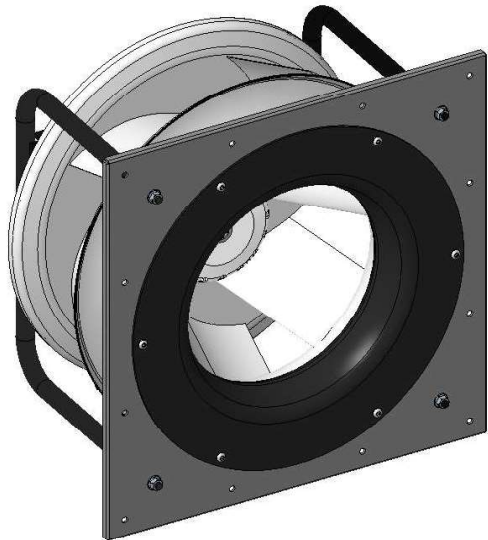


## Electronically Commutated (EC) Fan

Centrifugal Fan

730 x 730 x 493 mm



Delta Electronics (Dongguan) Co., Ltd. certifies that the GTM063PBV41R-V003 shown herein is license to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.



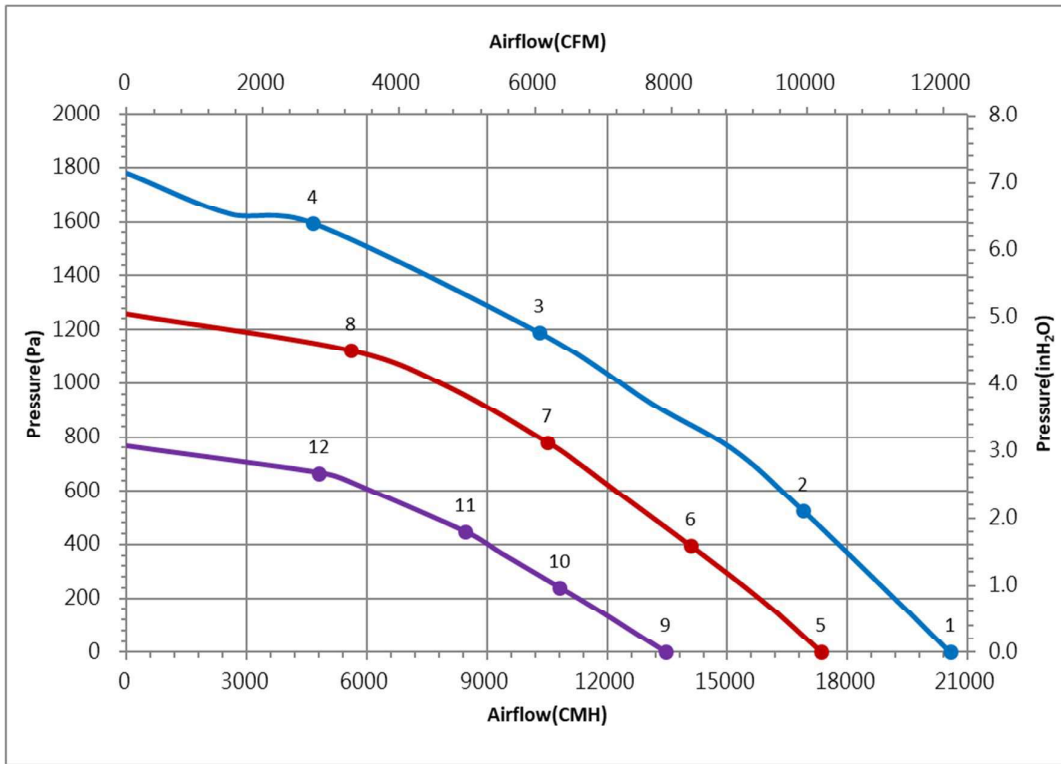
### Technical features

Input Side	
Nominal Voltage	3~ 400V <sub>ac</sub> 50/60Hz
Input Source	3~ 380V <sub>ac</sub> - 480V <sub>ac</sub>
Power @ Free air	2350 W
Power @ Max. load	5200 W
Output Side	
Speed (RPM)	1845
Qmax. (CMH / CFM)	20560 / 12094
Pmax. (Pa / inAq)	1779 / 7.14
Noise (dB-A) @ Qmax.(LwA)	87
Functions	
Passive power factor correction	
Control input 0-10V <sub>DC</sub> / PWM / 4-20mA.	
Output +10V <sub>DC</sub> (±10%), max. 10mA.	
Control voltage output: 0-10V <sub>DC</sub> .	
RS485 control bus (MODBUS (V2.1) RTU / 9600 8N1)	
Alarm relay, Locked rotor protection, Soft start.	
Voltage / Current monitoring.	

Physical	
Rotation Direction	CW, Seen on rotor
Material (Impeller / Motor Frame)	Aluminum / Die-cast Aluminum
Material (Bracket / Nozzle)	Sheet steel / Sheet steel
Bearing system	Ball bearings
Weight (kg)	70
Electrical leads	Via terminal block
Environmental	
Operating temperature range	-25 ~ +40 °C
Storage temperature range	-40 ~ +70 °C
Safety	
Safety	UL , cUL , CE, UKCA
IP Level	IP55
EMC	EN61000-6-2 , EN61000-6-3
Protection class	I
Insulation class	F
Leakage current	<= 3.5 mA
Motor protection	Over temperature protected
Life expectancy	87,600 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 : AMCA

	P [Pa]	Q [CMH]	N [R.P.M.]	P1 [W]	I [A]	LwA [dB(A)]
1	0	20560	1851	2350	3.63	87
2	528	16880	1849	4480	6.84	84
3	1188	10297	1789	5199	8.07	82
4	1595	4655	1845	4641	7.20	89
5	0	17345	1563	1474	2.27	89
6	396	14076	1564	2711	4.12	85
7	780	10516	1563	3345	5.07	80
8	1122	5591	1564	3039	4.60	83
9	0	13464	1212	743	1.19	88
10	240	10814	1212	1332	2.06	79
11	448	8453	1212	1620	2.48	74
12	666	4806	1212	1533	2.31	75

ErP Directive:

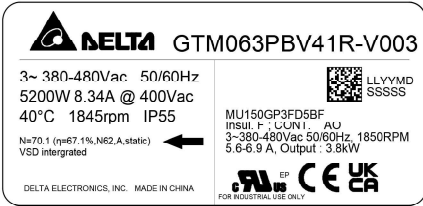
	Actual	2015
Over all Eff (%)	67.1	59.0
Eff Grade N	70.1	62
Power (kW)	5.199	
Air flow (CMH)	10297	
Pressure (Pa)	1188	
Speed (RPM)	1789	

Note :

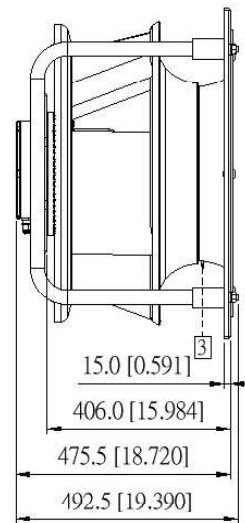
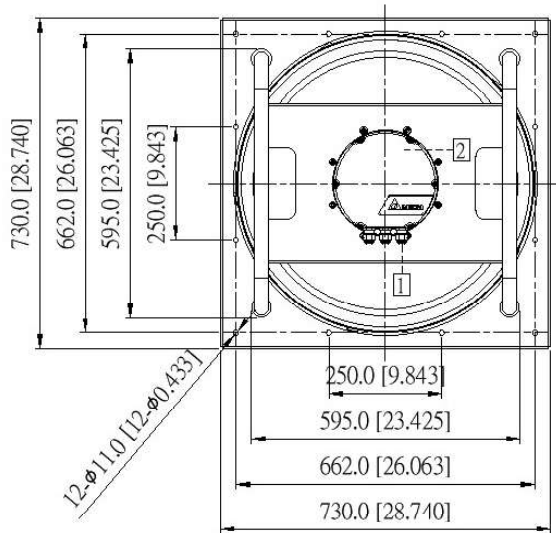
- Input voltage / frequency: 400V / 50Hz-60Hz.
- The PQ curve meets the operating point of the AWS MacGyver system (104 kCFM @3.11 inwg). At this operating point, the fan power is approximately 4.5 kW and has been verified by SSM.

Dimension drawing

Label :



Fan :



UNIT : mm[INCH]

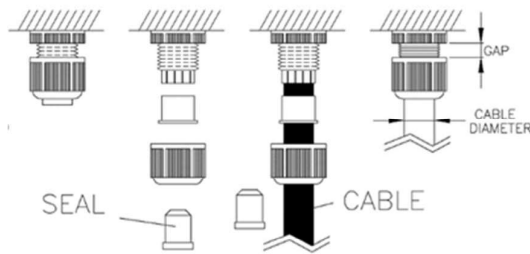


Fig1

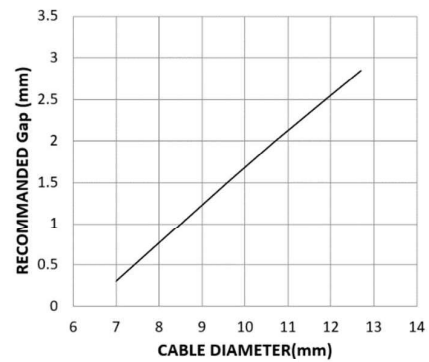
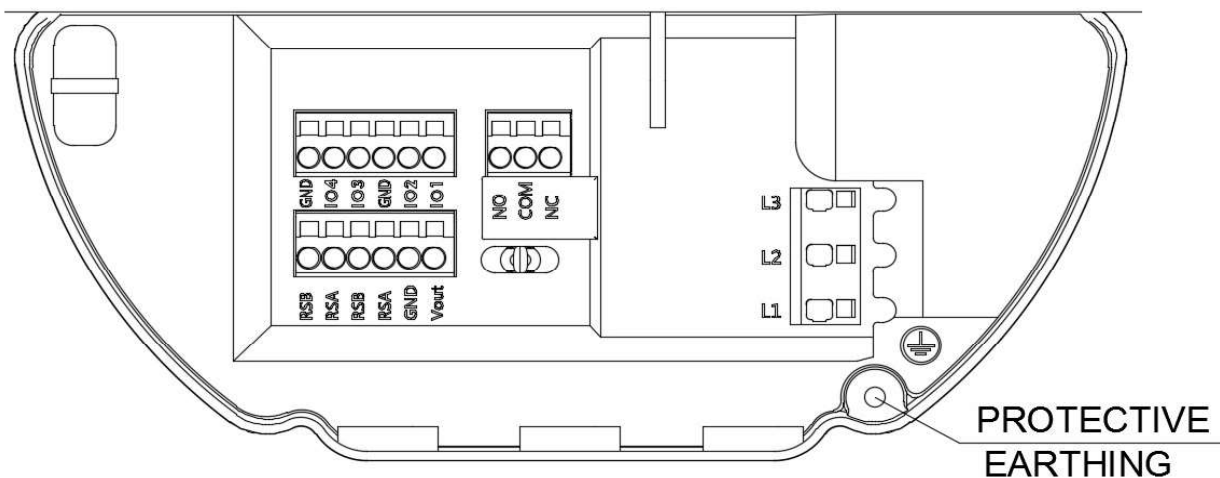


Fig2

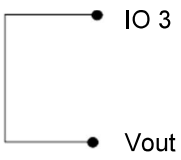
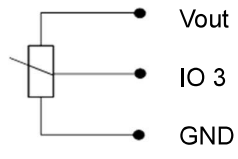
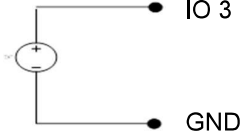
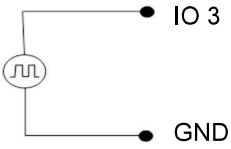
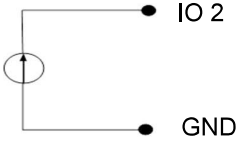
Note :

- 1 Cable diameter :  $\varnothing 7.0 \sim \varnothing 12.7$ mm.
- 2 Open the cover and refer to definition of terminal block, screw tightening torque  $17 \pm 10\%$ kgf-cm.
- 3 Accessory : inlet nozzle (k value = 375), all the performance data are measured with it.

Definition of terminal block

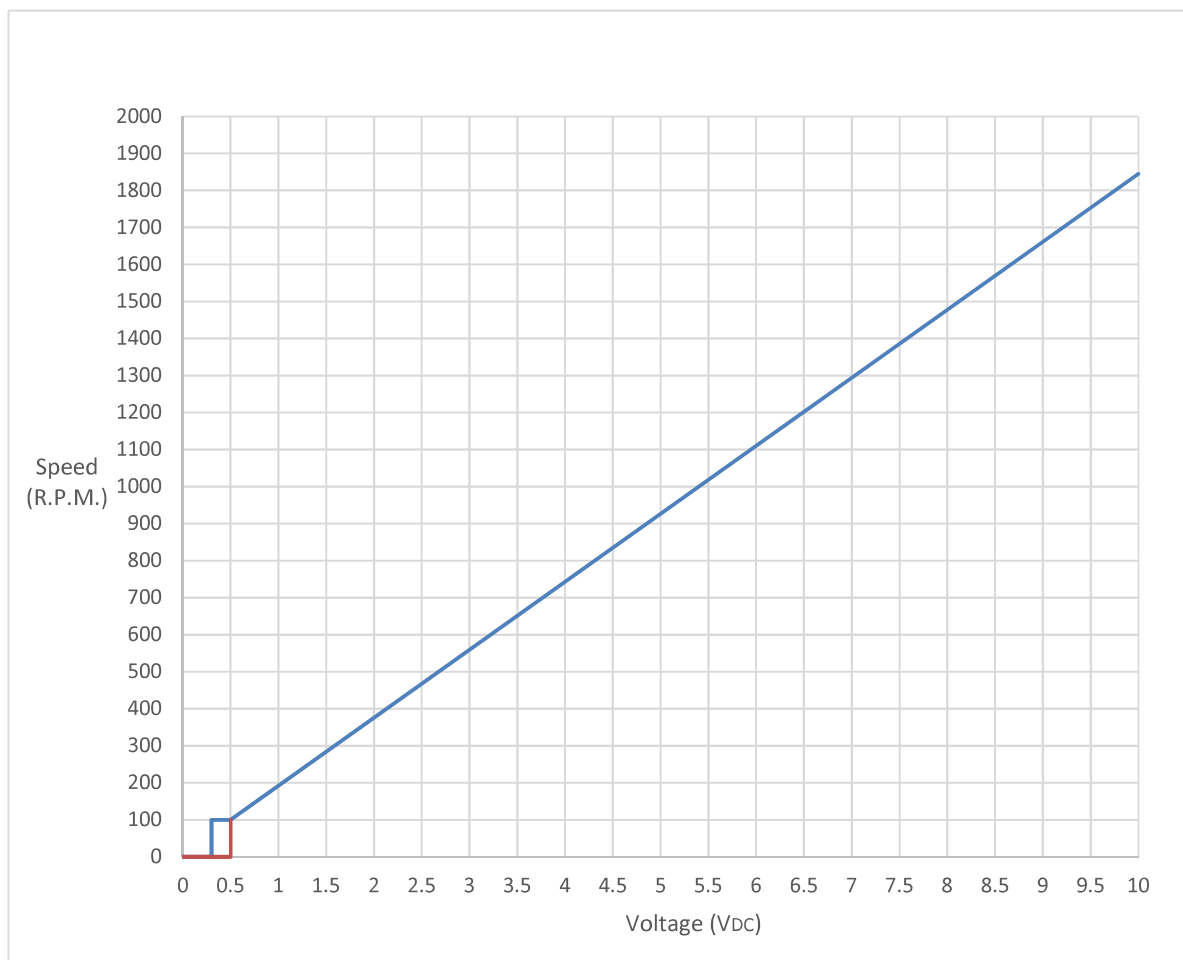


	Text	Functions
Power	L1	AC main (3~ 380-480VAC)
	L2	AC main (3~ 380-480VAC)
	L3	AC main (3~ 380-480VAC)
Status	NC	Alarm relay, open by failure
	COM	Alarm relay, common (2A/250VAC)
	NO	Alarm relay, close by failure
Signal	RSB	RS485-B
	RSA	RS485-A
	RSB	RS485-B
	RSA	RS485-A
	GND	Ground
	Vout	+3.3-24V/800mW output (default: +10V)
	GND	Ground
	IO4	Control voltage output 0-10VDC
	IO3	Speed control, input 0-10VDC/PWM
	GND	Ground
	IO2	Speed control, input 4-20mA
IO1	Frequency generator (FG) signal	

Speed setting	
<p><b>Full Speed</b></p> 	<p><b>Short Vout &amp; IO3</b> Fan will run at full speed.</p>
	<p><b>Connector 1-10kΩ variable resistor</b> Between <b>Vout</b> with <b>GND</b> and <b>IO 3 (0-10V/PWM)</b> Vary the variable resistance to change the 'IO3' voltage (0...10V), then change FAN speed</p>
<p><b>Voltage Control B</b></p> <p>0-10V DC Source</p> 	<p><b>Use voltage source supply 0~10V<sub>DC</sub> voltage</b> DC+ : connect to IO 3 (+) DC- : connect to GND (-)</p>
<p><b>PWM Control</b></p> <p>PWM Generator</p> 	<p><b>PWM duty control</b> PWM amplitude is 3.3~24V<sub>DC</sub> Frequency Range is 100Hz...10kHz -PWM duty higher than 5%, fan start up -PWM duty lower than 3%, fan stop</p>
<p><b>Current Control</b></p> <p>4-20mA Current Source</p> 	<p><b>4~20mA Current Control</b> Open 0-10V/PWM PIN - 3.0 mA → Fan Stop - 4.0 mA → Fan Start up - 20.0 mA → Maximum Speed</p>

Signal function																
<b>RS485 control function</b>	<p><b>RS485 control function</b></p> <ul style="list-style-type: none"> <li>-Select the control mode of speed, fixed speed or fixed PWM duty</li> <li>-Speed and power consumption feedback.</li> <li>-Allow multiple FANs control and status patrol.</li> </ul> <p>Note:</p> <ol style="list-style-type: none"> <li>1. A MODBUS over Serial Line Cable must be shielded. At one end of each cable its shield must be connected to protective ground.</li> </ol>															
<b>Voltage / PWM</b>	<p>The speed comparison will control level.</p> <table border="1"> <thead> <tr> <th>Voltage (V) ± 5%</th> <th>PWM(%) ± 5%</th> <th>Speed (RPM)</th> </tr> </thead> <tbody> <tr> <td>0 ~ 0.3</td> <td>0 ~ 3</td> <td>0</td> </tr> <tr> <td>0.5</td> <td>5</td> <td>100 ± 50 RPM</td> </tr> <tr> <td>6.0</td> <td>60</td> <td>1100 ± 8%</td> </tr> <tr> <td>10.0</td> <td>100</td> <td>1845 ± 5%</td> </tr> </tbody> </table>	Voltage (V) ± 5%	PWM(%) ± 5%	Speed (RPM)	0 ~ 0.3	0 ~ 3	0	0.5	5	100 ± 50 RPM	6.0	60	1100 ± 8%	10.0	100	1845 ± 5%
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<p><b>IO4 OUT (Control O/P)</b></p> <p>* 'OUT' outputs a 0-10V voltage, for series fan connection. (fan1→ fan2 → ...→fan(n)). Which apply a voltage command, all fans run in same RPM.</p>	<p>The OUT voltage Vs. current control input (almost linear, 4~20mA).</p> <table border="1"> <thead> <tr> <th>Current (mA) ± 5%</th> <th>OUT (VDC) ± 5%</th> </tr> </thead> <tbody> <tr> <td>4.0</td> <td>0.5</td> </tr> <tr> <td>6.0</td> <td>1.5</td> </tr> <tr> <td>13.6</td> <td>6.0</td> </tr> <tr> <td>20.0</td> <td>10.0</td> </tr> </tbody> </table>	Current (mA) ± 5%	OUT (VDC) ± 5%	4.0	0.5	6.0	1.5	13.6	6.0	20.0	10.0					
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6.0	1.5															
13.6	6.0															
20.0	10.0															
<b>Alarm state</b>	<ol style="list-style-type: none"> <li>1. NC and COM will OPEN.</li> <li>2. NO and COM will CLOSE.</li> </ol>															

**Control Voltage VS. RPM Curve**



**Voltage (VDC), PWM duty (%), 4~20mA table**

<b>Voltage ± 5%</b>	0	0.5	1	1.5	2	3	4	5	6	7	8	9	10	VDC
<b>PWM duty ± 5%</b>	0	5	10	15	20	30	40	50	60	70	80	90	100	%
<b>4~20 mA ± 5%</b>	0	4.0	5.0	6.0	6.9	8.5	10.2	12.0	13.6	15.3	17.0	18.7	20.0	mA

## 1. 注意事項

### Attention Item!!

為了確保能夠正確地安裝及操作風扇，請在裝機之前，詳細閱讀本產品說明，避免造成人員傷害或是機器損壞。

In order to ensure the fan installation and operation is correct. Please read this instruction carefully to avoid staff or machine damage

### 1.1 基本安全規範

#### Basic safe regulation

- 只有合格的電機專業人員才可以對風扇進行安裝、配線、修理及保養，請防止非技術人員接近風扇。

**Only qualified professional staff can install, repair and maintain the fan.**

**Please prevent non-technical person to carry on action above.**

- 禁止自行改裝風扇內部的零件或線路，也不可將風扇拆解為零部件單獨使用，以免發生危險。

**Prohibit to modify internal parts or circuits of fan by self, nor disassemble fan into parts and use it separately.**

- 禁止對於風扇外表做額外的塗裝。


**Prohibit to increase additional painting/coating on fan.**

- 不正確的安裝方式可能導致風扇的損害。

**It is possible to damage fan with wrong install way.**

### 1.2 安全項目確認

#### Safety check

 <p>DANGER</p>	<ul style="list-style-type: none"><li>● 定期檢查設備的電氣設備時，立即更換鬆動的連接和有缺陷的電纜。 <b>Change connect part or cable if defect found during regular inspection.</b></li><li>● 在帶電設備上工作時，請站在橡膠墊上，避免觸電的危險。</li></ul>
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	<p><b>When working on live equipment, please stand on non-conductive carpet (ex: rubber mat) to avoid risk of electric shock</b></p> <ul style="list-style-type: none"><li>● 電源關閉後，應在斷開所有電力後，並等待五分鐘後再操作風扇，避免觸電危險。 <b>After turning off fan power, please check fan till five minutes later to avoid risk of electric shock.</b></li><li>● 風扇本體雖有基本絕緣防護，但發生異常狀況時，仍有帶電的風險，請使用檢測儀器確認安全後，再行作業。 <b>Although the fan body has basic insulation protection, there is still a risk of electrification when abnormal conditions occur. Please use testing instruments to confirm safety before operating.</b></li><li>● 若風扇配有端子接線盒，啟動風扇前，請務必確認接線盒上蓋有確實安裝。 <b>If the fan body include terminal box, please make sure that the top cover of box already installed properly before turning on the fan.</b></li><li>● 本風扇在使用前，請務必確實接地。接地的導線截面積不得少於 <math>0.75\text{mm}^2</math> (18AWG min)。 <b>Must have grounding check before using. And section area of ground wire cannot lower than <math>0.75\text{mm}^2</math> (18AWG min)</b></li></ul>
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**注意：扇葉是可旋轉物件，碰觸到人體或是物件有受傷的風險！！**

**Attention: Here is risk to hurt human body when rotating impeller in touch with.**

- 執行作業時，必須關閉電源線路等到設備完全停止，並確保風扇無法開啟，並在作業完畢後，移除所有的工具。

**When performing work, you must turn off the power line and wait until the equipment is completely stopped, and make sure that the fan cannot be turned on, and remove all tools after the work is completed**

- 風扇在通電後，會因為存在控制電壓或是上一次啟動時儲存的速度設定，風扇可能會立即運轉，請在風扇通電前，應再確認人員與其他物品已不在風扇周邊危險區域內。

**After turn on power, fan may run immediately due to control voltage or last speed setting stored at the fan, so please confirm that people and objects already keep safety distance with fan before start up.**

- 當風扇須加裝防護罩，此防護罩必須符合成品的相關規範，避免人員碰觸到扇葉；有意外狀況時，保護罩也可避免破裂物或是吸入物射出造成危險。

**If need to have an additional protect cover on fan, it must comply with the relevant specification of finished product to prevent people from touching the fan blades; in case of accidents, the protect cover can also**

	<p>prevent the danger caused by the ejection of broken objects or inhaled objects</p> <ul style="list-style-type: none"> <li>● 請小心長髮或是寬鬆衣物被捲入，可能導致人員受傷。</li> </ul> <p><b>Be careful that long hair or loose clothing entangled by fan, which may cause people injury.</b></p> <ul style="list-style-type: none"> <li>● 風扇與周遭零件的距離應保持 25mm 以上。</li> </ul> <p><b>Distance between fan and surrounding parts should keep at least 25mm</b></p>
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### 1.3 其他注意事項

#### Others

	<ul style="list-style-type: none"> <li>● 電機殼體表面會發熱產生高溫，可能造成燙傷，請適當施加保護裝置並避免直接碰觸。</li> </ul> <p><b>Fan motor will have heat near when operating, it possible to cause burned on body. So suggest to add protect item and avoid to touch motor body.</b></p> <ul style="list-style-type: none"> <li>● 風扇運轉時，可能會產生高分貝噪音，嚴重時，可能會導致人員聽力受損；請採取隔音或是保護措施。</li> </ul> <p><b>It' s possible to have serious noise when fan operating. Please take soundproofing or protective mechanism to avoid hearing impaired</b></p> <ul style="list-style-type: none"> <li>● 請確認整個設置符合 EMC 標準，在系統上採取適當屏蔽措施。</li> </ul>
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	<p><b>Please confirm that the entire setup complies with EMC standards, and take appropriate shielding on the system</b></p> <ul style="list-style-type: none"><li>● 運送風扇時，請使用原包裝，並維持包裝方向避免任何形式翻轉，工作人員請穿著安全手套與安全鞋，避免割傷與撞傷。</li></ul> <p><b>When transporting fan, please use original packaging material, and keep fan packaging the same as open in beginning. The staff should wear proper gloves and shoes to avoid cuts and bumps.</b></p> <ul style="list-style-type: none"><li>● 固定用螺絲建議具有防鬆的機制。</li></ul> <p><b>Please use screw with anti-loosening mechanism to install fan</b></p> <ul style="list-style-type: none"><li>● 此風扇屬於散熱零件，僅適用於系統內，不可單獨使用。</li></ul> <p><b>This fan is a cooling part and only be used in system. Please do not use it away from system.</b></p> <ul style="list-style-type: none"><li>● 風扇可提供空氣輸送功能，並可協助系統散熱，其他任何使用方法皆不符合此風扇的適用範圍內</li></ul> <p><b>This fan only use for air moving and heat dissipation of system, not use for other purpose.</b></p> <ul style="list-style-type: none"><li>● 風扇所屬的的系統必須提供足夠的結構支撐能力。</li></ul> <p><b>The system must have sufficient structural strength to support fan install inside.</b></p>
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	<ul style="list-style-type: none"> <li>● 風扇本體在使用中會發熱，系統周圍零件必須有一定的耐熱能力 <b>Fan body will create heat when using, so the part near by must have ability to suffer that.</b></li> <li>● 確保所有的保護裝置有適當的安裝。 <b>Ensure that all protective devices are properly installed</b></li> <li>● 建議執行定期檢查。 <b>Please perform regular maintenance checks if necessary.</b></li> </ul>
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➤ **請避免**風扇使用在以下範圍

**Avoid to use in field below**

- 使用環境內具有腐蝕、易燃性之氣、液體、漂浮性的塵埃及金屬微粒。  
**Environment with Corrosion, flammable gas and liquid, Floatable dust and metal particles**
- 遭受劇烈的震動，包括使用中，運送或是安裝過程中。  
**Environment with series vibration include transfer and install process.**
- 用於醫療相關設備，或是與生命安全關聯的設備中  
**Medical related equipment, or equipment related to life safety**

## 1.4 儲存

### Storage

- 必須置於乾燥與乾淨的環境，建議置於穩固的臺架上。  
**Fan must be placed in a dry and clean environment, and recommended to place it on a stable stand**
- 避免儲存於含有腐蝕性氣、液體之環境中。

**Avoid to store in environments containing corrosive gases and liquids**

- 避免存放於陽光直射或有振動的場所。

**Avoid storing in direct sunlight or places with vibration**

- 請避免在無通電的狀態下放置一年以上，風機內電解電容長期不通電，可能會產生劣化。

**Avoid leaving it without power for more than one year. The electrolytic capacitor inside the fan may deteriorate if it doesn't power on for a long time.**

- 若風扇裝設於系統，有使用電纜固定接頭(cable gland)，請確保防水橡膠有正確安裝。

**If the fan is installed with cable gland, please ensure that the waterproof rubber of gland is properly installed.**

- 儲存位置的環境溫度範圍請參考各機種規格書。

**For the ambient temperature range of storage, please refer to the data sheet of each model**