



Specification For Approval

Customer : _____
Description : _____ EC FAN _____
Customer Part No. : _____ Rev : _____
Delta Model No. : _____ GTW063HUD22E-M001 _____ Rev : 00 _____
Safety Model No. : _____
Sample Issue No. : _____
Sample Issue Date : _____ 12/05/2019 _____

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,
Taoyuan City, 33341, Taiwan

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*** SAMPLE HISTORY ***

CUSTOMER :

CUSTOMER P/N : N/A

DELTA MODEL : GTW063HUD22E-M001

REV	DESCRIPTION	DRAWN	CHECKED		APPROVED	ISSUE DATE
			ME	EE		
00	ISSUE SPEC	邱奕清 12/05'19	邱奕清 12/05'19	蘇德勝 12/05'19	顏承偉 12/05'19	12/05'19

Electronically Commutated (EC) Fan

Axial Fan

805 x 805 x 225 mm



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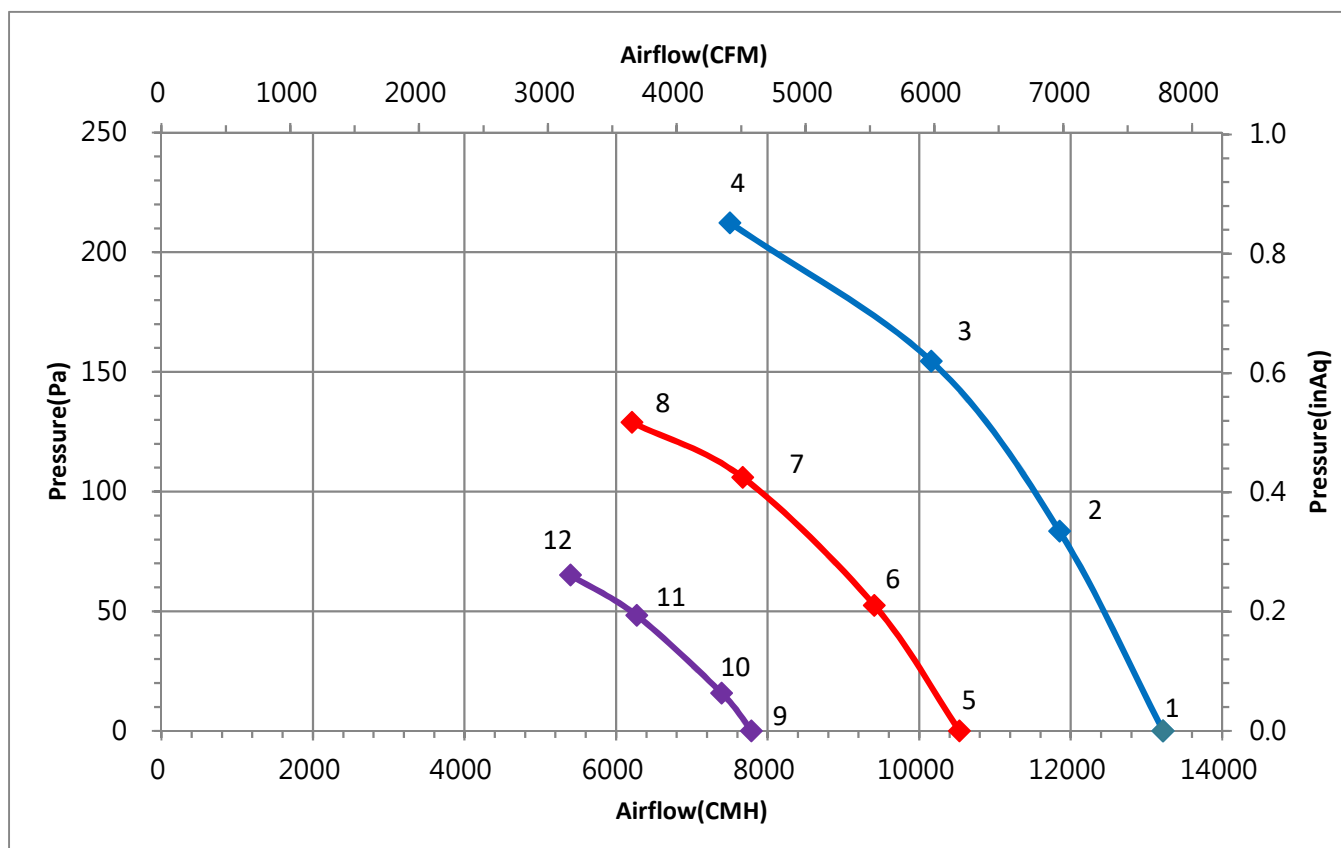
Technical features

Input Side	
Nominal Voltage	3~ 230/400Vac 50/60Hz
Input Source	3~ 200Vac - 480Vac
Power @ Free air	670W
Power @ Max. load	1100 W
Output Side	
Speed (RPM)	1200
Qmax. (CMH / CFM)	13218 / 7775
Pmax. (Pa / inAq)	212 / 0.85
Noise (dB-A) @ Qmax	76.0
Functions	
Passive power factor correction	
Control input 0-10VDC / PWM / 4-20mA.	
Output +10VDC ($\pm 10\%$), max. 10mA.	
Control voltage output: 0-10VDC.	
RS485 control bus (MODBUS (V1.1) RTU/ 8N1)	
Alarm relay, Locked rotor protection, Soft start.	
Speed telling, frequency generator signal.	
Voltage / Current monitoring.	

Physical	
Rotation Direction	CCW, seen on rotor
Material (Impeller / Frame)	Plastic / Steel
Bearing system	Ball bearings
Weight (kg)	30
Electrical leads	Via terminal block
Environmental	
Operating temperature range	-25 ~ +60 °C
Storage temperature range	-40 ~ +70 °C
Safety	
Safety	UL ,CUL(in process)
IP Level	IP54
EMC	EN61000-6-1/3 (in progress)
Protection class	I
Insulation class	F
Leakage current	≤ 3.5 mA
Motor protection	Over temperature protected
Life expectance	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 (3~230Vac) [A]	I (3~400Vac) [A]	Lp [dB(A)]
1	0	13218	1200	670	1.81	1.15	76.0
2	83	11854	1200	832	2.23	1.43	
3	155	10160	1200	932	2.47	1.56	
4	212	7505	1200	1012	2.67	1.67	
5	0	10531	960	332	0.91	0.80	70.5
6	52	9411	960	416	1.13	0.90	
7	106	7674	960	473	1.28	0.94	
8	129	6210	960	502	1.34	1.00	
9	0	7789	720	149	0.47	0.46	63.5
10	16	7395	720	171	0.53	0.50	
11	48	6274	720	204	0.60	0.57	
12	65	5401	720	216	0.64	0.60	

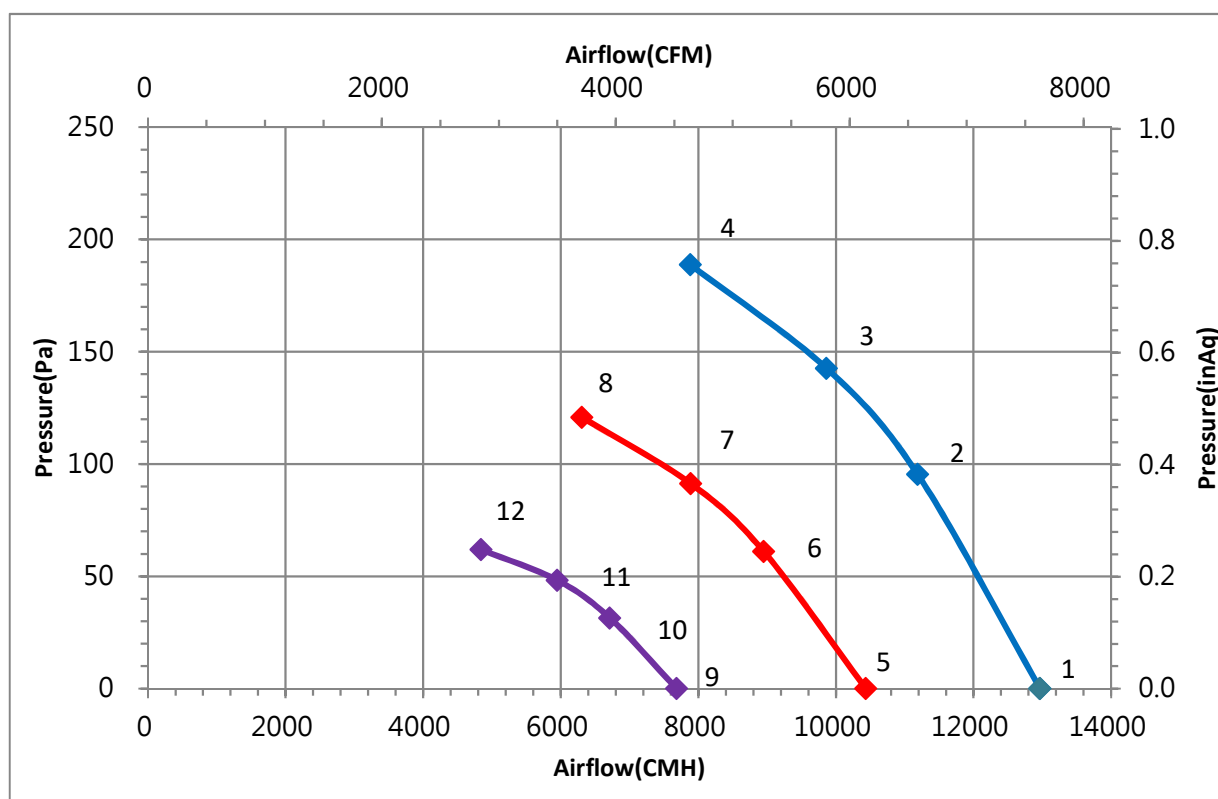
Test Condition:

- Input Voltage: Nominal Voltage
- 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 (%)	51.0	33.5
Eff Grade N	57.5	40
Power (kW)	0.932	
Air flow (CMH)	10160	
Pressure (Pa)	155	
Speed (RPM)	1200	

P & Q curves(with fanguard condition)



Measure data:

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I (3~230Vac) [A]	I (3~400Vac) [A]	Lp [dB(A)]
1	0	12968	1200	648	1.77	1.20	76.0
2	95	11188	1200	830	2.18	1.42	
3	168	8906	1200	932	2.50	1.56	
4	189	7887	1200	966	2.60	1.61	
5	0	10434	960	347	0.94	0.82	70.5
6	61	8950	960	440	1.16	0.92	
7	91	7890	960	473	1.27	0.94	
8	121	6309	960	510	1.36	1.02	
9	0	7685	720	155	0.57	0.47	63.5
10	31	6713	720	193	0.59	0.56	
11	48	5951	720	206	0.61	0.58	
12	62	4840	720	222	0.64	0.63	

Test Condition:

- Input Voltage: Nominal Voltage
- 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 (%)	48.5	33.5
Eff Grade N	55.1	40
Power (kW)	0.932	
Air flow (CMH)	8906	
Pressure (Pa)	168	
Speed (RPM)	1200	

Dimension drawing

Label:



Fan :

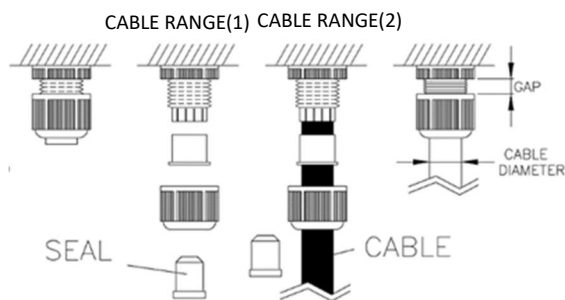
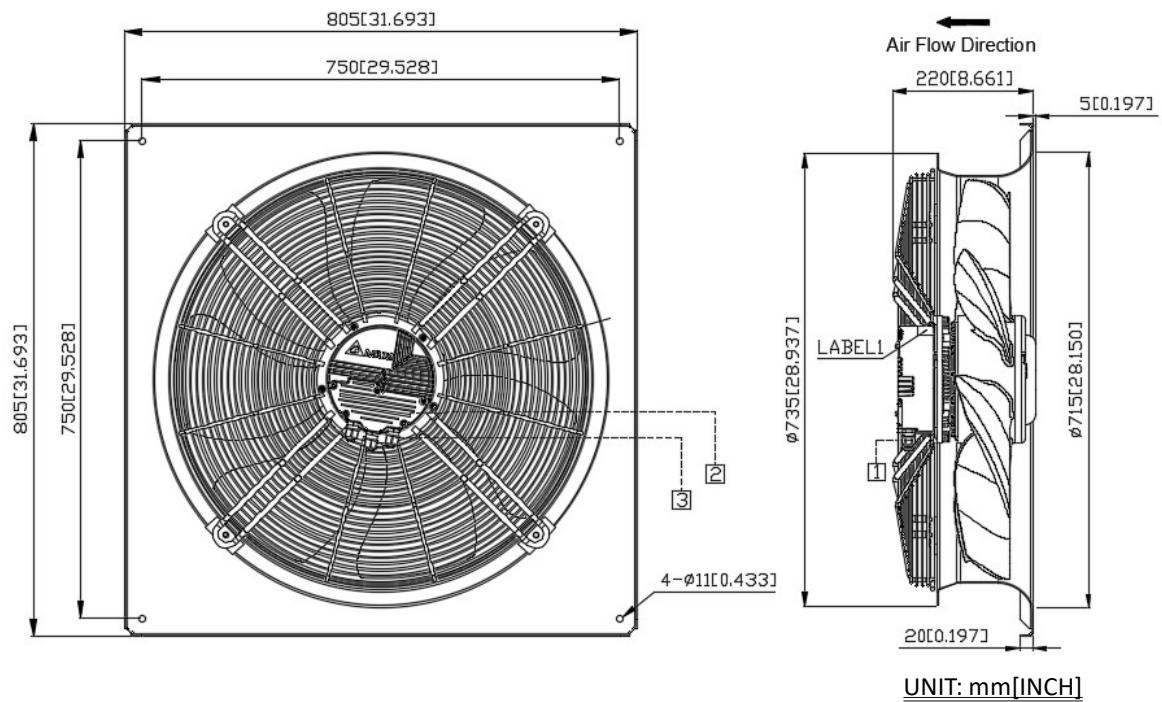


Fig1

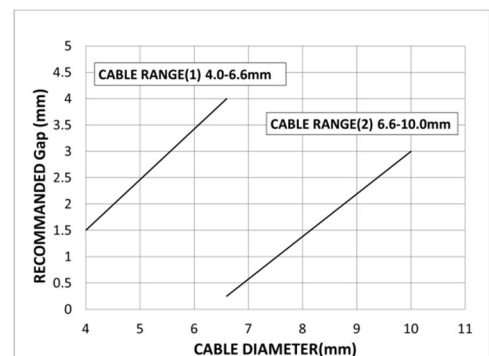
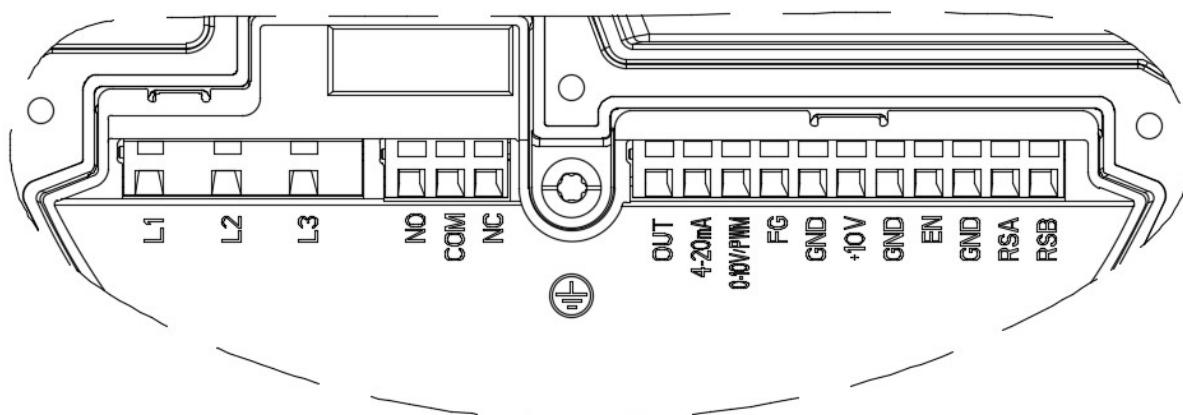


Fig2

Note:

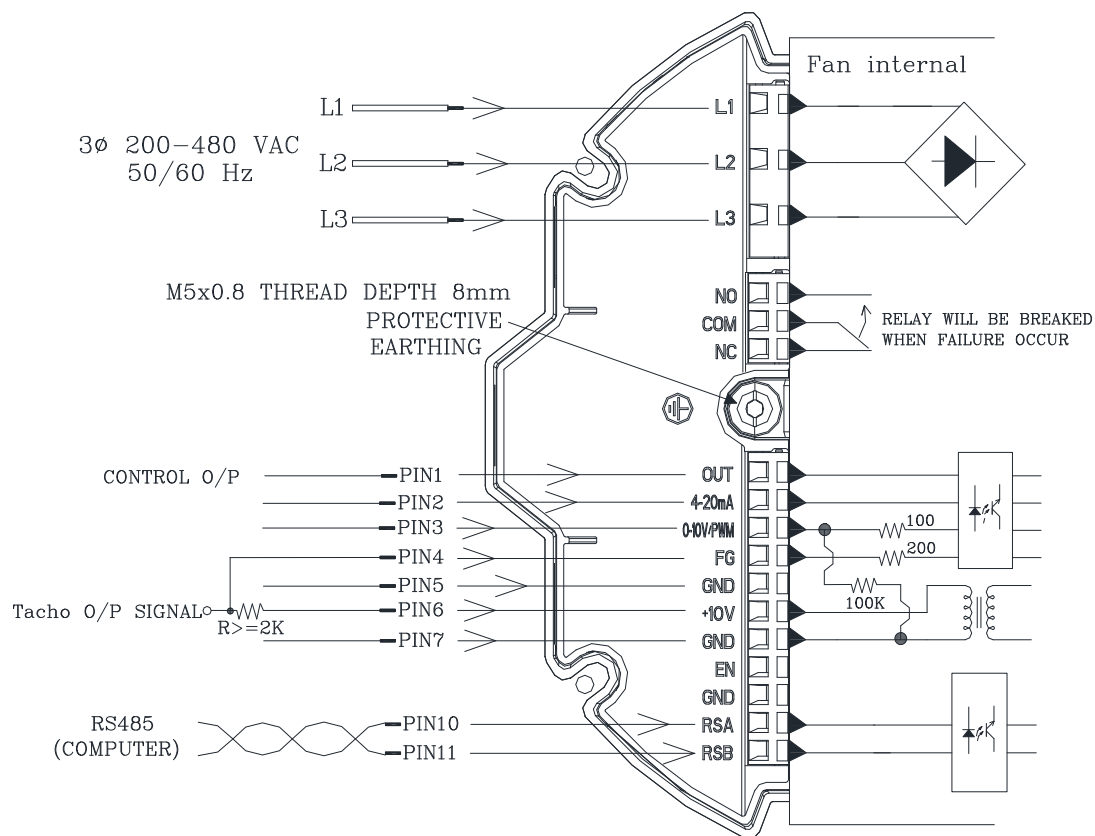
1. Cable Diameter : ϕ 4.0~ ϕ 10.0 mm.
2. Open the cover and refer to definition of terminal block.
Screws tighten torque 20 ± 2 Kgf-cm ,when close the cover.
3. Cable sealing nut's gap refer Fig 1 & 2.

Definition of terminal block



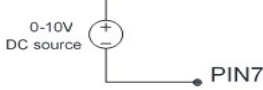
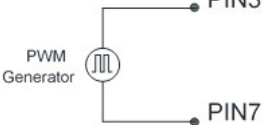
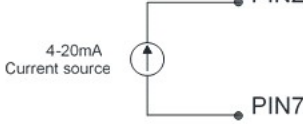
	Text	Functions
Power	L1	AC main (3~ 200-480VAC)
	L2	AC main (3~ 200-480VAC)
	L3	AC main (3~ 200-480VAC)
Status	NO	Alarm relay, close by failure
	COM	Alarm relay, common (2A/250VAC)
	NC	Alarm relay, open by failure
Signal	OUT	Control voltage output 0-10VDC (For external potentiometer)
	4-20mA	Speed control,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

Lead wire connection:



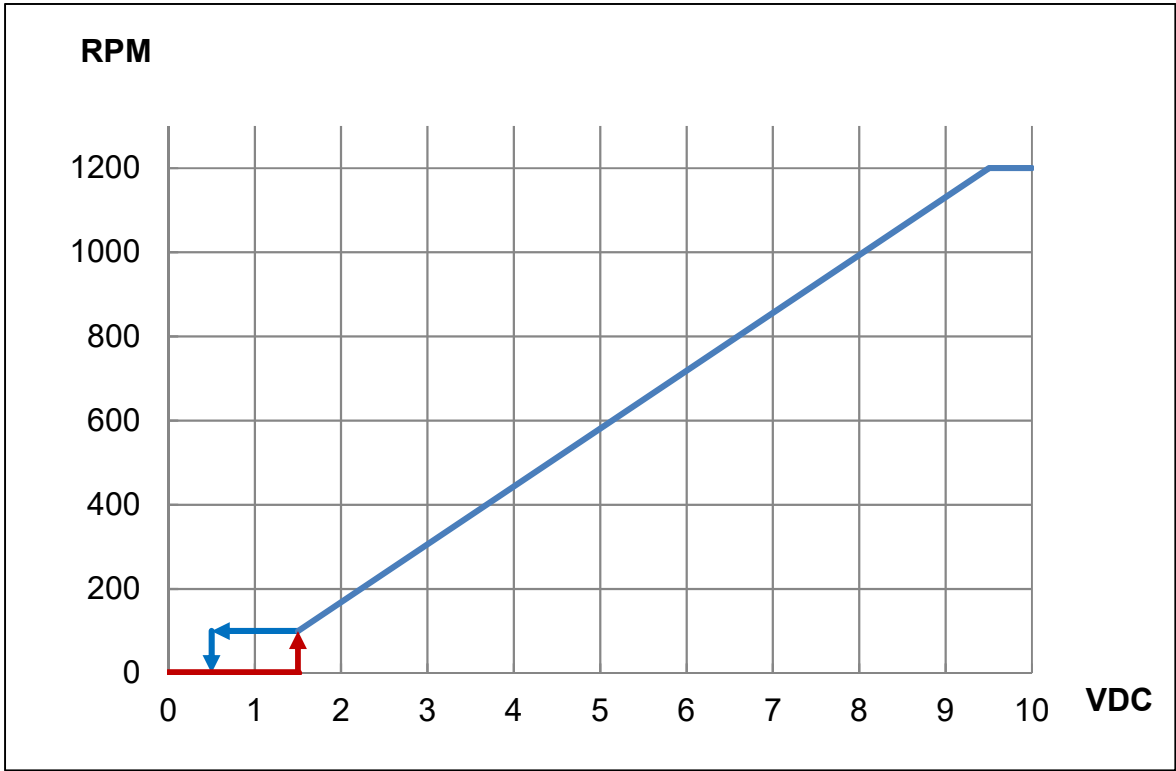
Note:

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 PIN3& PIN6 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 PIN3(+) 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						
Signal function							
RS485 control function	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. Cable : A MODBUS over Serial Line Cable must be shielded. At one end of each cable its shield must be connected to protective ground.						
Control O/P	The analog signal level is the derivative of current control level. <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>9.38</td></tr> </tbody> </table>	Current (mA)	Control O/P (VDC) (REF)	4.0	0	19.5	9.38
Current (mA)	Control O/P (VDC) (REF)						
4.0	0						
19.5	9.38						

Voltage/PWM control	The speed comparison will control level <table><tr><td>Voltage (V)</td><td>PWM (%)</td><td>Speed (RPM) (REF)</td></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>9.5</td><td>95</td><td>1200±5%</td></tr></table>	Voltage (V)	PWM (%)	Speed (RPM) (REF)	0	0	0	9.5	95	1200±5%
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0	0	0								
9.5	95	1200±5%								
Current control	The speed comparison will control level <table><tr><td>Current (mA)</td><td>Speed (RPM) (REF)</td></tr><tr><td>4.0</td><td>0</td></tr><tr><td>19.5</td><td>1200±5%</td></tr></table>	Current (mA)	Speed (RPM) (REF)	4.0	0	19.5	1200±5%			
Current (mA)	Speed (RPM) (REF)									
4.0	0									
19.5	1200±5%									
NO/NC/COM state	● Normal State NO and COM will OPEN; NC and COM will CLOSE. ● Alarm State (power off) NO and COM will CLOSE; NC and COM will OPEN.									
FG	$V_{CE(sat)} = 0.7V \text{ MAX.}$ $I_C = 5mA \text{ MAX.}$ $V_{FG} = 30.0V \text{ MAX.}$ $R \geq V_{FG} / I_C$ Frequency generator waveform $V_{FG} \pm 5\%$ $0.7V \text{ MAX.}$ <									

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