



Specification For Approval

Customer : _____
Description : Heat Exchanger 60W/K
Customer Part No. : _____ Rev. : _____
Delta Model No. : HEX060PA Rev : 01
Sample Issue No. : _____
Sample Issue Date : Apr.8 2016

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

Approved by : _____

Date : _____

Delta Electronics, Inc.
252, Shang Ying Road, Kuei San District
Taoyuan City 33341, Taiwan, R. O. C.

TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

DELTA ELECTRONICS, INC.
252, SHANG YING ROAD, KUEI SAN
TAOYUAN HSIEN 333, TAIWAN, R. O. C.

TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

STATEMENT OF DEVIATION

NONE

DESCRIPTION :

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Specification For Approval

Customer :

Description : Heat Exchange 60W/K

Customer P/N :

Rev. :

Delta model no. : HEX060PA

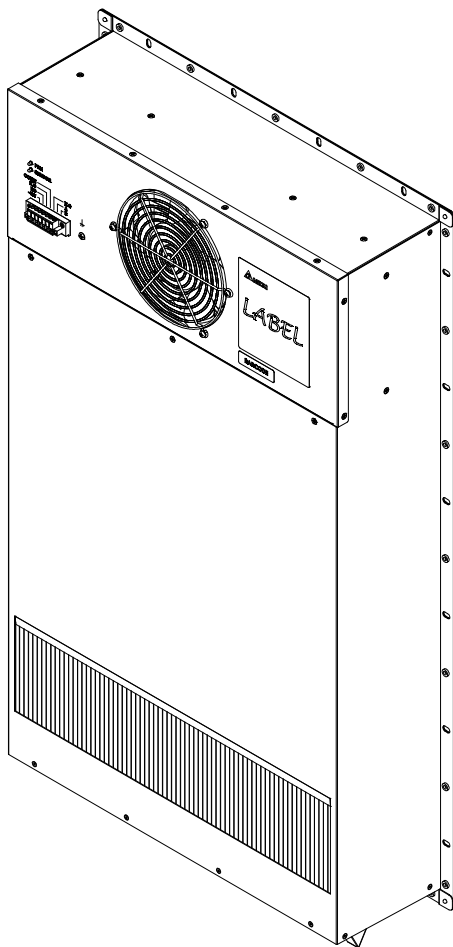
Rev. : 00

Sample revision. :

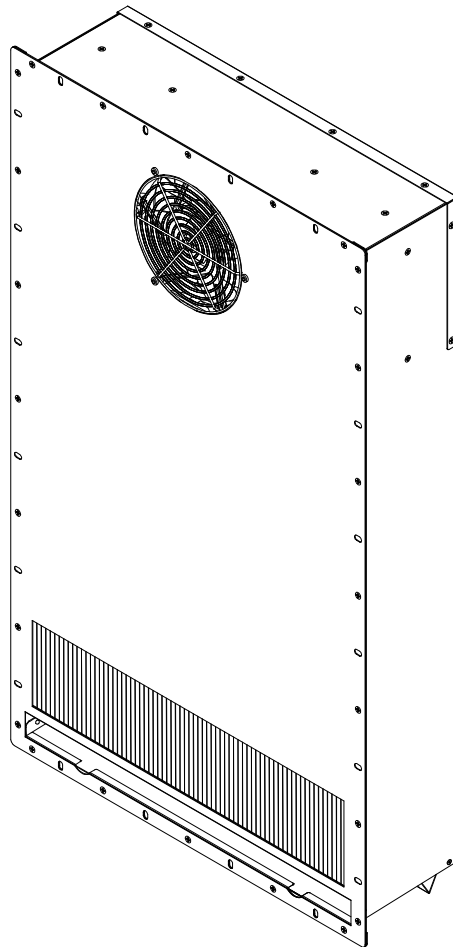
Issue no. :

Sample issue date :

Quantity : sets



Internal



External

Part no. :

Delta model no. : HEX060PA

1. Description

1-1. General description:

The Heat Exchanger (HEX) is designed for direct air to air heat exchange to remove the heat from the cabinet. It is easy to be installed in the cabinet with the nuts.

The internal and the external air circulation loops of the HEX are separated to prevent the introduction of dust, humidity and dirt. The fan on the external air loop conforms to IP55 protection rating.

1-2. Main feature & Model number (Operation 48VDC)

Main feature	Unit	Model Number
		HEX060PA
Outline Dimension	mm	850 L x 500 W x 148 D
Cooling Capacity (*Note 1)	W/K	60
Operating Voltage Range	VDC	40 - 60
Operating Temperature range	°C	-10 ~ 65
Rated Voltage	VDC	48
Current	A	0.6
Consumption	W	29
Mounting Location	N/A	Internal Door/ Wall
Fan Speed Control	N/A	PWM 5 ~ 100% duty cycle
Controller	N/A	Built-in
Operating Status	N/A	LED Indicator
Fan alarm / NTC alarm	N/A	Dry Contact Output
Acoustic Noise at 1.5M (SPL)	dB-A	62.0 dB-A
Weight	Kg	17.0 ± 0.5

*Note 1 : The cooling capacity (W/K or W/°C) is defined as $Q / (TI - TA)$

Q : Heat dissipation (W) from inside

TI : Return temperature of internal air circuit (K OR °C)

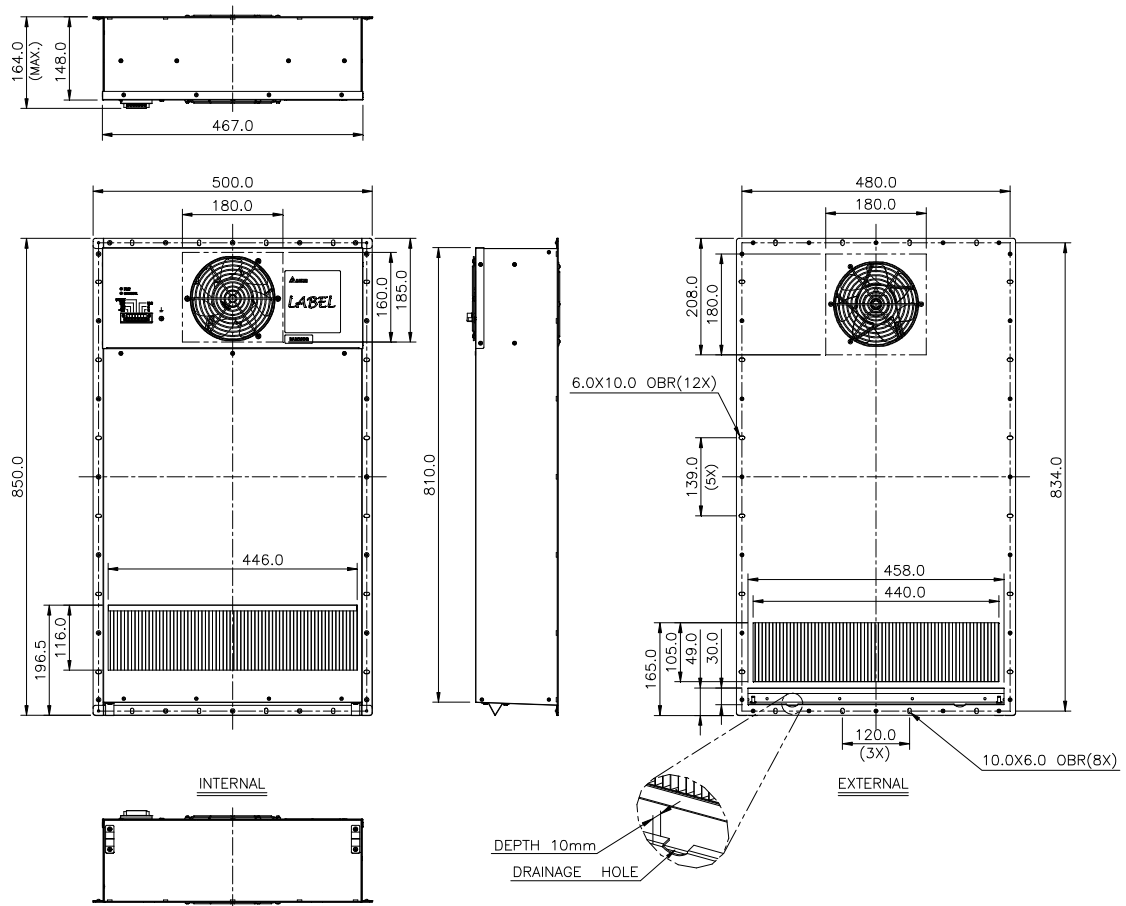
TA : Ambient temperature of external air circuit (K OR °C)

Part no. :

Delta model no. : HEX060PA

1-3. Dimension

1-3-1. Drawing



- (1) Material : SPCC sheet t=0.8mm
- (2) Finish : Powder paint 75~120um, Color RAL 7032.
- (3) Dimensional tolerance :

Unit : mm

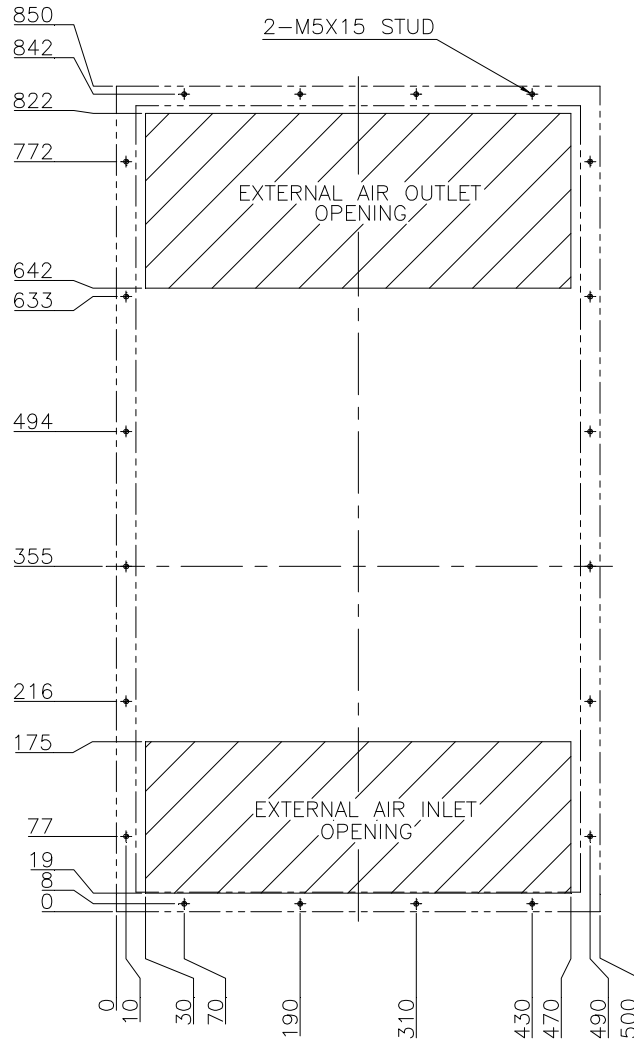
X.X [X.XX] : $\pm 1\text{mm}$ [0.04"]

X.XX [X.XXX] : $\pm 0.3\text{mm}$ [0.012"]

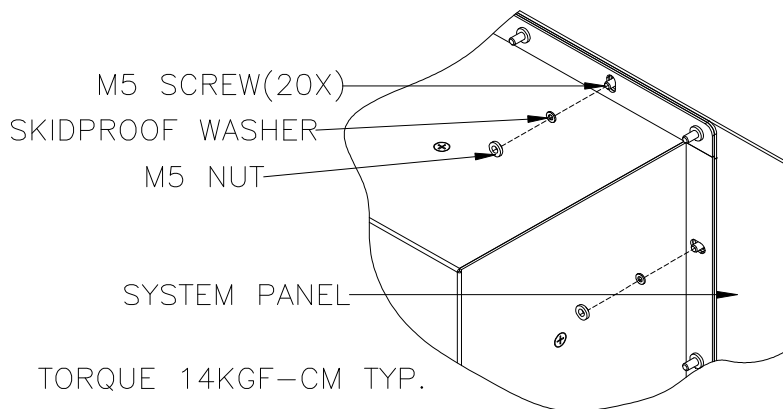
Part no. :

Delta model no. : HEX060PA

1-3-2. Mounting panel cutout



TOLERANCE : $\pm 0.5\text{MM}$

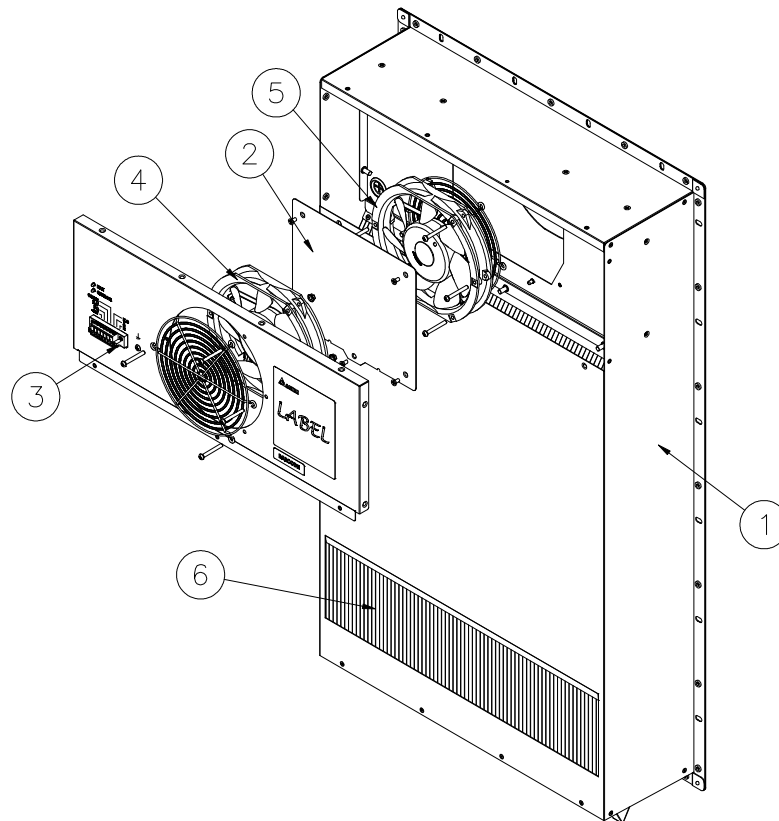


Part no. :

Delta model no. : HEX060PA

1-4. Configuration & Maintenance

The HEX is composed of the key components as the following :
Chassis , Heat Exchange Core , Controller and Fan . The user can disassemble screws for controller and fans replacement .



Item	Q'ty	Description
1	1	Chassis assy
2	1	Frame assy
3	1	Controller
4	1	Internal fan
5	1	External fan
6	1	Heat exchange CORE

Part no. :

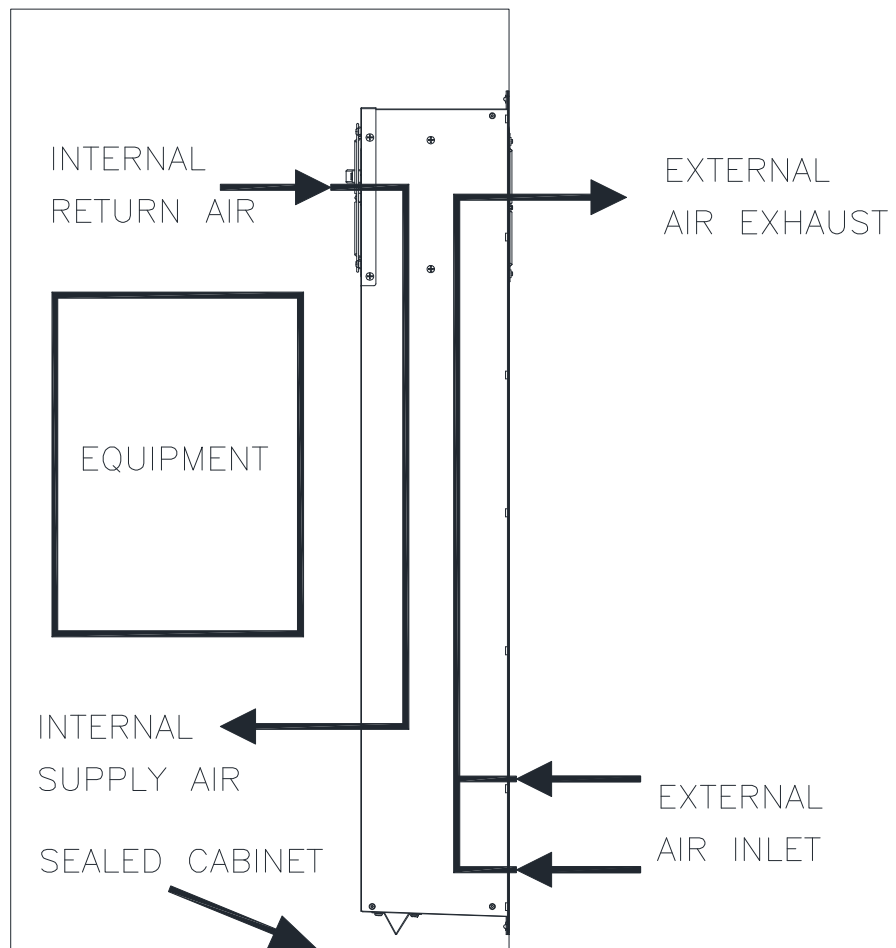
Delta model no. : HEX060PA

1-5. Thermal path and Airflow baffle

With the forced convection using the axial fan , the warm air generated by the equipment will be blowing into the internal return opening and pass through the HEX , then flow out from internal supply opening , the cold supply air will be used to cool down the system ;

While on the opposite side, cooler air from the out environment will be drawn from the external air inlet side and bring the heat of the HEX out from the external air exhaust side .

The thermal exchange path is shown in the figure below.

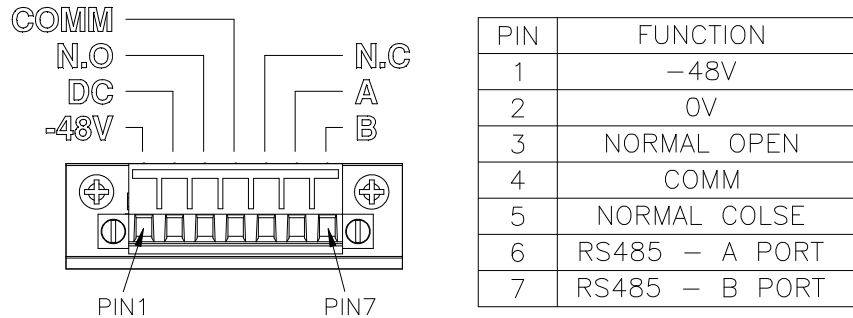


Part no. :

Delta model no. : HEX060PA

2. Electrical specification

2-1. Indicator & Connector (HEX panel side)



Dry contact : (contact max. rating : **60VDC/400mA**)

User can select dry contact definition both normal open(N.O.) or normal close(N.C.) for alarm output

	Normal open	Normal close
Connection	Pin 3 & Pin 4	Pin 5 & Pin 4
Control board, NTC and fan are in normal status	OPEN	CLOSE
Power-off or control board is disabled	CLOSE	OPEN
NTC resistance is over range such as "open circuit" or "short circuit"	CLOSE	OPEN
Fan speed is lower than 50% of definition or fan locked	CLOSE	OPEN

LED indicator :

○ FAN

○ SENSOR

	Fan	NTC sensor
Normal	GREEN	GREEN
Abnormal or failed	RED	Blinking RED
Over oper. temp. (<-10°C or >+65°C)	GREEN	Blinking RED

Part no. :

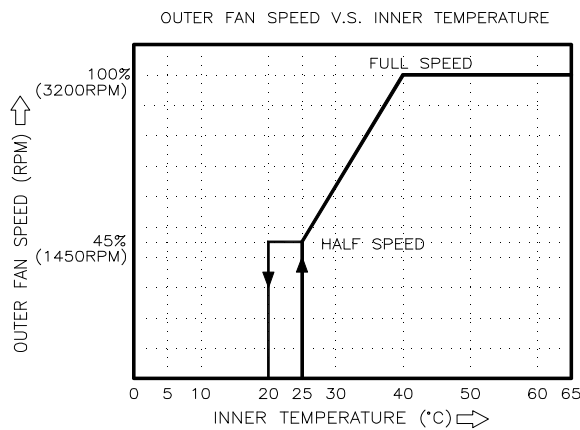
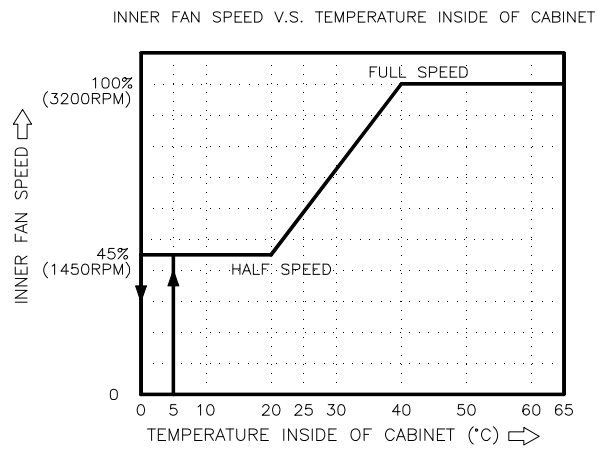
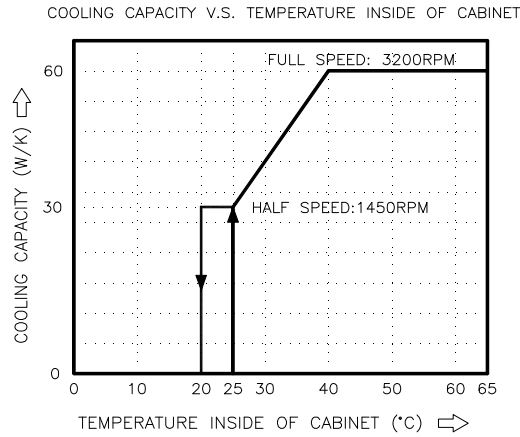
Delta model no. : HEX060PA

2-2 Standalone control mode

HEX can detect temperature inside of cabinet to control cooling capacity .

Full speed : 3200 RPM \pm 10%

Half speed : 1450RPM \pm 200RPM



Part no. :

Delta model no. : HEX060PA

3. Environmental condition

3-1. Operating temperature

-10°C ~ +65°C (14°F ~ 149°F)

3-2. Storage temperature

-40°C ~ +70°C (-40°F ~ 158°F)

3-3. Humidity

External air loop : 0 ~ 100% RH

Internal air loop : 0 ~ 90% RH, non-condensing

3-4. Ingress Protection rating (external side)

IEC60529 IP55 (NEMA3)

GR-487

3-5. MTBF

The L10 Fan life is expected to be at least 80,000 hours continuous operation at 40°C with 15 ~ 65%RH. @ label rated voltage

4. Reliability table

Test item	Condition
High temperature	IEC 60068-2-2
Low temperature	IEC 60068-2-1
High temp. / High humidity	IEC 60068-2-14 TEST Nb
Temperature cycle	IEC 60068-2-3
Vibration	ETSI 300 019-1-4 CLASS 4.1
Ingress protection (External side)	IEC 60529 IP55 (NEMA 3) GR-487
Package bump	IEC 60068-2-29

5. Safety Certification



Part no. :

Delta model no. : HEX060PA

6. Warranty

Delta Electronics, Inc warrants one year (twelve months) from the date of shipment , this warranty covers customer below application :

- Customer follows Delta specification to install and operate the product.
- The product and any parts do not be modified (including both mechanical and electrical modification) by customer themselves .

This warranty cover only repair, replacement or refund for defective Delta products does not include any loss of data or any costs associated with determining the source of system problems, costs for transportation, removal or reinstallation of equipment or labor for repairs or replacement made in the field.



Application Notice

- 1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.**
- 2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.**
- 3. Please exercise caution when handling fans. Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires, or if the fan was hard-dropped to the production floor.**
- 4. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder, droplets of water or encroachment of insect into the hub.**
- 5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.**
- 6. It is very important to establish the correct polarity before connecting the fan to the power source. Positive (+) and Negative (-). Damage may be caused to the fans if connection is with reverse polarity, if there is no foolproof method to protect against such error specifically mentioned in this spec.**
- 7. Delta fans without special protection are not suitable where any corrosive fluids are introduced to their environment.**
- 8. Please ensure all fans are stored according to the storage temperature limits specified. Do not store fans in a high humidity environment. We highly recommend performance testing is conducted before shipping, if the fans have been stored over 6 months.**
- 9. Not all fans are provided with the Lock Rotor Protection feature. If you impair the rotation of the impeller for the fans that do not have this function, the performance of those fans will lead to failure.**
- 10. Please be cautious when mounting the fan. Incorrect mounting of fans may cause excess resonance, vibration and subsequent noise.**
- 11. It is important to consider safety when testing the fans. A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.**
- 12. Except where specifically stated, all tests are carried out at room (ambient) temperature and relative humidity conditions of 25°C, 65% RH. The test value is only for fan performance itself.**
- 13. Be certain to connect an “ 4.7μF or greater” capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.**