



## Specification For Approval

Customer : \_\_\_\_\_  
Description : \_\_\_\_\_ EC FAN \_\_\_\_\_  
Customer Part No. : \_\_\_\_\_ Rev : \_\_\_\_\_  
Delta Model No. : \_\_\_\_\_ GTM023EUG10R-V \_\_\_\_\_ Rev : 03  
Safety Model No. : \_\_\_\_\_ GTM023EUG10 \_\_\_\_\_  
Sample Issue No. : \_\_\_\_\_  
Sample Issue Date : \_\_\_\_\_ 04/07/2020 \_\_\_\_\_

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

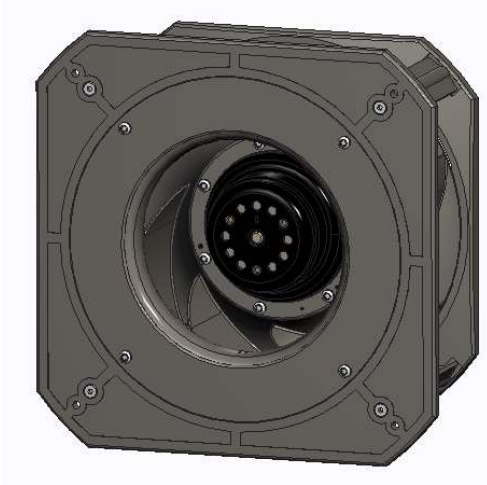
TEL : +886-3-359-1968

FAX : +886-3-359-1991

# Electronically Commutated (EC) Fan

## Centrifugal Fan

270 x 270 x 126 mm



Delta Electronics, Inc.  
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 Industrial Zone, Taoyuan City, 33341,  
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[www.deltaww.com](http://www.deltaww.com)



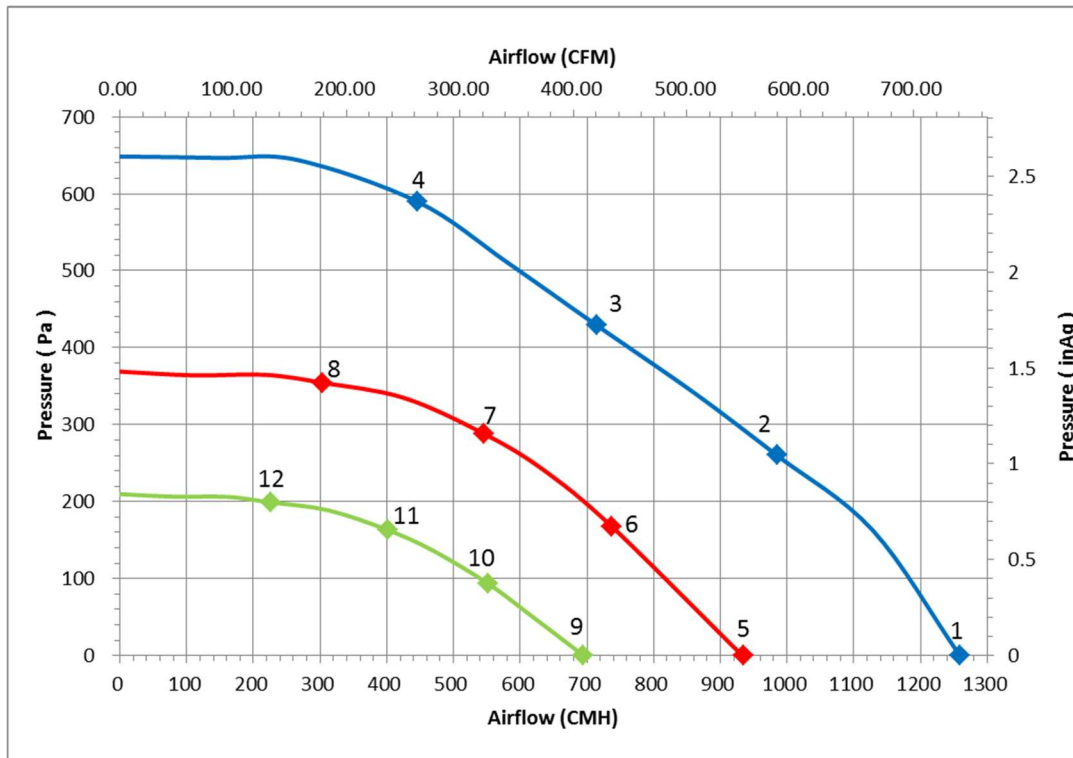
### Technical features

Input Side	
Nominal Voltage	1~ 230Vac 50/60Hz
Input Source	1~ 200Vac - 240Vac
Power @ Free air	135 W
Power @ Max. load	180 W
Power Factor	>0.95 @230Vac max load
Output Side	
Speed (RPM)	3000
Qmax. (CMH / CFM)	1260 / 741
Pmax. (Pa / inAq)	650 / 2.6
Noise (dB-A) @ Qmax.	72.0
Functions	
Control input 0-10VDC or PWM pattern.	
Output +10VDC(±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)	2.4
Electrical leads	Lead wire
Environmental	
Operating temperature range	-25 ~ +60 °C
Storage temperature range	-40 ~ +80 °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 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



Measure data:

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	Lp [dB(A)]
1	0	1259	3210	136	0.60	72.0
2	260	985	3095	176	0.77	70.0
3	429	715	2986	176	0.78	68.0
4	589	447	3104	176	0.77	72.0
5	0	935	2408	64	0.29	65.5
6	167	738	2403	87	0.39	64.5
7	288	545	2400	95	0.43	63.0
8	354	304	2400	83	0.38	64.0
9	0	695	1808	32	0.18	60.5
10	93	552	1801	42	0.21	58.5
11	163	401	1811	46	0.22	56.5
12	199	226	1807	41	0.20	57.0

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:

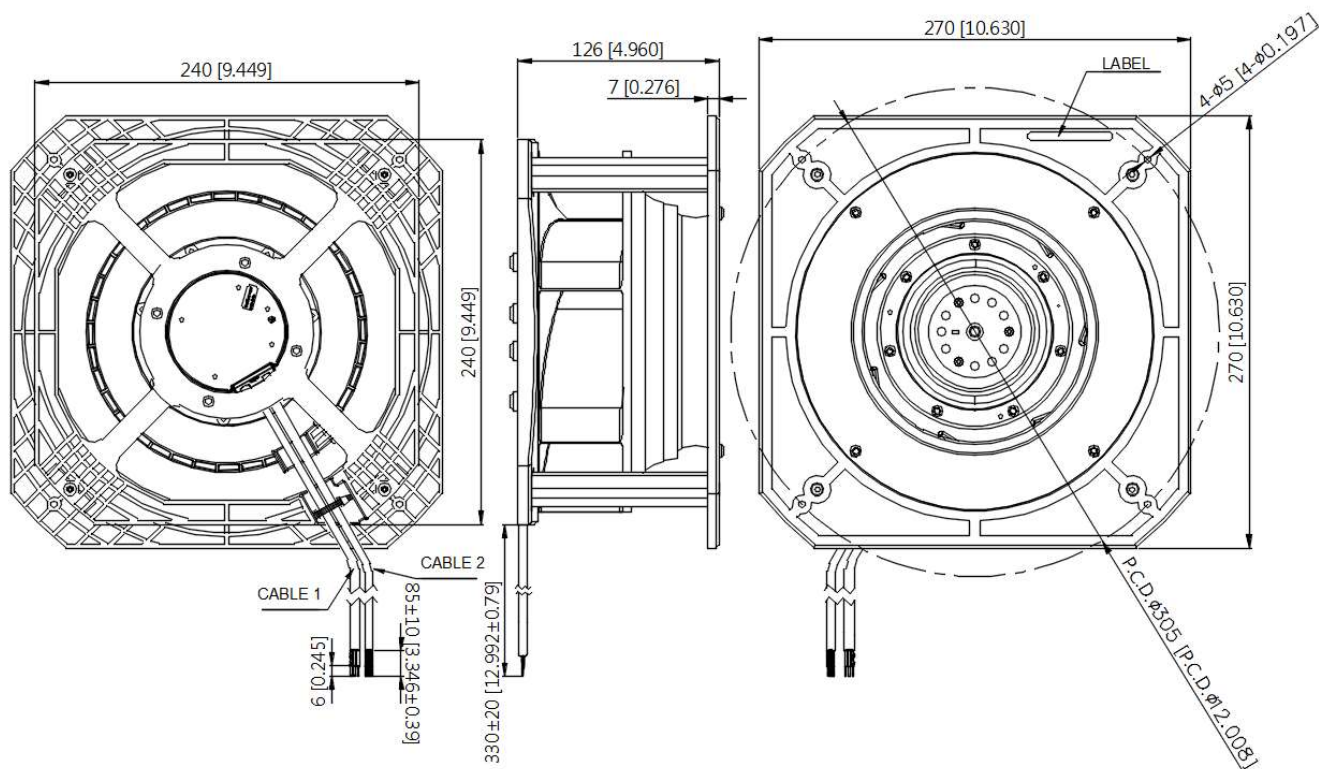
	Actual	2015
Over all Eff (%)	55.0	43.6
Eff Grade N	73.4	62.0
Power (kW)	0.176	
Air flow (CMH)	715	
Pressure (Pa)	429	
Speed (RPM)	2986	

Dimension drawing

Label :

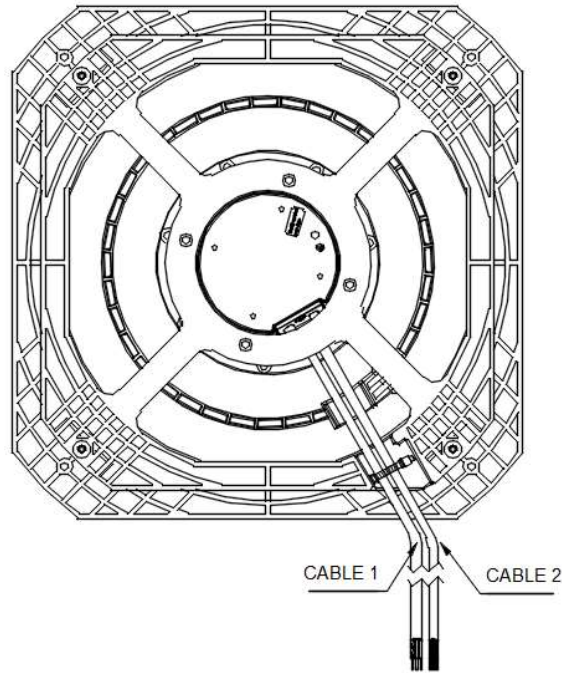


Fan :



UNIT : mm [INCH]

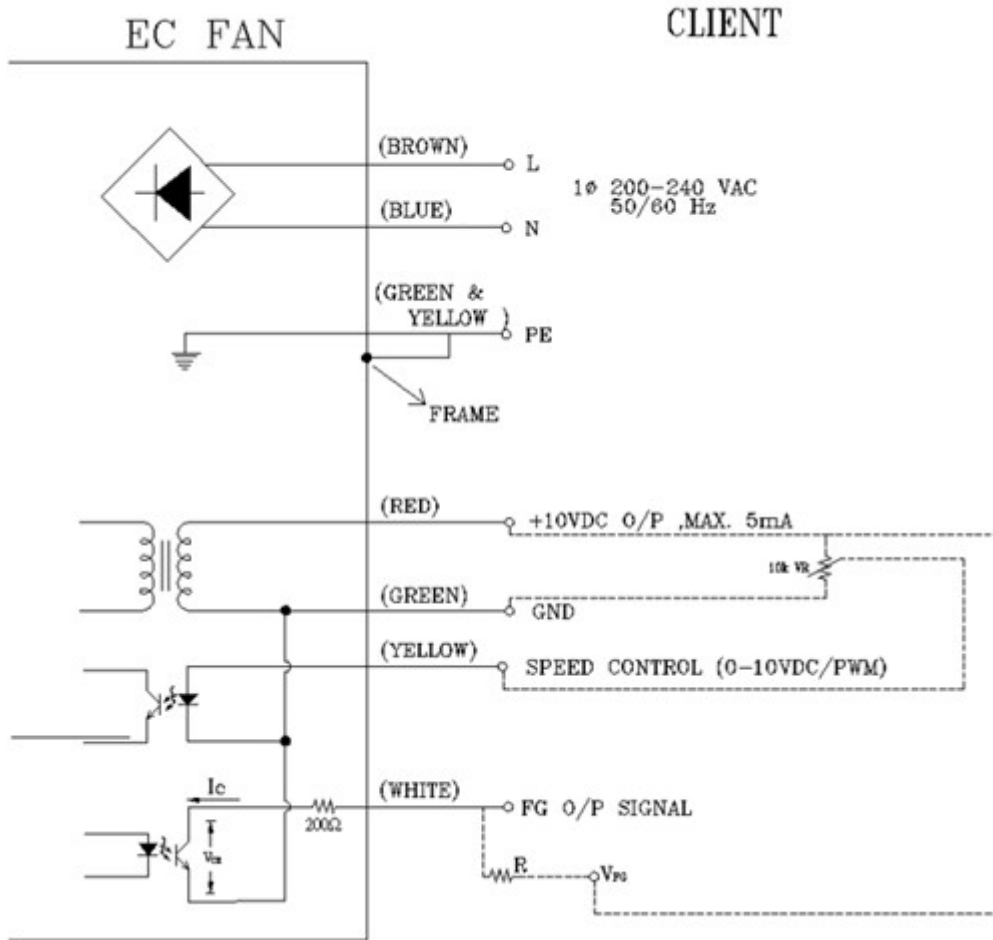
Definition of cable

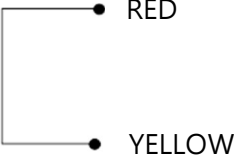
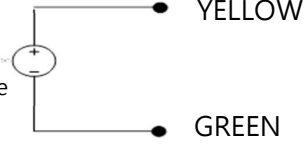
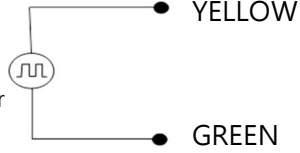


Cable	Wire Type	Color	Functions
1	UL2464 18#AWG	Brown	Line/ AC main
		Blue	Neutral/AC main
		Green / Yellow	Protective Earth

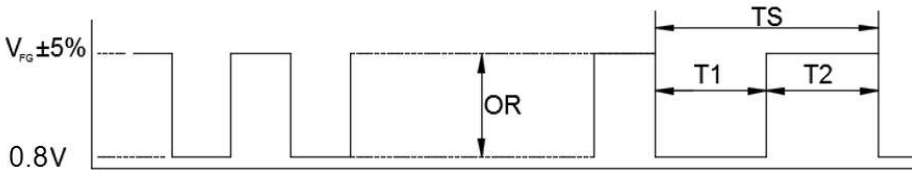
Cable	Wire Type	Color	Functions
2	UL2464 24#AWG	Green	Ground
		Red	+10V output
		White	F00
		Yellow	0-10VDC / PWM

Lead wire connection



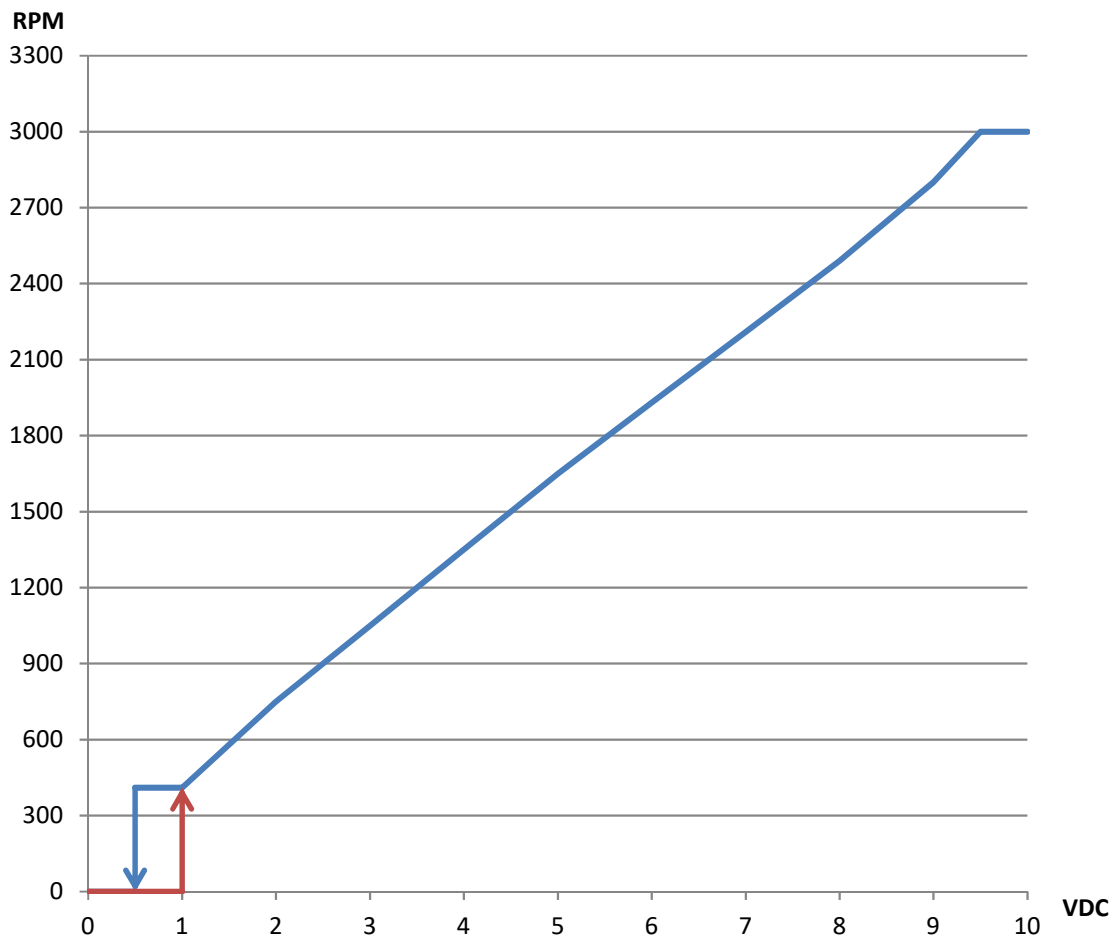
Speed setting	
<p><b>Full Speed</b></p> 	<p><b>Short RED &amp; YELLOW</b> Fan will run full speed.</p>
<p><b>Voltage Control</b></p> 	<p><b>Use voltage source support 0~10VDC voltage</b> DC+ : connect to YELLOW DC - : connect to GREEN -Voltage higher than 1.0 VDC, fan start up. -Voltage lower than 0.5 VDC , fan stop</p>
<p><b>PWM Control</b></p> 	<p><b>PWM duty control</b> 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>

**Note : The PWM pin supply voltage must be less than 11VDC.**

Signal function																
Voltage/PWM control	<p>The speed comparison will control level</p> <table border="1"> <thead> <tr> <th>Voltage (V)</th> <th>PWM(%)</th> <th>Speed (RPM) (REF)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>10</td> <td>410</td> </tr> <tr> <td>5</td> <td>50</td> <td>1650</td> </tr> <tr> <td>10</td> <td>99</td> <td>3000</td> </tr> </tbody> </table>	Voltage (V)	PWM(%)	Speed (RPM) (REF)	0	0	0	1	10	410	5	50	1650	10	99	3000
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0	0	0														
1	10	410														
5	50	1650														
10	99	3000														
FG	<p> <math>V_{CE(sat)} = 0.8V \text{ MAX.}</math>      <math>V_{FG} = 30.0V \text{ MAX.}</math>  <math>I_C = 5mA \text{ MAX.}</math>      <math>R \geq V_{FG} / I_C</math> </p> <p>Frequency generator waveform</p>  <p style="text-align: center;"> <span style="margin-right: 20px;">RUNNING</span> <span style="margin-right: 20px;">BLADE LOCKED</span> <span>RUNNING</span> </p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td><math>N = \text{R.P.M}</math></td> <td>1 PULSE PER REVOLUTION</td> </tr> <tr> <td><math>TS = 60/N(\text{SEC})</math></td> <td><math>T1 = T2 = 1/2 TS</math></td> </tr> </tbody> </table>	$N = \text{R.P.M}$	1 PULSE PER REVOLUTION	$TS = 60/N(\text{SEC})$	$T1 = T2 = 1/2 TS$											
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## Control Voltage VS. RPM Curve



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

Voltage	0	0.5	1	2	3	4	5	6	7	8	9	10	VDC
PWM duty	0	5	10	20	30	40	50	60	70	80	90	100	%