE.</li> </ol>		
FG	<p>Enable function.</p> <ol style="list-style-type: none"> <li>1. FG is H or Blank, the fan is enable</li> <li>2. FG is L, the fan is disable</li> </ol> <p>※ H : 9.5 ~ 10V L : 0 ~ 0.7V</p>		

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	6.1	6.9	8.4	10	11.9	13.5	15.1	16.7	18.6	20	mA