Specification For Approval

Customer : _____

Description : EC FAN

Customer Part No. : _____ Rev : ____

Delta Model No. : GTM050NUT34R Rev : 04

Safety Model No. : UL：GTB050NUT34、TUV：MU150HA3FC6

Sample Issue No. : _____

Sample Issue Date : 11/21/2019

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

Approved by : _____

Date : _____

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Smarter. Greener. Together.

GTM050NUT34R

Electronically Commutated (EC) Fan

Centrifugal Fan

630 x 630 x 412.5 mm

DELTA ELECTRONICS, INC.
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Technical features

Input Side	
Nominal Voltage	3~ 400Vac 50/60Hz
Input Source	3~ 380Vac - 480Vac
Power @ Free air	2430 W
Power @ Max. load	3100 W
Output Side	
Speed (RPM)	1820
Qmax. (CMH / CFM)	12221 / 7193
Pmax. (Pa / inAq)	1104 / 4.43
Noise (dB-A) @ Qmax.	86.4
Functions	
Active power factor correction	
Control input 0-10VDC / PWM / 4-20mA.	
Output +10VDC (±10%), max. 10mA.	
Control voltage output: 0-10VDC.	
RS485 control bus	
Alarm relay, Locked rotor protection, Soft start.	
Speed telling, Frequency generator signal.	
Voltage / Current monitoring.	

Physical	
Rotation Direction	CW, Seen on rotor
Material (Impeller / Frame)	Aluminum sheet / Die-cast aluminum
Bearing system	Ball bearings
Weight (kg)	47
Electrical leads	Via terminal block
Environmental	
Operating temperature range	-25 ~ +60 ℃
Storage temperature range	-40 ~ +70 ℃
Safety	
Safety	UL , cUL , TUV
IP Level	IP54
EMC	EN61000-6-2/3 , EN61000-3-2/3 (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 ℃ / 15 ~ 65 %RH

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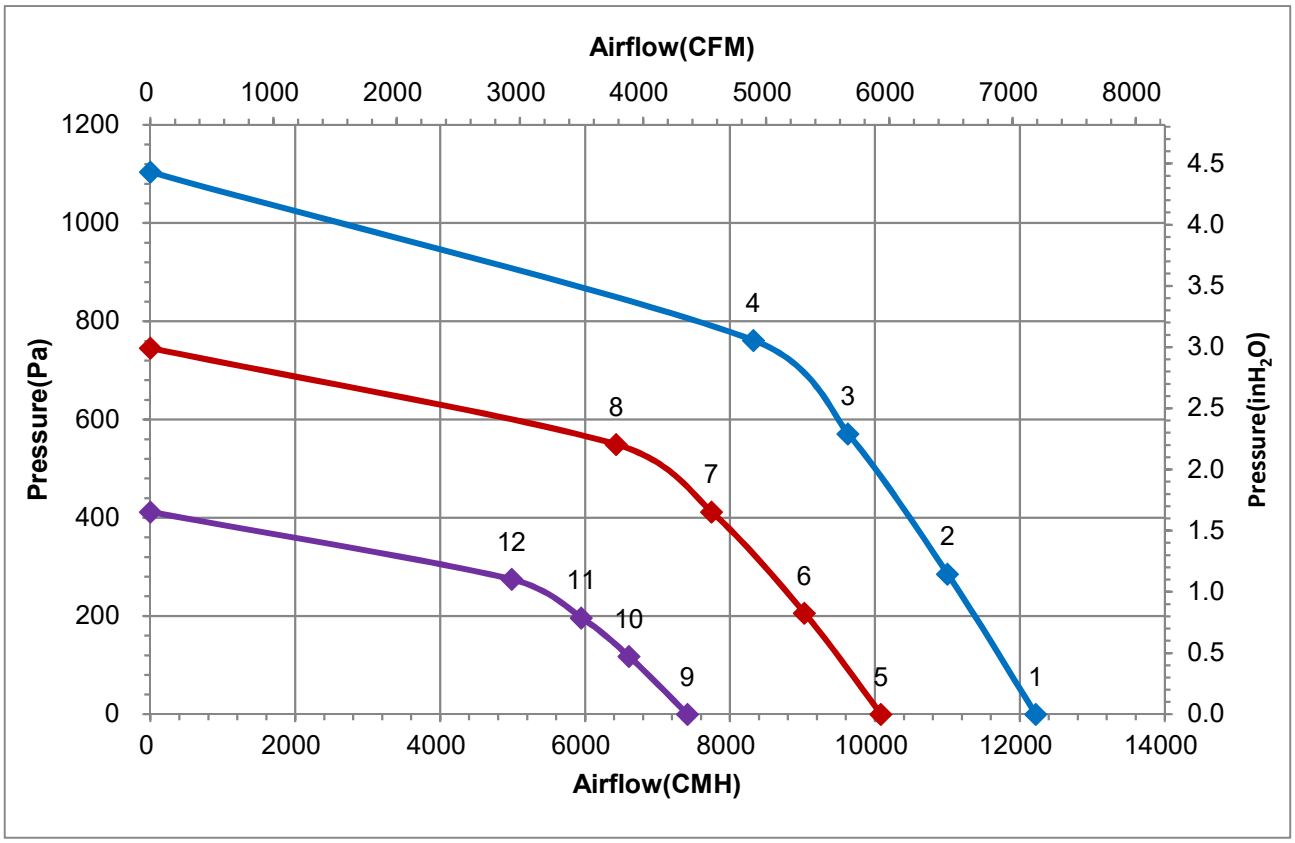
P & Q curves



Measure data:

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	Lp [dB(A)]
1	0	12221	1820	2216	3.31	86.4
2	286	11005	1820	2650	3.96	
3	571	9631	1820	2983	4.41	
4	761	8324	1820	3100	4.59	
5	0	10085	1500	1296	2.18	81.2
6	206	9028	1500	1533	2.53	
7	412	7746	1500	1723	2.75	
8	549	6431	1500	1754	2.79	
9	0	7415	1100	570	1.00	73.2
10	118	6607	1100	666	1.18	
11	196	5950	1100	727	1.29	
12	275	4989	1100	752	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.

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Dimension drawing

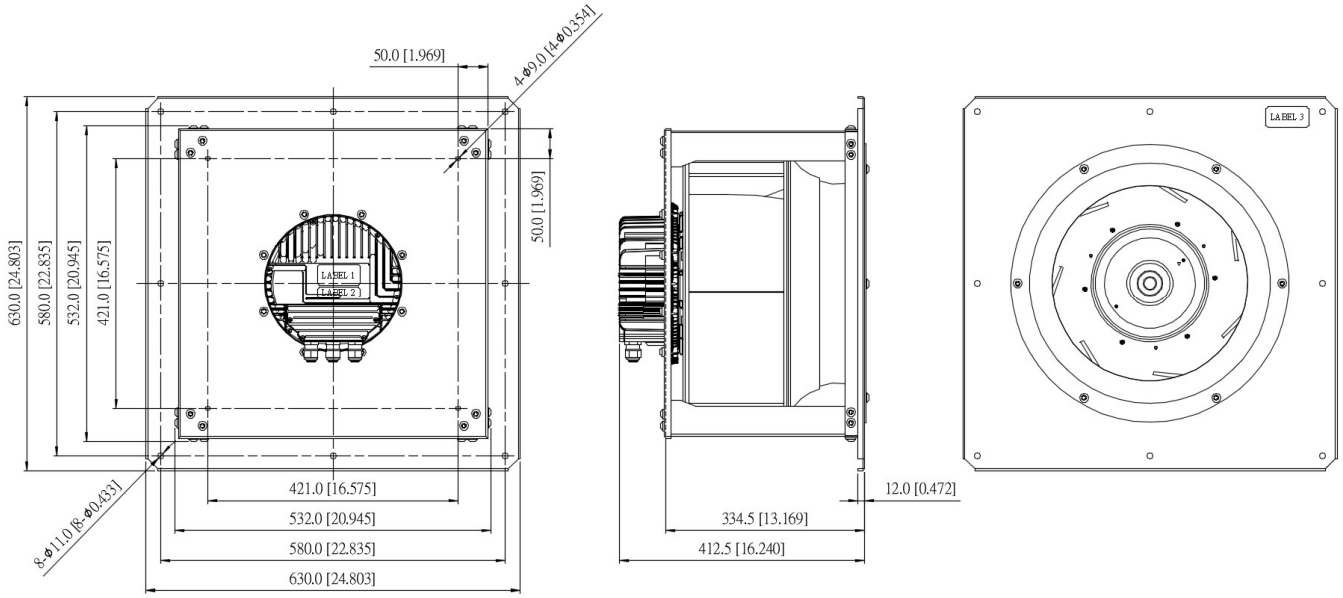
Label :

Label 1

Label 2

Label 3

Fan :



UNIT : mm[INCH]

Note :

1. Cable diameter : ϕ7.0 ~ ϕ12.7mm.
2. Open the cover and refer to definition of terminal block.

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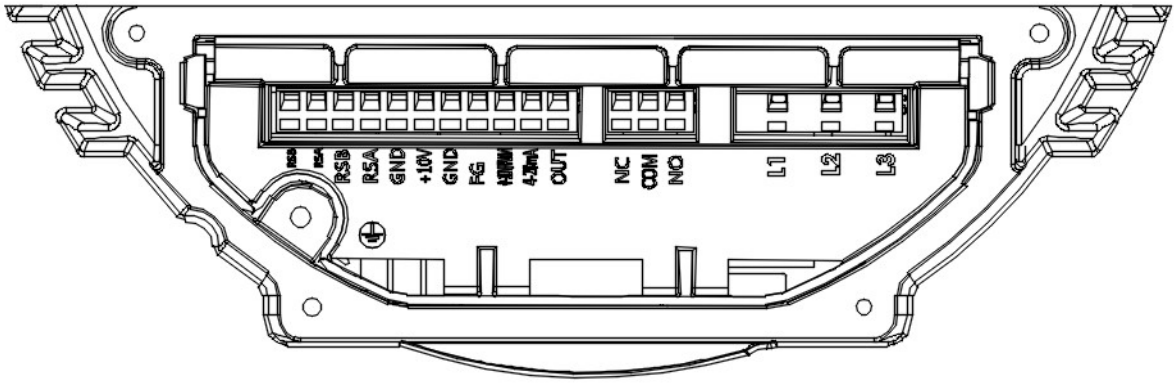
Definition of terminal block



	Text	Functions
Power	L1	AC main (3~ 380-480VAC)
	L2	AC main (3~ 380-480VAC)
	L3	AC main (3~ 380-480VAC)
Status	NC	Alarm relay, open by failure
	COM	Alarm relay, common (2A/250VAC)
	NO	Alarm relay, close by failure
Signal	RSB	RS485-B
	RSA	RS485-A
	RSB	RS485-B
	RSA	RS485-A
	GND	Ground
	+10V	+10V output, MAX 10mA (For external potentiometer)
	GND	Ground
	FG	Frequency generator (FG) signal
	0-10V/PWM	Speed control, input 0-10VDC
	4-20mA	Speed control, input 4-20mA
	OUT	Control voltage output 0-10VDC (For external potentiometer)

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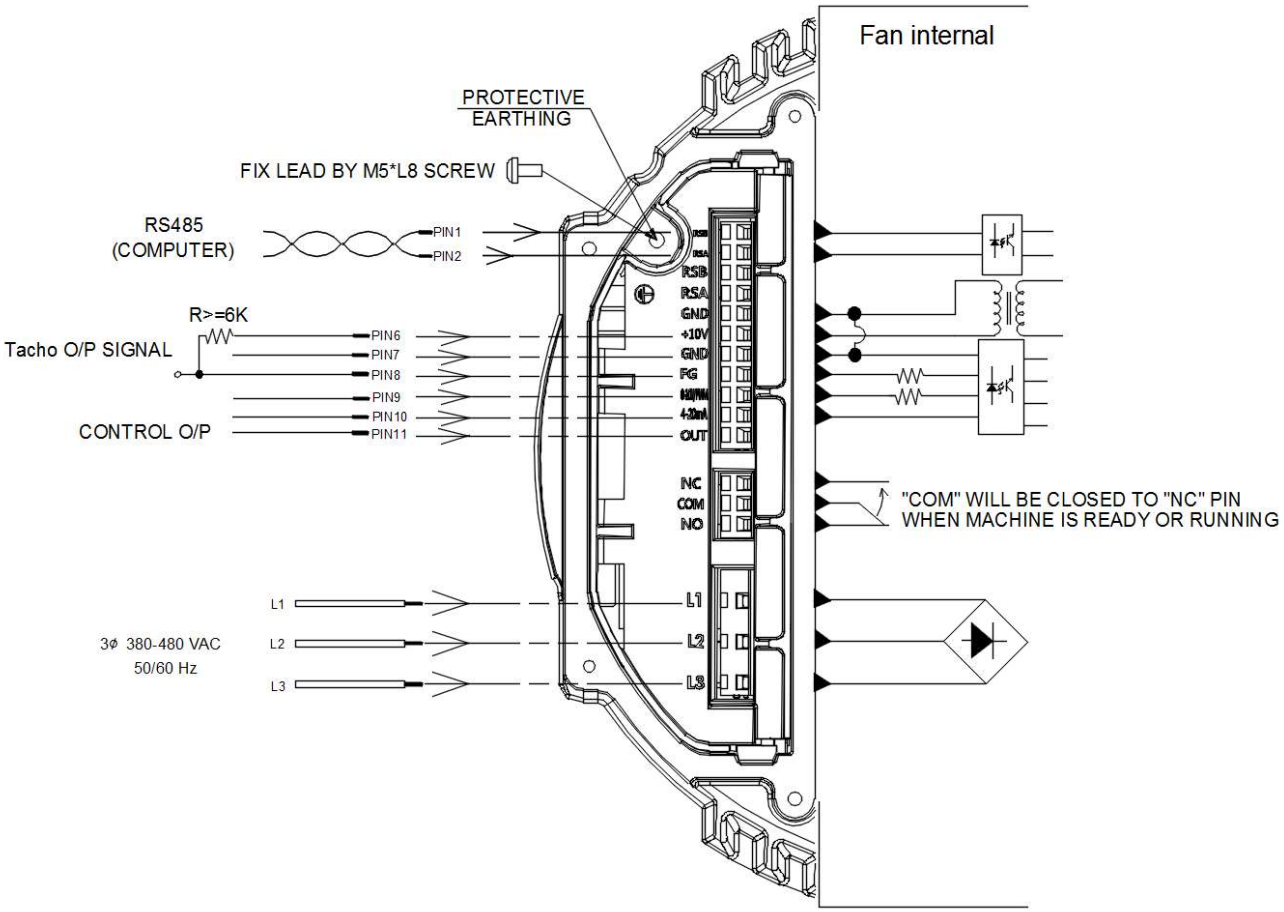
Lead wire connection:



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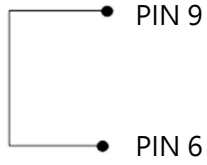
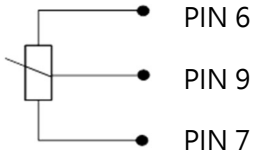
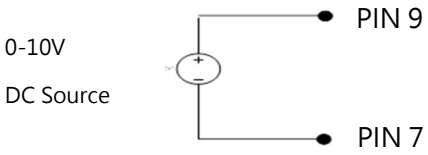
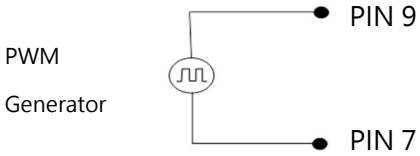
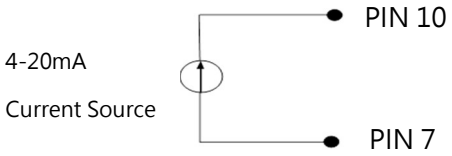
Speed setting	
Full Speed  	**Short PIN6 & PIN9** Fan will run full speed.
Voltage Control A  	**Connector 1-10kΩ variable resistor** Between **+10VDC** with **GND** and **0-10V/PWM** Turn the variable resistor，can change the ‘**0-10V/PWM**’ voltage (0...10V)。
Voltage Control B  	**Use voltage source support 0~10VDC voltage** DC+ : connector PIN9(+) DC - : connector PIN7(-)
PWM Control  	**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。
Current Control  	**4~20mA Current Control** Open 0-10V/PWM PIN - 4.5 mA → Fan Stop - 6.0 mA → Fan Start up - 19.5 mA → Maximum Speed

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<table>
<tr><th colspan="2">Signal function</th></tr>
<tr><td>RS485 control function</td><td>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.</td></tr>
<tr><td>Control O/P</td><td>The analog signal level is the derivative of current control level.
<table>
<tr><th>Current (mA)</th><th>Control O/P (VDC) (REF)</th></tr>
<tr><td>4.0</td><td>0</td></tr>
<tr><td>6.3</td><td>1.60</td></tr>
<tr><td>14.0</td><td>6.03</td></tr>
<tr><td>19.5</td><td>9.19</td></tr>
</table></td></tr>
<tr><td>Voltage/PWM control</td><td>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>1.5</td><td>15</td><td>137 ± 50 RPM</td></tr>
<tr><td>6.0</td><td>60</td><td>1144 ± 8%</td></tr>
<tr><td>9.5</td><td>95</td><td>1820 ± 5%</td></tr>
</table></td></tr>
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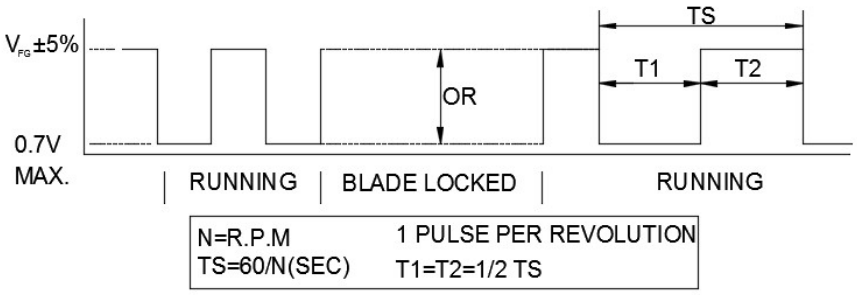
<tr><td>19.5</td><td>1820 ± 5%</td></tr>
</table></td></tr>
<tr><td>Alarm state</td><td>NC and COM will OPEN; NO and COM will CLOSE.</td></tr>
<tr><td>FG</td><td>V_{CE}(sat) = 0.7V MAX. V_{FG} = 30.0V MAX.
I_C = 5mA MAX. $R \geq V_{FG} / I_C$
Frequency generator waveform
 
</td></tr>
</table>

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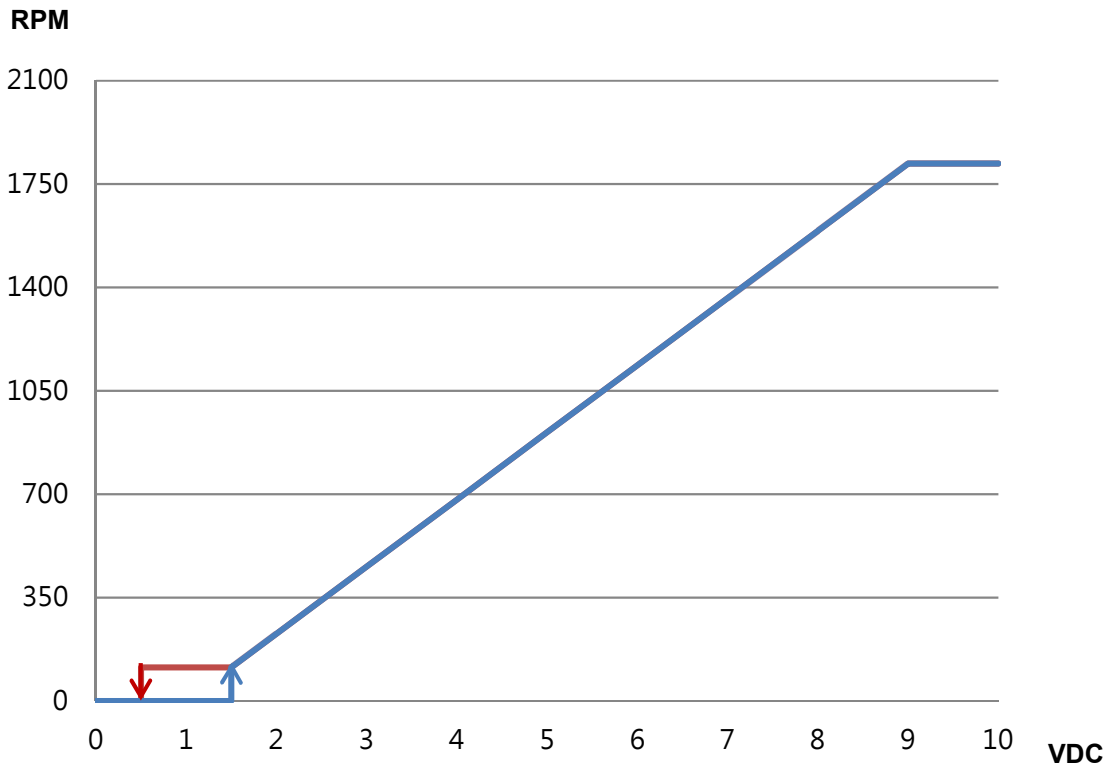
Control Voltage VS. RPM Curve



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	10	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

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