



Specification For Approval

Customer : _____
Description : _____ EC FAN _____
Customer Part No. : _____ Rev : _____
Delta Model No. : _____ GTW071HUD22E-M001 _____ Rev : 01 _____
Safety Model No. : _____
Sample Issue No. : _____
Sample Issue Date : _____ 09/26/2019 _____

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

TEL : +886-3-359-1968

FAX : +886-3-359-1991

*** SAMPLE HISTORY ***

CUSTOMER :

CUSTOMER P/N :

DELTA MODEL : GTW071HUD22E-M001

REV	DESCRIPTION	DRAWN	CHECKED		APPROVED	ISSUE DATE
			ME	EE		
00	Issue spec	邱奕清 08/14'19	邱奕清 08/14'19	蘇德勝 08/14'19	顏承偉 08/14'19	08/14'19
01	Add input current (Max.) Add input voltage tolerance Add RPM 808 PQ Label add FW revision Voltage VS. RPM Curve add tolerance	邱奕清 09/26'19	邱奕清 09/26'19	蘇德勝 09/26'19	顏承偉 09/26'19	09/26'19

Electronically Commutated (EC) Fan

Axial Fan

850 x 850 x 216 mm



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www.deltaww.com



Technical features

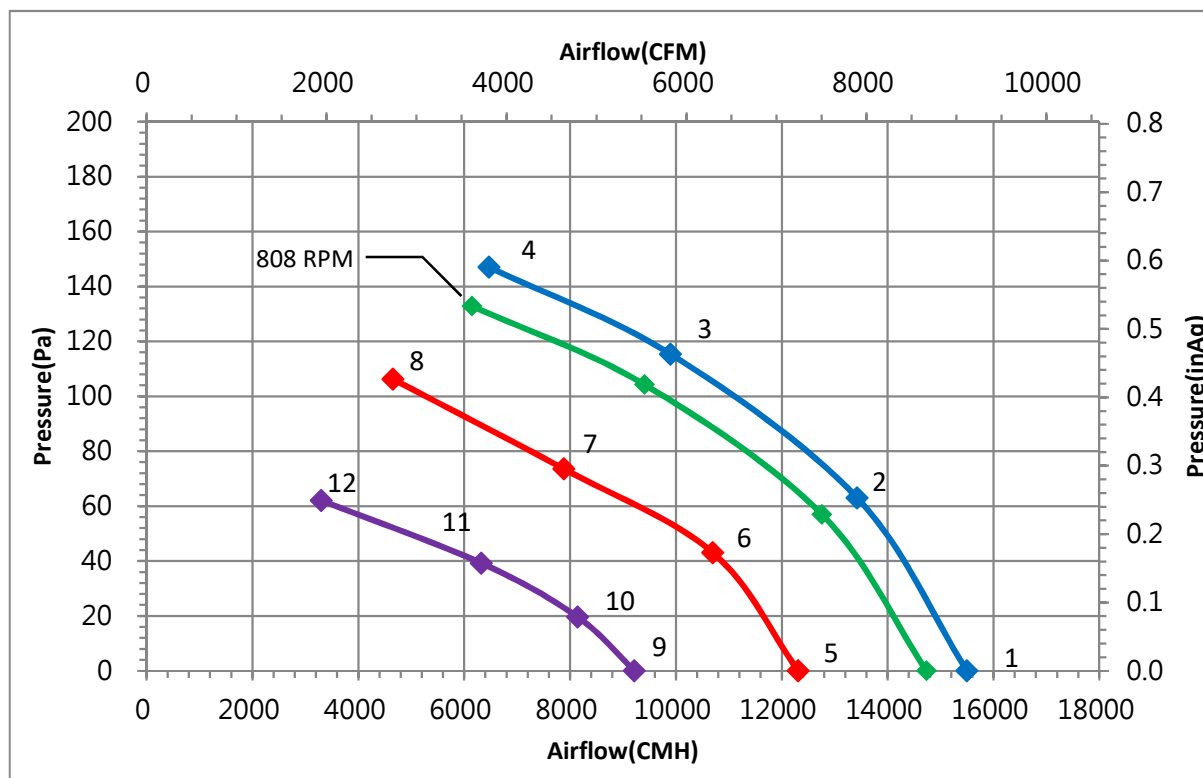
Input Side		Physical	
Nominal Voltage	3~ 230/400 Vac 50/60Hz	Rotation Direction	CCW, seen on rotor
Input Source	3~ 200Vac - 480Vac	Material (Impeller / Frame)	Plastic / Steel
Power @ Free air	693 W	Bearing system	Ceramic ball bearings
Power @ Max. load	1000 W	Weight (kg)	35
Input Current (max)	3.30 A	Electrical leads	Via terminal block
Output Side		Environmental	
Speed (RPM)	850	Operating temperature range	-25 ~ +60 °C
Qmax. (CMH / CFM)	15499 / 9117	Storage temperature range	-40 ~ +70 °C
Pmax. (Pa / inAq)	147 / 0.59	Safety	
Noise (dB-A) @ Qmax	75.5	Safety	UL , cUL , TUV(in progress)
Functions		IP Level	IP55
Passive power factor correction		EMC	EN61000-6-1/3 (in progress)
Control input 0-10VDC / PWM / 4-20mA.		Protection class	I
Output +10VDC (±10%), max. 10mA.		Insulation class	F
Control voltage output: 0-10VDC.		Leakage current	≤ 3.5 mA
RS485 control bus (MODBUS (V1.1) RTU / 8N1)		Motor protection	Over temperature protected
Alarm relay, Locked rotor protection, Soft start.		Life expectancy	60,000 hrs at 40 °C / 15 ~ 65 %RH
Speed telling, frequency generator signal.			
Voltage / Current monitoring.			

NOTE1:*The input voltage tolerance of 200VAC could be allowed to -10% and 480VAC could be allowed to +10%

NOTE.2: F/W REV : HD0300

NOTE.3 : 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	15499	850	693	1.89	75.5
2	63	13425	850	800	2.13	
3	115	9899	850	861	2.31	
4	147	6469	850	810	2.17	
5	0	12310	680	351	1.00	70.0
6	43	10697	680	415	1.14	
7	74	7882	680	443	1.22	
8	106	4653	680	448	1.21	
9	0	9217	510	160	0.50	64.0
10	20	8142	510	179	0.54	
11	47	5314	510	197	0.58	
12	62	3300	510	200	0.60	

Test Condition:

- Input Voltage: Nominal Voltage (3~ 230Vac 50/60Hz)
- Temperature : Room Temperature
- Humidity : 65%RH
- Measured with Fanguard
- Noise (Lp) is measured at a distance of one meter from the inlet side.

Dimension drawing

Label:

Label 1

Label 2



Fan :

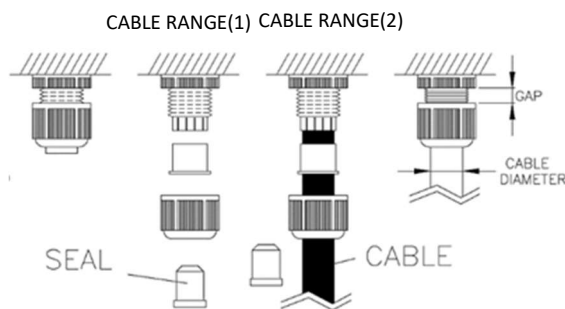
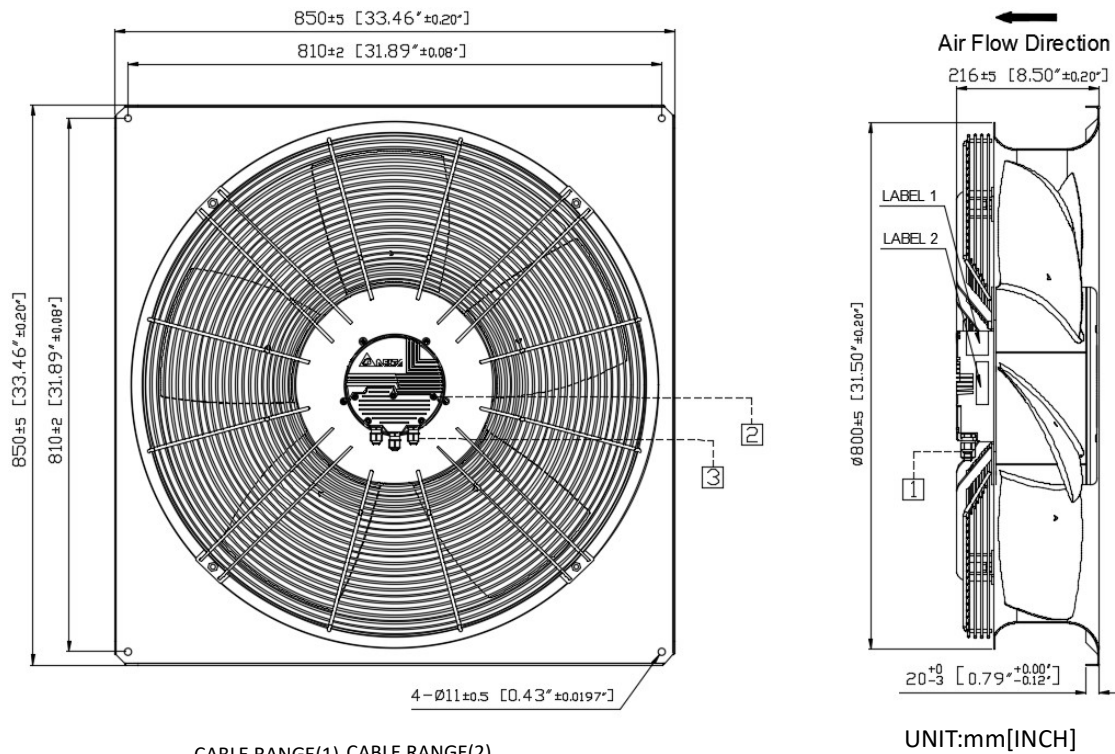


Fig1

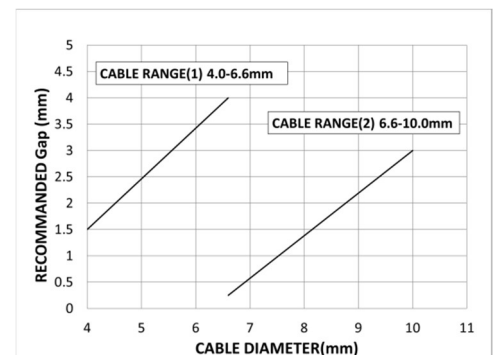
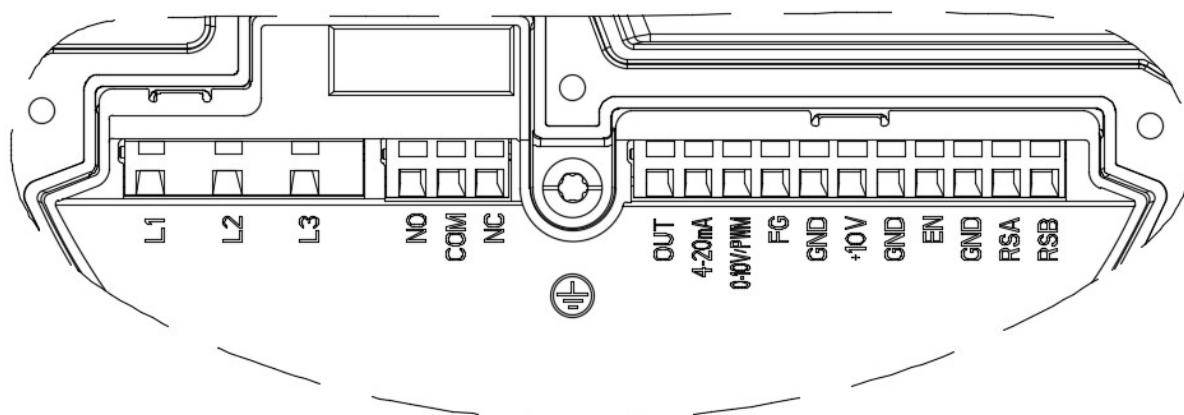


Fig2

Note:

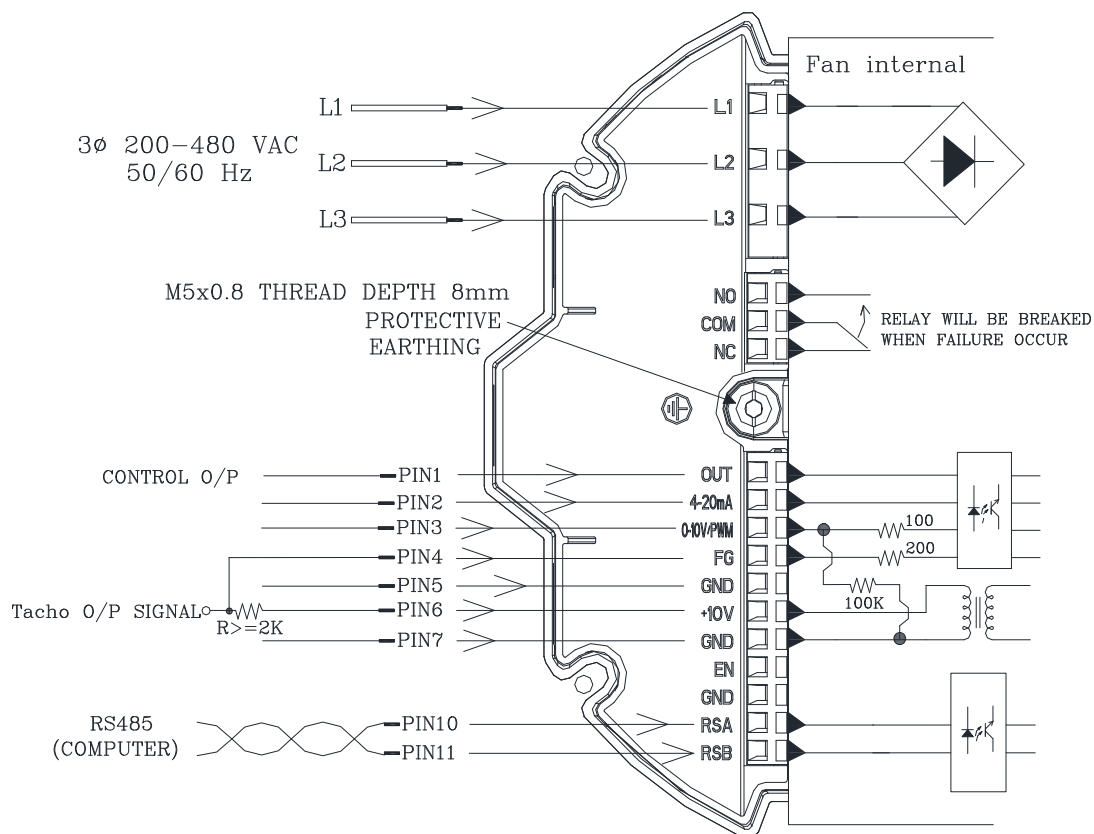
1. Cable Diameter : $\phi 4.0 \sim \phi 10.0$ mm.
2. Open the cover and refer to definition of terminal block.
Screws tighten torque 20 ± 2 Kgf-cm ,when close the cover.
3. Cable sealing nut's gap refer Fig 1 & 2.
4. Balance grade : G 4.0

Definition of terminal block



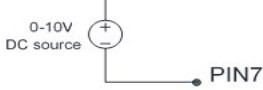
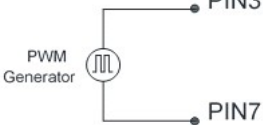
	Text	Functions
Power	L1	AC main (3~ 200-480VAC)
	L2	AC main (3~ 200-480VAC)
	L3	AC main (3~ 200-480VAC)
Status	NO	Alarm relay, close by failure
	COM	Alarm relay, common (2A/250VAC)
	NC	Alarm relay, open by failure
Signal	OUT	Control voltage output 0-10VDC (For external potentiometer)
	4-20mA	Speed control, 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

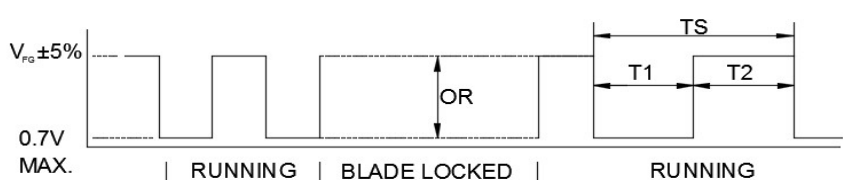
Lead wire connection:



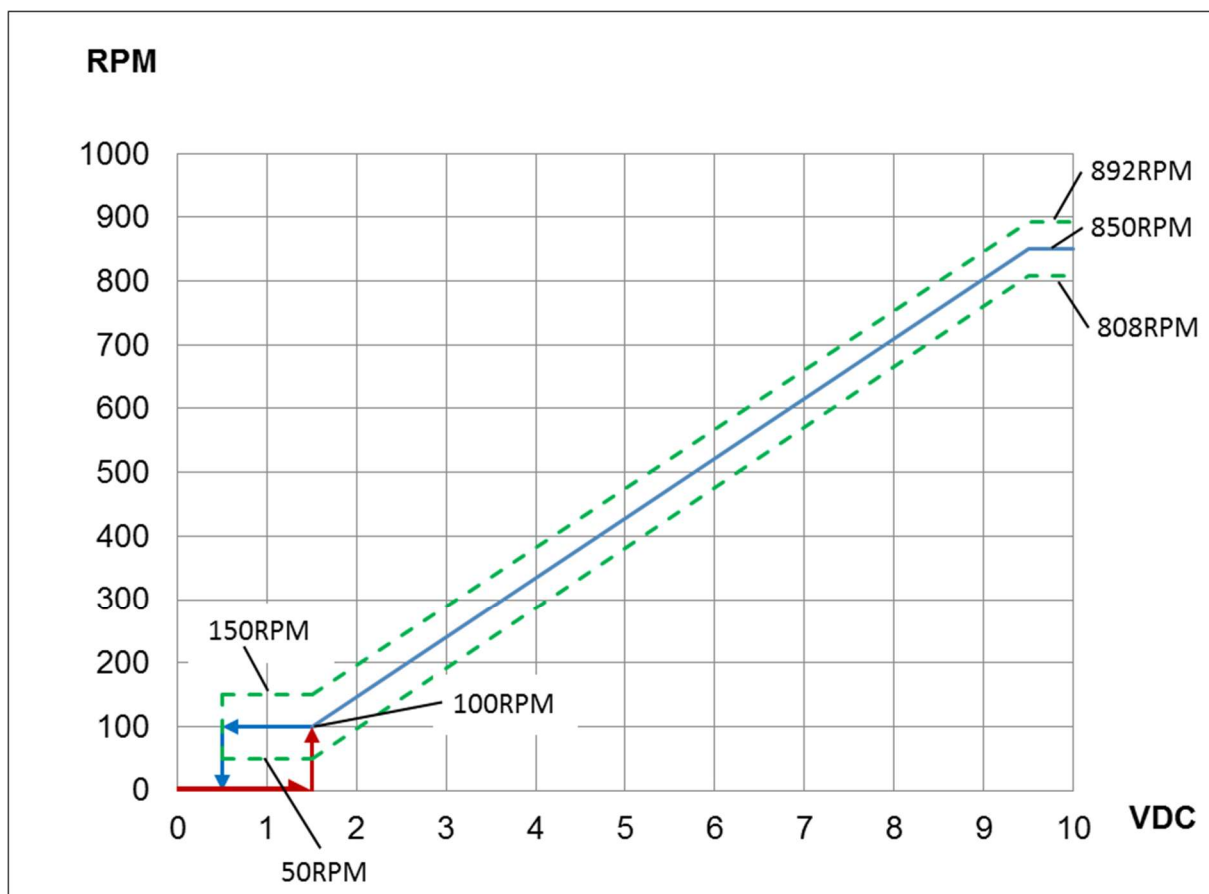
Note:

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)</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)	4.0	0	19.5	9.38
Current (mA)	Control O/P (VDC)						
4.0	0						
19.5	9.38						

Voltage/PWM control	The speed comparison will control level				
	Voltage (V)		PWM (%)		Speed (RPM)
	0		0		0
	9.5		95		850±5%
Current control	The speed comparison will control level				
	Current (mA)		Speed (RPM)		
	4.0		0		
	19.5		850±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.				
	Alarm state	觸發條件	觸發時間	回覆狀態	Recover time
	First time Power On	Power on	1.5s	Alarm to Normal second	1S
	OVP	>557V	>3s	Voltage Return to normal , Alarm Keep Second	<2S
	UVP	<160V	>3s	Voltage Return to normal , Alarm Keep Second	<2S
	PVP	Loss Phase	>4s	Voltage Return to normal , Alarm Keep Second	<2S
	OCP	6.5A	10ms	Return to normal, Alarm Keep Second	<2S
	Reverse Rotation Protection	Reverse Rotation	1.5s	Return to normal Alarm Keep Second	<2S
	LOCK	Lock Rotor	<2s	Return to normal Alarm Keep Second	<2S
	OTP	>120℃	33ms	<90℃ Return to normal, Alarm Keep Second	<2S
	Fan will not be damaged when it restarts continuously for a long time.				
FG	$V_{CE(sat)} = 0.7V \text{ MAX.}$ $V_{FG} = 30.0V \text{ MAX.}$ $I_C = 5mA \text{ MAX.}$ $R \geq V_{FG} / I_C$ Frequency generator waveform				
					
	N=R.P.M 1 PULSE PER REVOLUTION TS=60/N(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

Note:

1. Full speed could be guaranteed 850 RPM $\pm$ 5%. When tested by single fan.