



Specification For Approval

Customer : _____
Description : _____ EC FAN _____
Customer Part No. : _____ Rev : _____
Delta Model No. : _____ GTB028EUB16 N1 _____ Rev : 06
Safety Model No. : _____ GTB028EUB16 _____
Sample Issue No. : _____
Sample Issue Date : _____ 07/27/2018 _____

Please send one copy of this specification back after
you signed approval for production pre-arrangement

Approved by : _____

Date : _____

Delta Electronics, Inc.

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Taoyuan City, 33341, Taiwan

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Electronically Commutated (EC) Fan

Centrifugal Fan

φ 280x 162 mm



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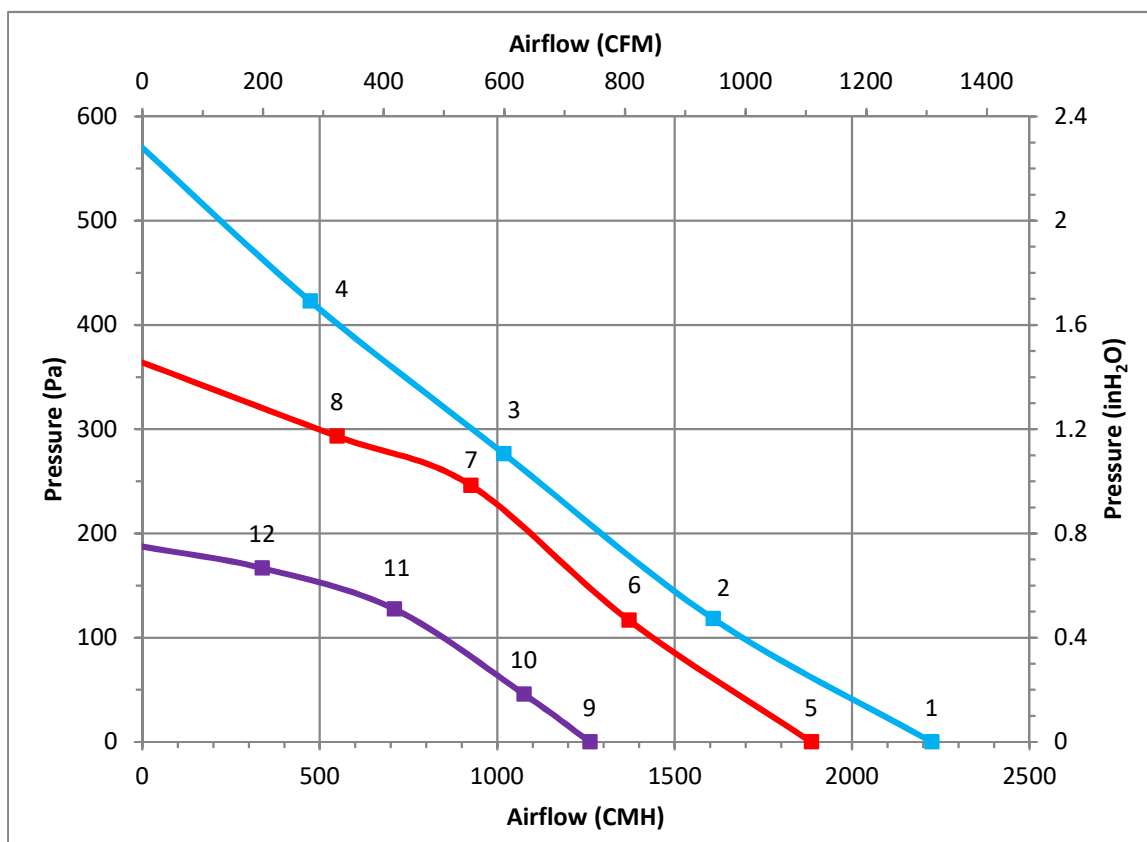
Technical features

Input Side	
Nominal Voltage	1~ 230Vac 50/60Hz
Input Source	1~ 200Vac - 277Vac
Power @ Free air	170 W
Power @ Max. load	180 W
Output Side	
Speed (RPM)	1850
Qmax. (CMH / CFM)	2222 / 1308
Pmax. (Pa / inAq)	569.7 / 2.287
Noise (dB-A) @ Qmax.	73.0
Functions	
Active power factor correction	
Input 0~10V _{DC} /PWM for speed control.	
Fan speed signal output.	
Output +10V _{DC} (±10%), max. 10mA.	

Physical	
Rotation Direction	CW, Seen on rotor
Material (Impeller / Frame)	Aluminum sheet / Die-cast aluminum
Bearing system	Ball bearings
Weight (kg)	3.2
Electrical leads	Lead wire
Environmental	
Operating temperature range	-25 ~ +60 °C
Storage temperature range	-40 ~ +70 °C
Safety	
Safety	UL, cUL, TUV
IP Level	IP54
EMC	EN61000-6-1/3 , EN61000-3-2/3
Protection class	I
Insulation class	B
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	2224	2010	164	3.31	73.0
2	118	1608	1862	165	3.96	
3	277	1018	1820	162	4.41	
4	423	473	2048	165	4.59	
5	0.0	1885	1764	118	2.18	72.0
6	117	1371	1702	134	2.53	
7	246	925	1673	144	2.75	
8	293	548	1728	129	2.79	
9	0.0	1261	1286	49	1.00	65.4
10	46	1075	1259	54	1.18	
11	128	710	1235	60	1.29	
12	167	337	1277	51	1.33	

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.
- Testing method is compliance with ISO 3745.

ErP Directive:

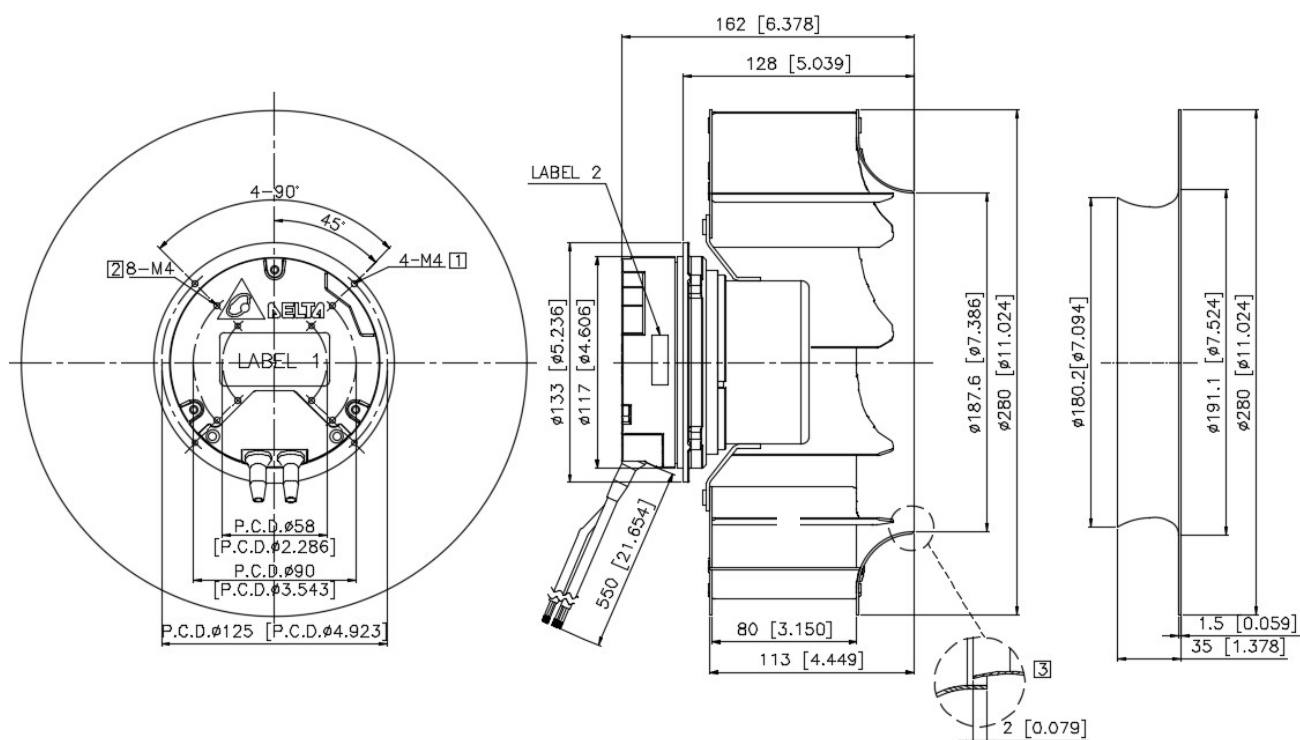
	Actual	2015
Over all Eff (%)	52.1	43.3
Eff Grade N	70.8	62
Power (kW)	0.166	
Air flow (CMH)	1060	
Pressure (Pa)	258	
Speed (RPM)	1850	

Dimension drawing

Label :



Fan :

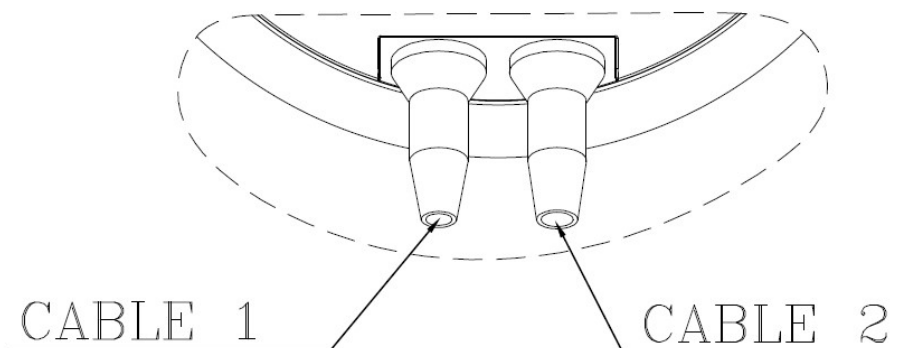


Note :

1. Depth of screw : 6 ~ 8 mm.
2. Depth of screw : 6 mm(max.).
3. Accessory: inlet cone, all the performance data are measured with it.

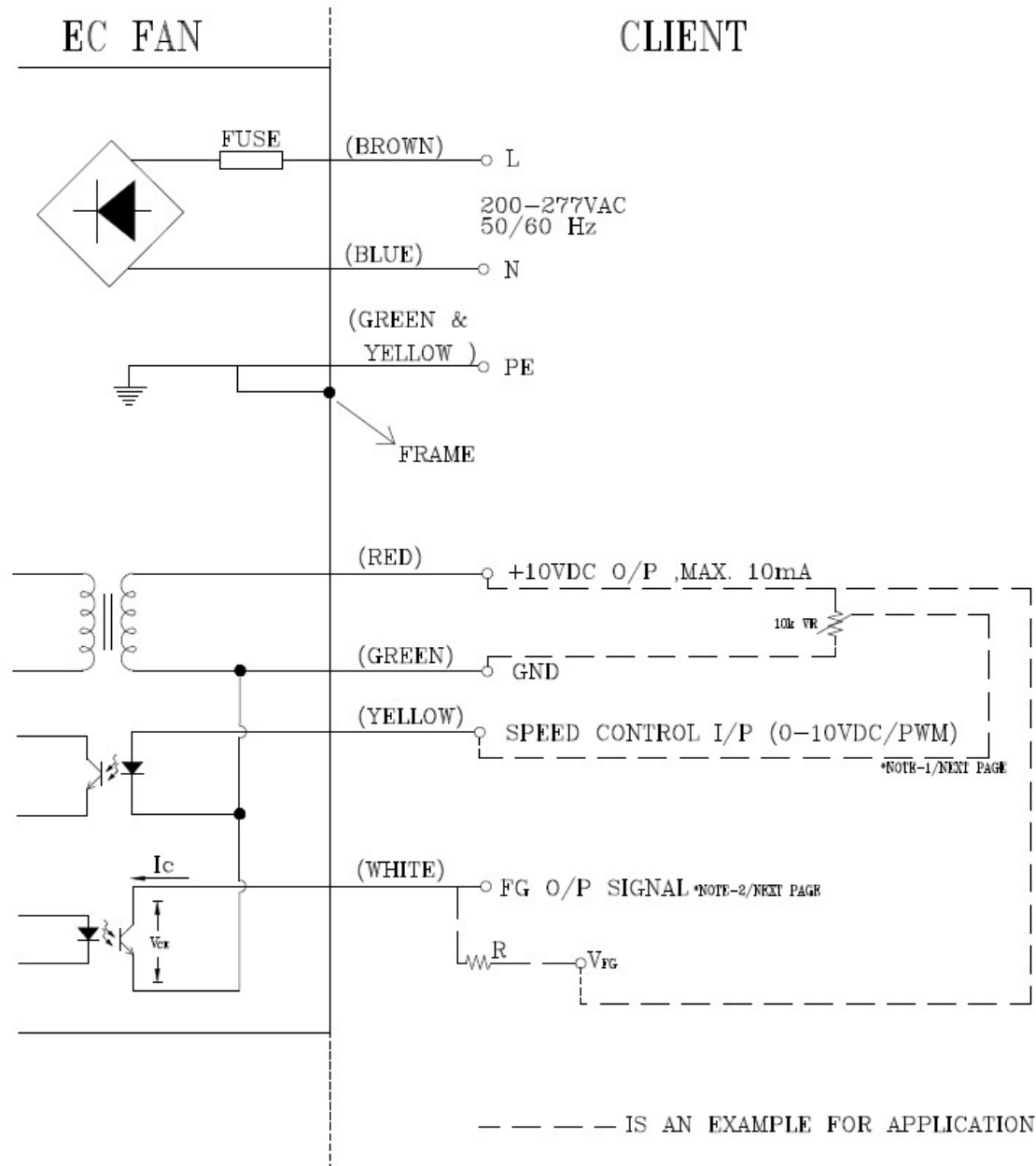
UNIT : mm[INCH]

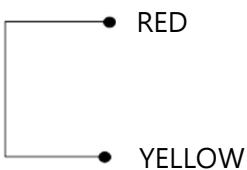
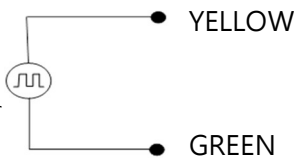
Definition of terminal block

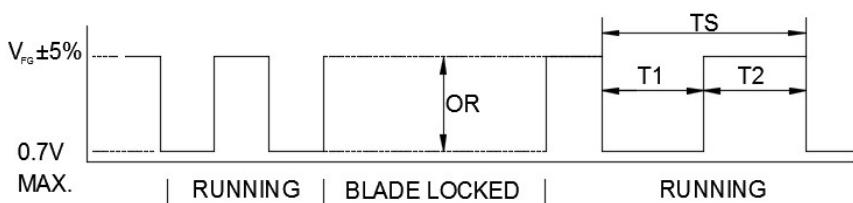


Cable	Wire type	Text	Functions
1	UL 2464 24AWG/4C TS A+B –LF–	Green	GND
		Red	+10V
		White	F00
		Yellow	PWM
2	UL 2464 18AWG/3C TS A+B –LF–	Brown	L
		Blue	N
		Green/Yellow	Earth

Lead wire connection:

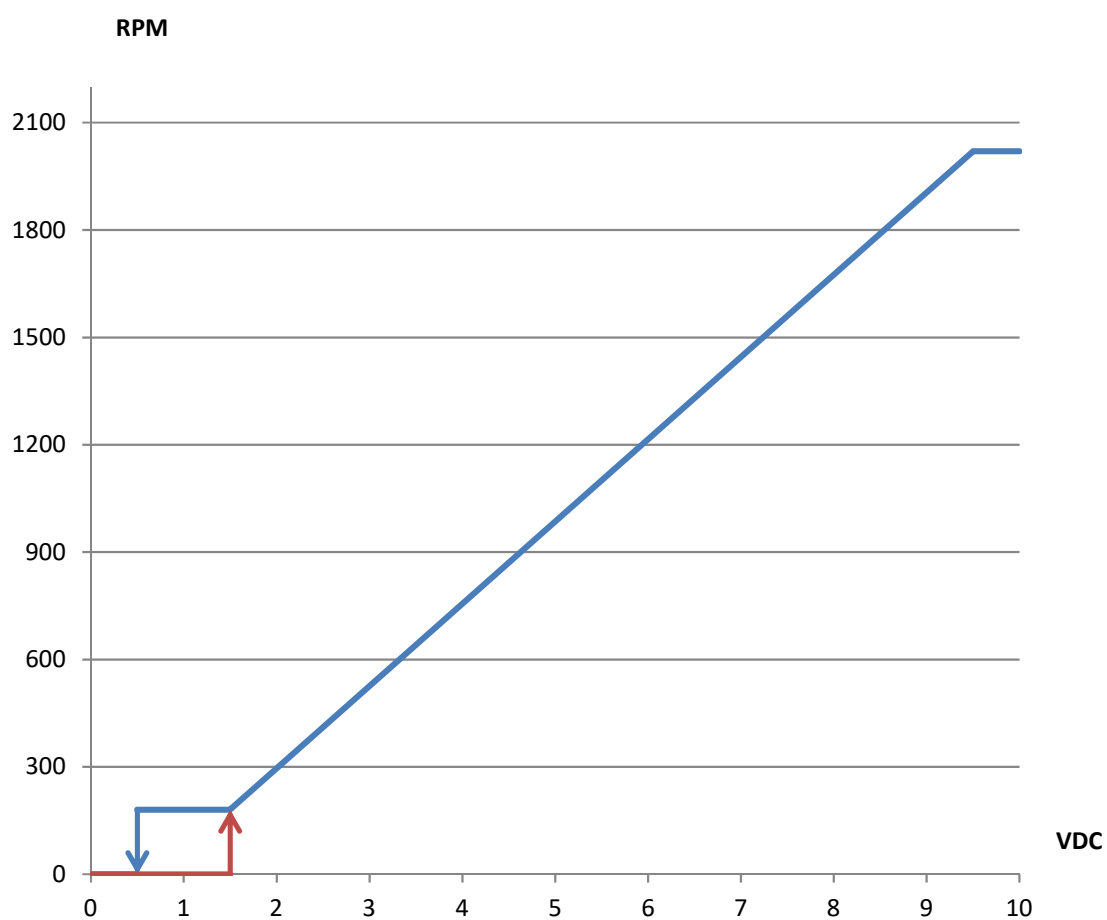


Speed setting	
Full Speed 	Short RED & YELLOW Fan will run full speed.
Voltage Control 0-10V DC Source 	Use voltage source support 0~10VDC voltage DC+ : connector YELLOW DC- : connector GREEN -Voltage higher than 1.5VDC, fan start up. -Voltage lower than 0.5VDC , fan stop
PWM Control PWM Generator 	PWM 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 °

Signal function											
Voltage control	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>9.5</td><td>95</td><td>1850</td></tr></table>		Voltage (V)	PWM (%)	Speed (RPM) (REF)	0	0	0	9.5	95	1850
Voltage (V)	PWM (%)	Speed (RPM) (REF)									
0	0	0									
9.5	95	1850									
Frequency generator (FG) signal	$V_{CE(sat)} = 0.7V \text{ MAX.}$ $I_C = 5mA \text{ MAX.}$ $V_{FG} = 20.0V \text{ MAX.}$ $R \geq V_{FG} / I_C$ Frequency generator waveform  $N=R.P.M$ $TS=60/N(SEC)$ 1 PULSE PER REVOLUTION $T1=T2=1/2 TS$										

Control Voltage VS. RPM Curve

Voltage(V)	PWM Duty(%)	Speed R.P.M.(ref.)	Power(W)
0.0	0	0	5
9.5	95	1850	180



Voltage(VDC) , PWM duty (%)

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	%

Protection Standard

ITEM	Standard
Rain	IEC 60529 IPX4
Dust/sand	IEC 60529 IP5X
Gas corrosion	GR-63-CORE
Salt mist	IEC 60068-2-11

FAN MATERIAL:

- ① Blades: Aluminum sheet
- ② Rotor: Steel with black electrodeposition coating
- ③ Pillow: Die-cast aluminum
- ④ Bottom Cover: Die-cast aluminum

