



Specification For Approval

Customer : _____
Description : _____ EC FAN _____
Customer Part No. : _____ Rev : _____
Delta Model No. : _____ GTM019FUG09R-V _____ Rev : X00
Safety Model No. : _____
Sample Issue No. : _____
Sample Issue Date : _____ 09/14/2020 _____

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

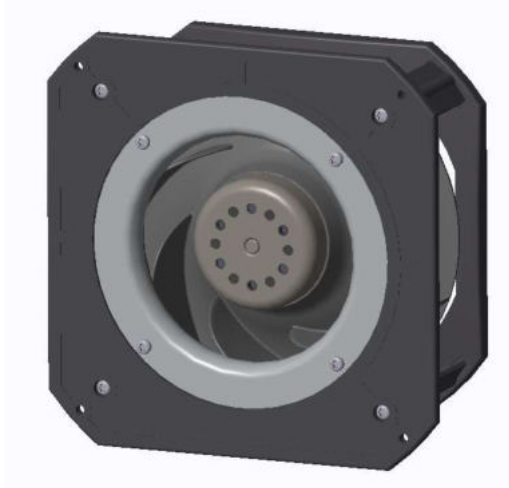
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Electronically Commutated (EC) Fan

Centrifugal Fan

225 x 225 x 99.8 mm



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Technical features

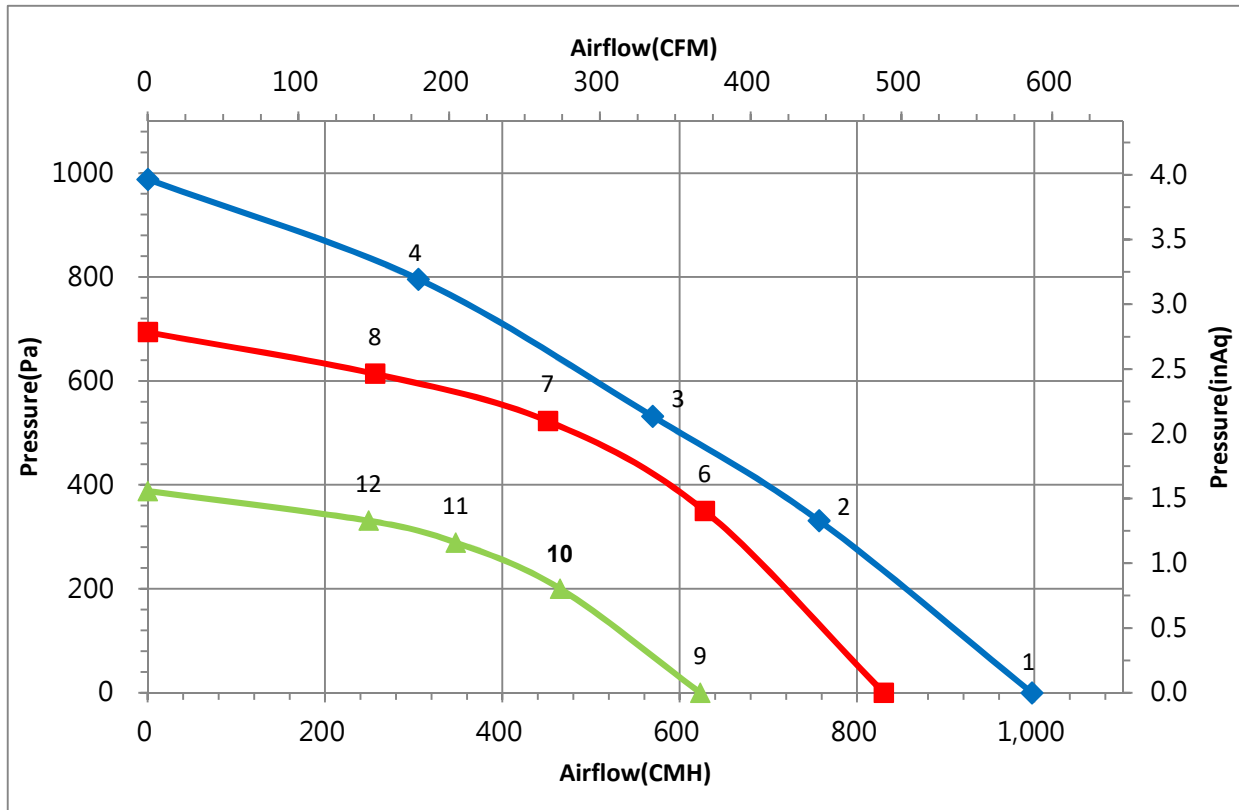
Input Side	
Nominal Voltage	1~ 230Vac 50/60Hz
Input Source	1~ 200Vac - 240Vac
Power @ Free air	172 W
Power @ Max. load	185 W
Output Side	
Speed (RPM)	4150
Qmax. (CMH / CFM)	997 / 587
Pmax. (Pa / inAq)	988 / 3.97
Noise (dB-A) @ Qmax.	76.5
Functions	
Control input 0-10VDC / PWM pattern.	
Output +10VDC ($\pm 10\%$), max. 5mA.	
Locked rotor protection, Soft start.	

Physical	
Rotation Direction	CW, Seen on rotor
Material (Impeller / Frame)	Plastic / Aluminum
Bearing system	Ball bearings
Weight (kg)	1.2
Electrical leads	Lead wire
Environmental	
Operating temperature range	-25 ~ +60 °C
Storage temperature range	-40 ~ +80 °C
Safety	
Safety	UL; cUL; TUV (in progress)
IP Level	IP54
EMC	EN61000-6-1/3 (in progress)
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.

(1) Base on installation conditions, ferrite core maybe required on the connection line for the application.

P & Q curves



Measure data:

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	Lp [dB(A)]
1	0	997	4612	172	1.13	76.5
2	331	757	4277	175	1.14	72.5
*3	532	569	4146	175	1.14	71.0
4	796	305	4403	175	1.15	75.5
5	0	830	3847	103	0.71	73.5
6	350	628	3853	137	0.92	70.0
7	523	451	3854	138	0.93	71.5
8	614	256	3859	118	0.81	72.0
9	0	623	2907	47	0.36	67.0
10	200	465	2904	60	0.44	63.5
11	289	347	2900	63	0.45	63.0
12	331	249	2907	56	0.42	65.5

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:

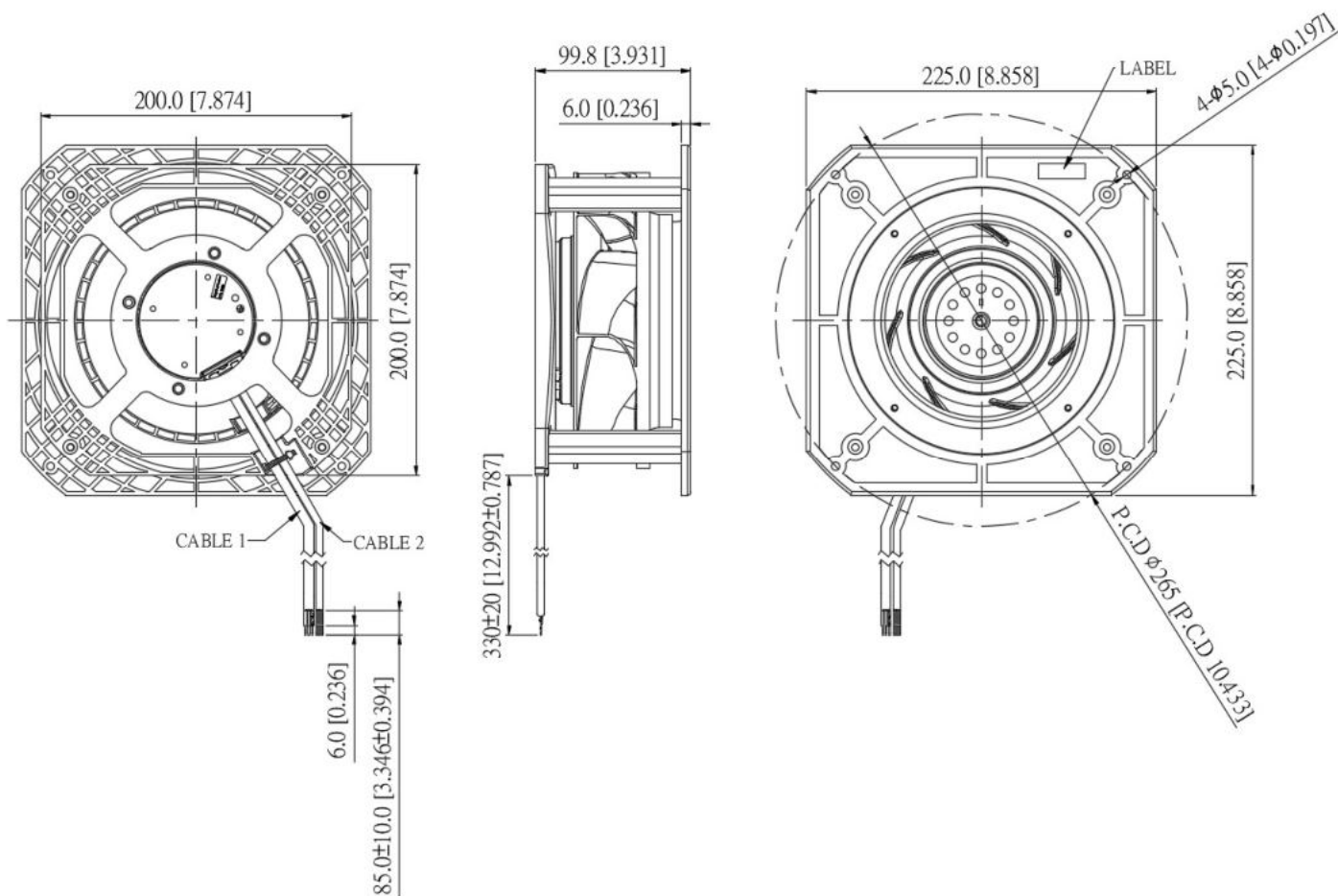
	Actual	2015
Over all Eff (%)	54.5	43.5
Eff Grade N	73.0	62.0
Power (kW)	0.175	
Air flow (CMH)	569	
Pressure (Pa)	532	
Speed (RPM)	4150	

Dimension drawing

Label :



Fan :

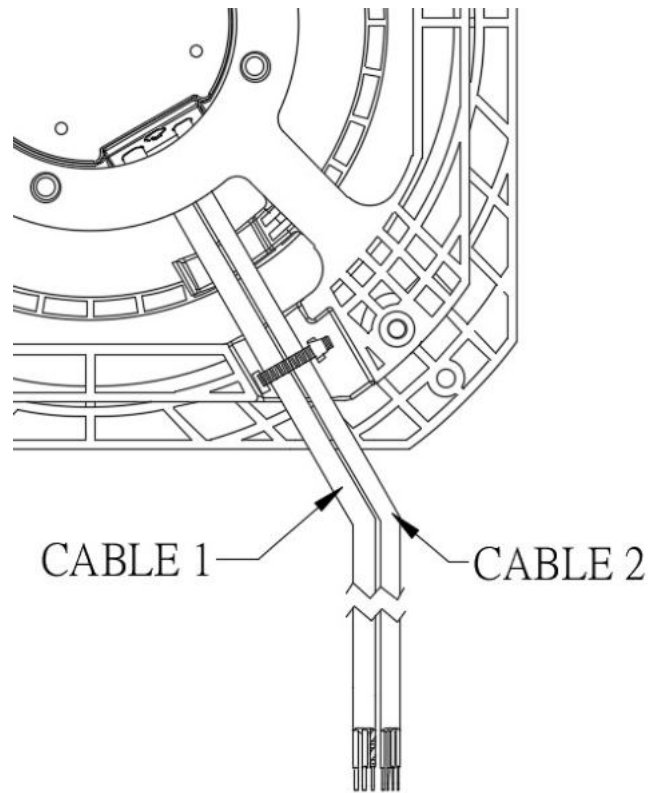


Note :

1. Depth of screw: 5mm (max.).
2. Depth of screw: 10mm (max.).

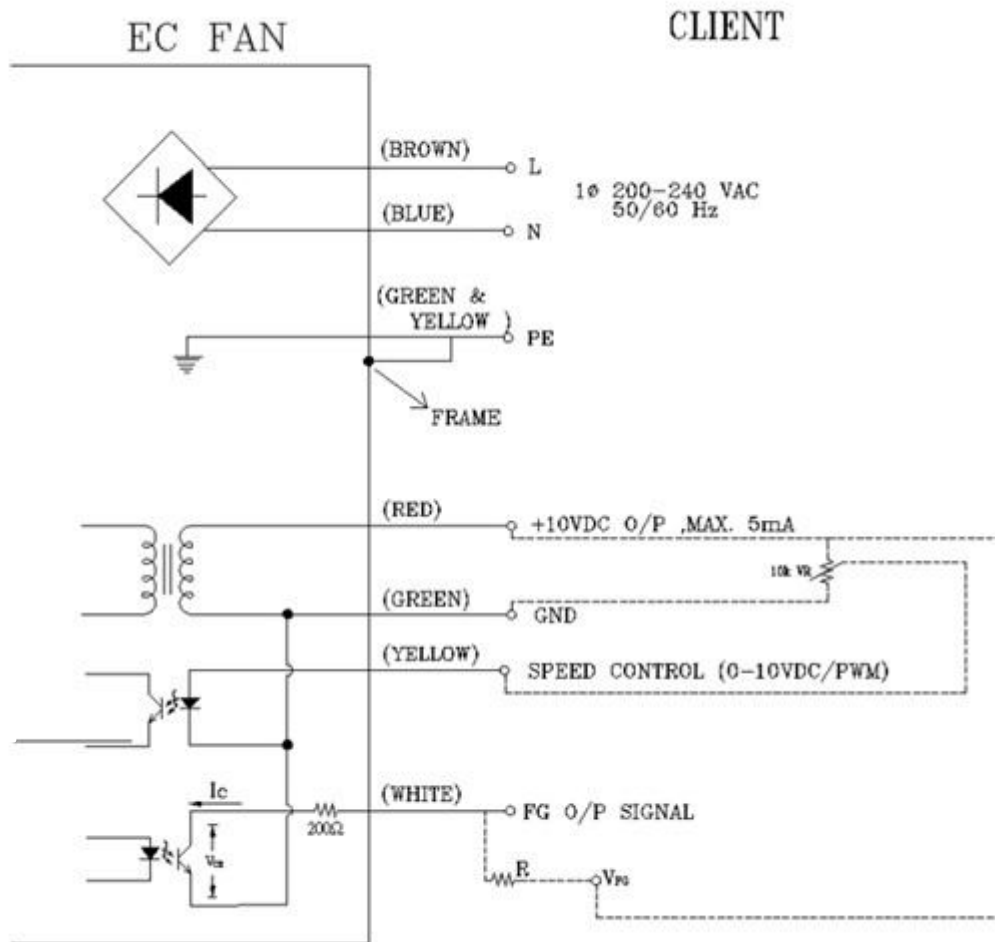
UNIT : mm[INCH]

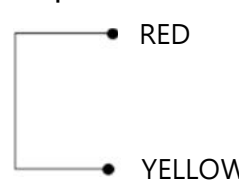
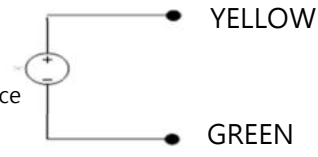

Definition of terminal block

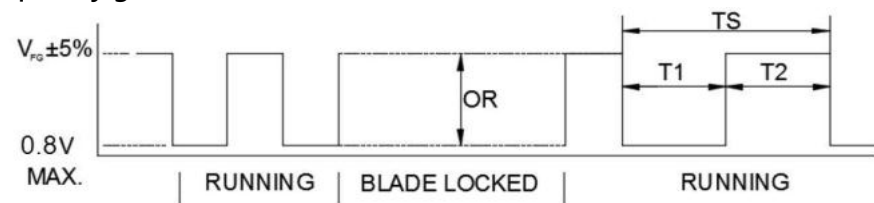


Cable	Wire Type	Color	Functions
1	UL2464 18#AWG	Brown	Line/ AC main
		Blue	Neutral/AC main
		Green / Yellow	Protective Earth
2	UL2464 24#AWG	Green	Ground
		Red	+10V output
		White	F00
		Yellow	0-10VDC / PWM

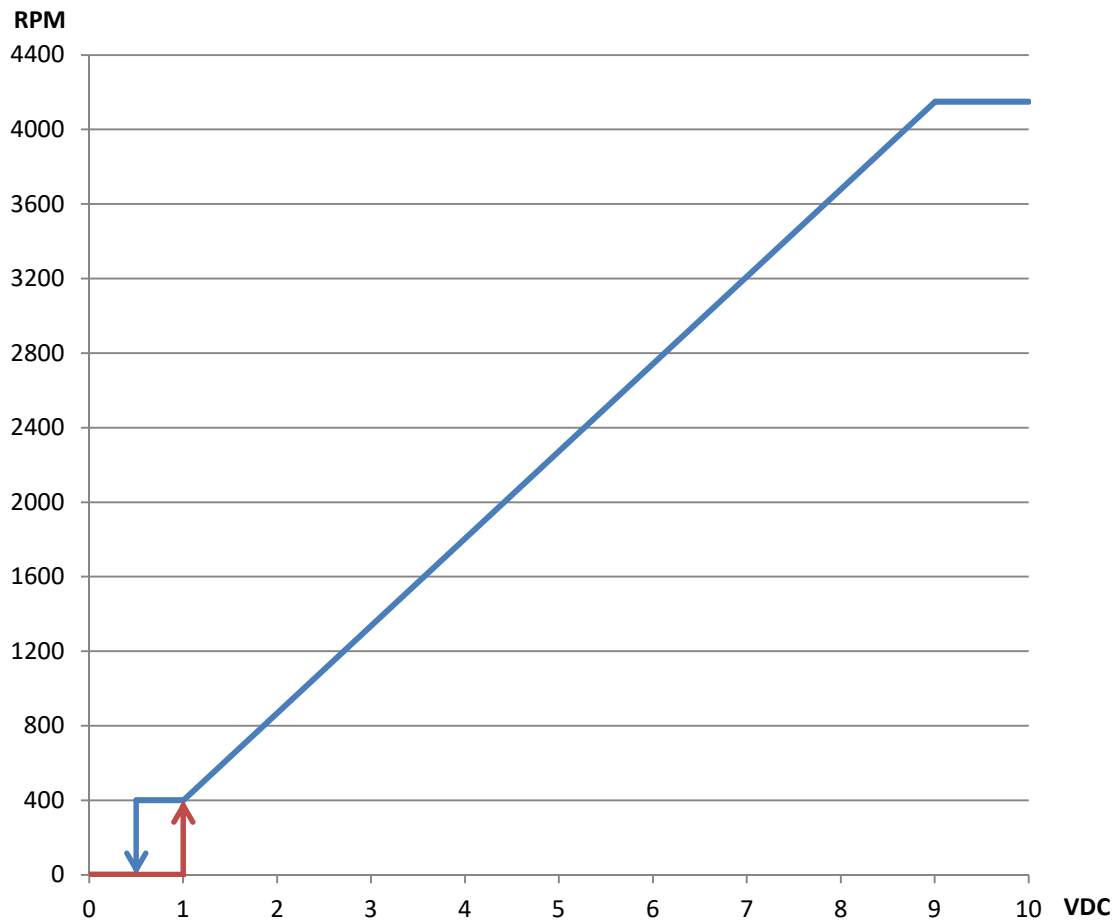
Lead wire connection:



Speed setting	
<p>Full Speed</p> 	<p>Short RED & YELLOW Fan will run full speed.</p>
<p>Voltage Control</p> 	<p>Use voltage source support 0~10VDC voltage DC+ : connect to YELLOW DC - : connect to GREEN -Voltage higher than 1.0 VDC, fan start up. -Voltage lower than 0.5 VDC , fan stop</p>
<p>PWM Control</p> 	<p>PWM duty control PWM amplitude is 10VDC(+/-5%) Frequency Range is 100Hz ~ 100kHz -PWM duty higher than 10%, fan start up · -PWM duty lower than 5%, fan stop ·</p>

Signal function										
<p>Voltage/PWM control</p>	<p>The speed comparison will control level.</p> <table border="1"> <thead> <tr> <th>Voltage (V)</th> <th>PWM(%)</th> <th>Speed (RPM)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>10</td> <td>99</td> <td>4150⁽¹⁾ ±5%</td> </tr> </tbody> </table> <p>(1) Reference point 3^(*) in P&Q curve page.</p>	Voltage (V)	PWM(%)	Speed (RPM)	0	0	0	10	99	4150 ⁽¹⁾ ±5%
Voltage (V)	PWM(%)	Speed (RPM)								
0	0	0								
10	99	4150 ⁽¹⁾ ±5%								
<p>FG</p>	<p>$V_{CE(sat)} = 0.8V \text{ MAX.}$ $V_{FG} = 30.0V \text{ MAX.}$ $I_C = 5mA \text{ MAX.}$ $R \geq V_{FG} / I_C$</p> <p>Frequency generator waveform</p>  <p style="text-align: center;"> RUNNING BLADE LOCKED RUNNING</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>$N=R.P.M$</td> <td>1 PULSE PER REVOLUTION</td> </tr> <tr> <td>$TS=60/N(SEC)$</td> <td>$T1=T2=1/2 TS$</td> </tr> </table>	$N=R.P.M$	1 PULSE PER REVOLUTION	$TS=60/N(SEC)$	$T1=T2=1/2 TS$					
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Control Voltage VS. RPM Curve



Voltage (VDC), PWM duty (%) 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	%

Note: If the fan is used on heavy load, the speed will be limited by power consumption.

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: Plastic (PA6+30%GF)
- ② Rotor: Steel
- ③ Pillow: Die-cast aluminum
- ④ Bottom Cover: Die-cast aluminum

