



Specification For Approval

Customer : _____
Description : Heat Exchanger 50W/K
Customer Part No. : _____ Rev. : _____
Delta Model No. : HEX050QA Rev : 03
Sample Issue No. : _____
Sample Issue Date : Aug.8.2014

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

Approved by : _____

Date : _____

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Specification For Approval

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Description : Heat Exchanger 50W/K

Customer P/N :

rev. :

Delta model no. : HEX050QA

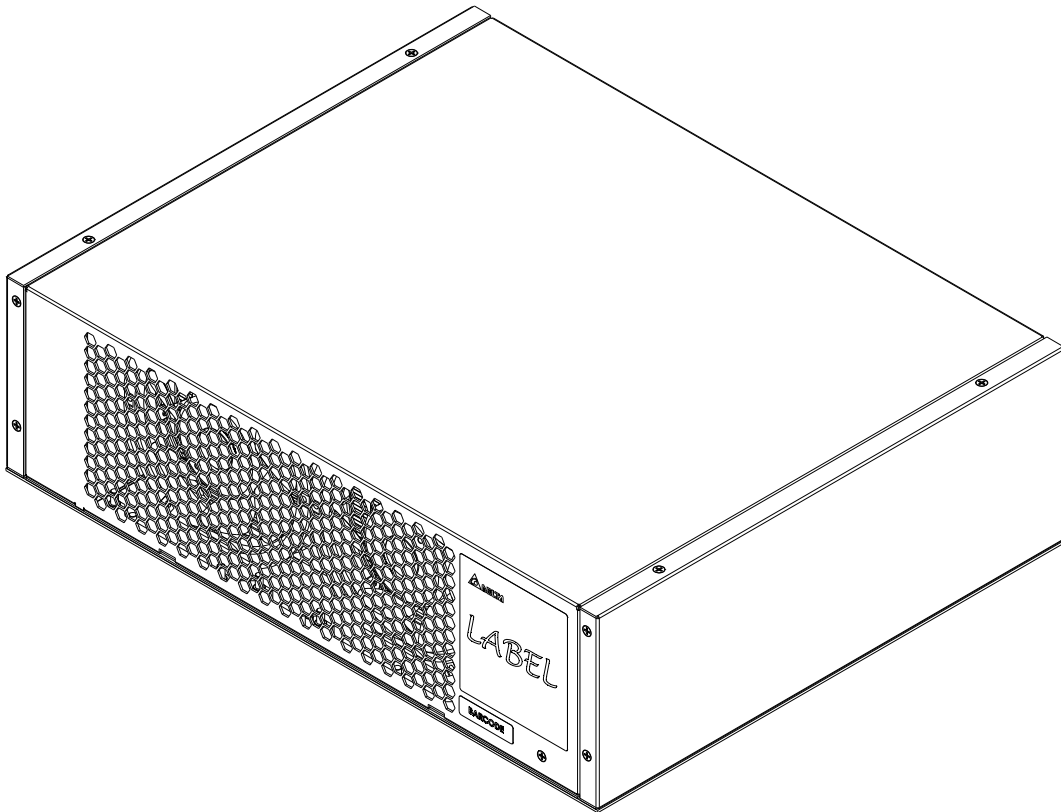
rev. : 03

Sample revision. :

Issue no. :

Sample issue date :

Quantity : sets



Part no. :

Delta model no. : HEX050QA

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. (Recommended on the roof of the cabinet)

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
		HEX050QA
Outline Dimension	Mm	550 L x 434 W x 155 H
Weight	Kg	9.0 ± 0.5
Cooling Capacity (*Note 1)	W/K	50 (MAX.)
Rated Voltage	VDC	48 (TYP.)
Operating Voltage Range	VDC	40 ~ 60
Current	A	1.4 (TYP.)
		1.7(MAX.)
Consumption	W	80 (MAX.)
Maximum Ambient Temperature	°C	65
Maximum Return Temperature	°C	50
Internal Airflow Rate	CFM	180 (TYP.)
External Airflow Rate		270 (TYP.)
Mounting Location	N/A	Roof Mount
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	64.0 dB-A (TYP.)

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

Q : Heat dissipation (W) from inside

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

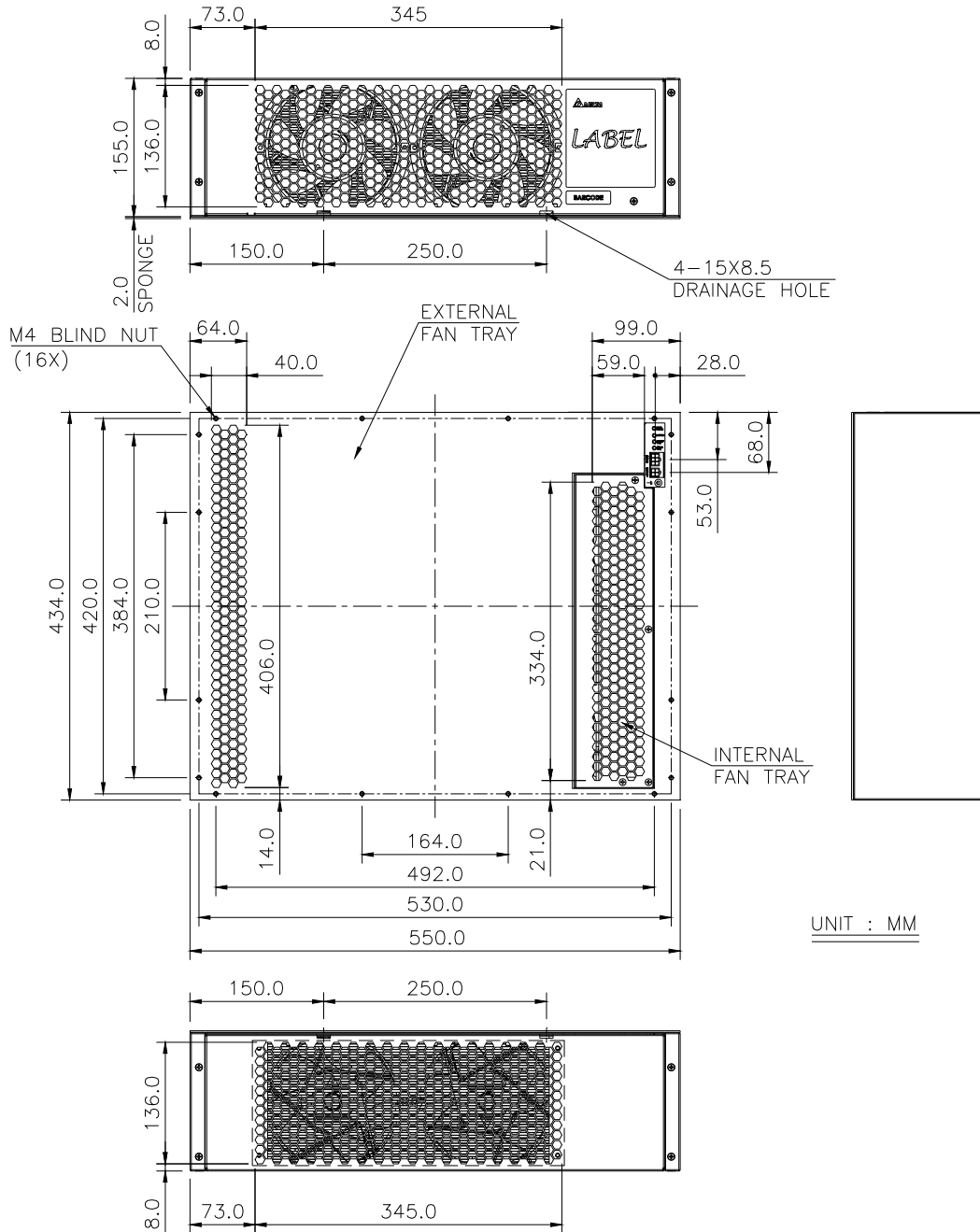
T_A : Ambient temperature of external air circuit (K OR °C)

Part no. :

Delta model no. : HEX050QA

1-3. Dimension

1-3-1 Drawing



(1) Material : Aluminum sheet t=1.5mm

(2) Finish : Powder paint 75~120um, Color RAL 7032.

(3) Dimensional tolerance :

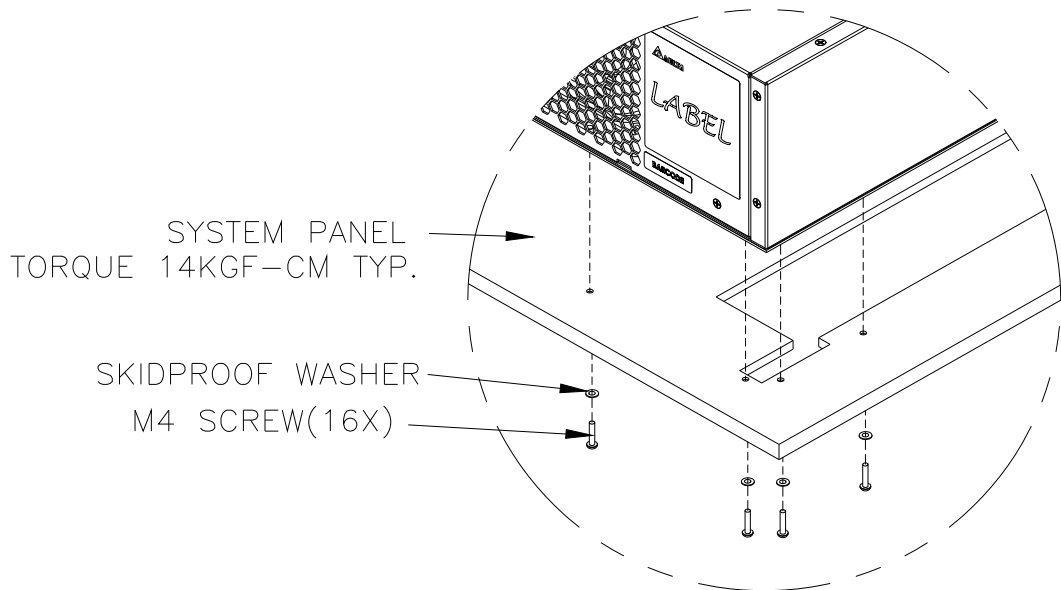
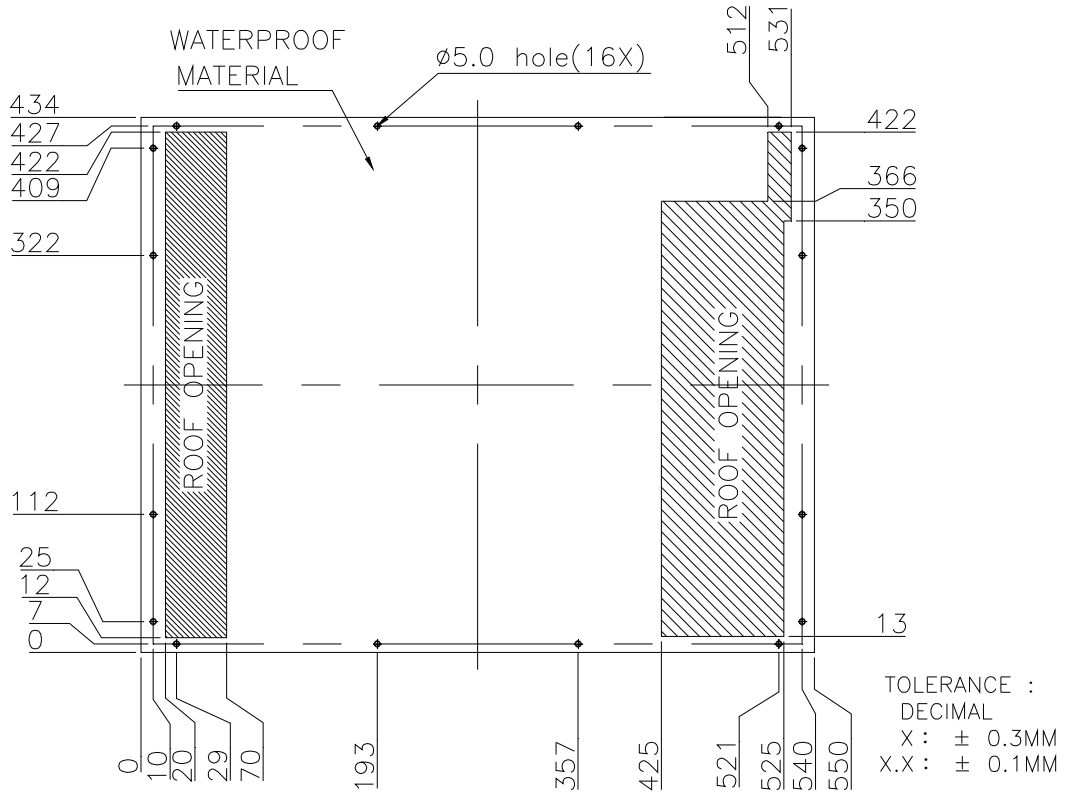
X.X [X.XX] : ± 1mm [0.04"]

X.XX [X.XXX] : ± 0.3mm [0.012"]

Part no. :

Delta model no. : HEX050QA

1-3-2 Mounting panel cutout



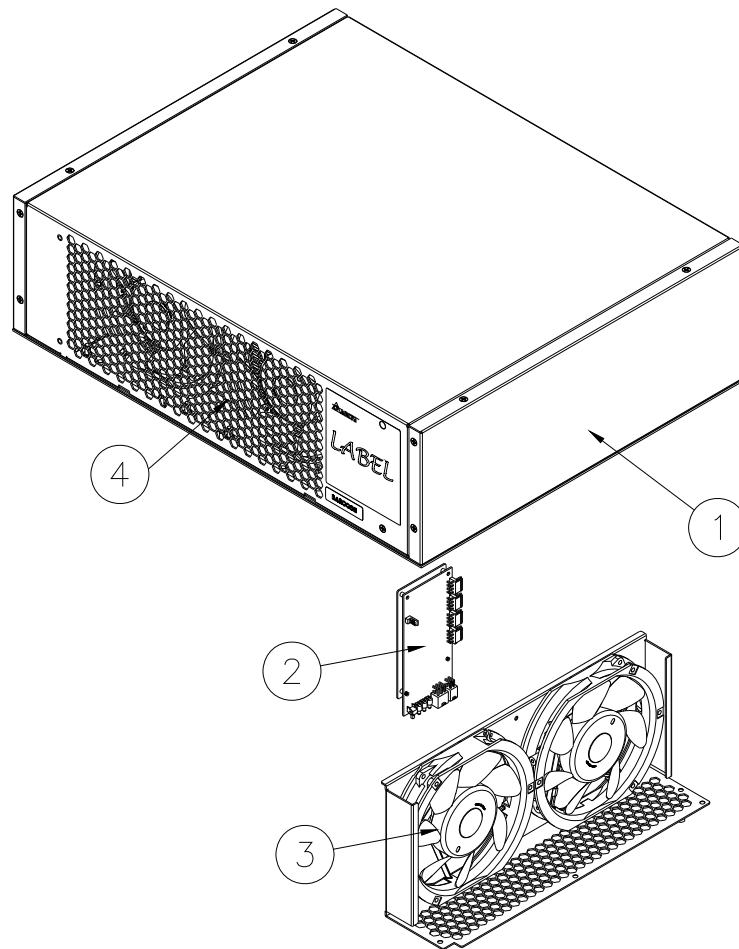
Part no. :

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1-4. Configuration & Maintenance

The HEX is composed of the key components as the following :

Chassis , Heat Exchange Core , Controller and Fan Tray . The user can slide out the fan tray easily for replacement of the controller and fans .



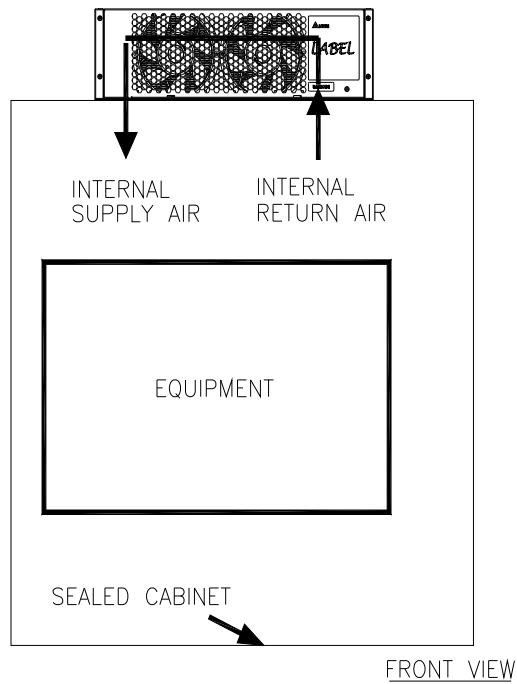
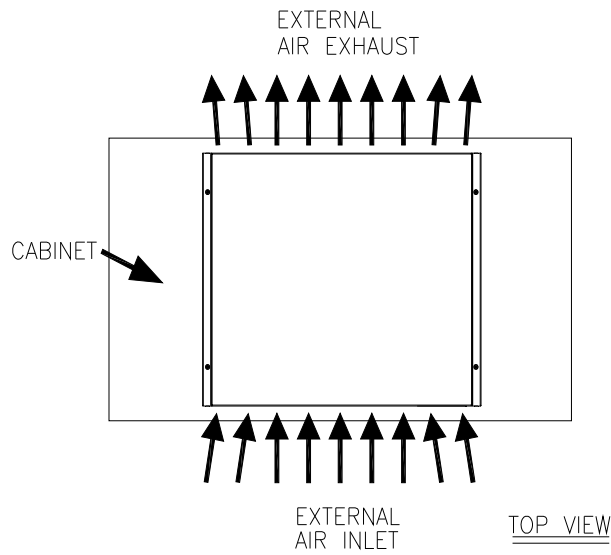
Item	Q'ty	Description
1	1	Chassis assy
2	1	Controller assy
3	1	Internal fan tray
4	1	External fan tray

Part no. :

Delta model no. : HEX050QA

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 internal return opening and pass through the HEX core, then flow out from internal supply opening , the air supply of the cold air will be used to cool down the system ; While on the opposite side , cooler air from the out environment will be drawn from external air inlet side and bring the heat of the HEX core out from the external air exhaust side . The thermal exchange path is shown in the figure below.



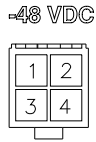
Part no. :

Delta model no. : HEX050QA

2. Electrical specification

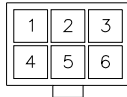
2-1. Indicator & Connector (HEX panel side)

Connector " -48V VDC "



PIN	FUNCTION
1	-48V
2	0V
3	-48V
4	0V

Connector "COMM"



PIN	FUNCTION
1	ALARM CONTACT
2	ALARM CONTACT
3	NA
4	NA
5	NA
6	NA

Alarm logic depends (Pin1 to Pin2 ----- MAX. \pm 75VDC ,50mA)

- Fan and NTC normal
Pin1 and Pin2 dry contact output open
- Fan failed
Pin1 and Pin2 dry contact output close
- NTC failed
Pin1 and Pin2 dry contact output close

NTC FAILED

The NTC failed alarm will be active when NTC resistor work in abnormal range such as

- 1.NTC cable does not connect to control board
- 2.NTC damage (short or open)

Fan will run at high speed when NTC failed alarm is active.

Switch "TEST"

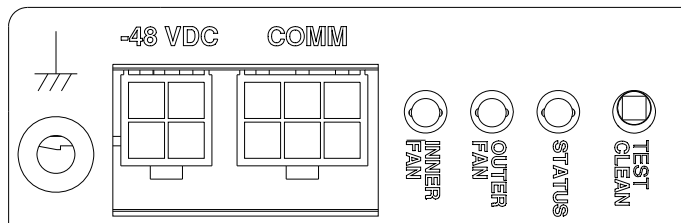
When pressing the "TEST/CLEAN" button, both outer fans and inner fans will run from low speed to high speed for test. The testing process is around 2 minutes, and the LED of INNER FAN and OUTER FAN will be blinking in GREEN color.

When the fan failed, the LED will be blinking red. It can be turned off by press the "TEST/CLEAN" button again.

Part no. :

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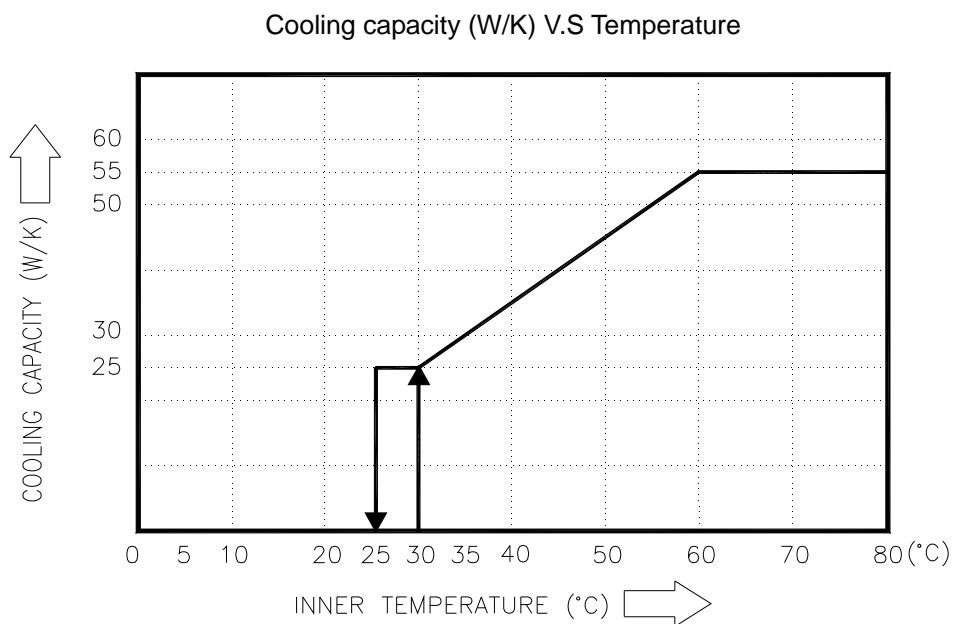
- LED of "INNER FAN & OUTER FAN"
 - (GREEN) : Fan normal
 - (RED) : Fan failed
 - (Blinking GREEN) : Fan is normal during test
 - (Blinking RED) : Fan failed during test
- LED of "STATUS"
 - (GREEN) : NTC normal
 - (RED) : NTC open or short



CONTROL PANEL

2-2 Standalone control mode

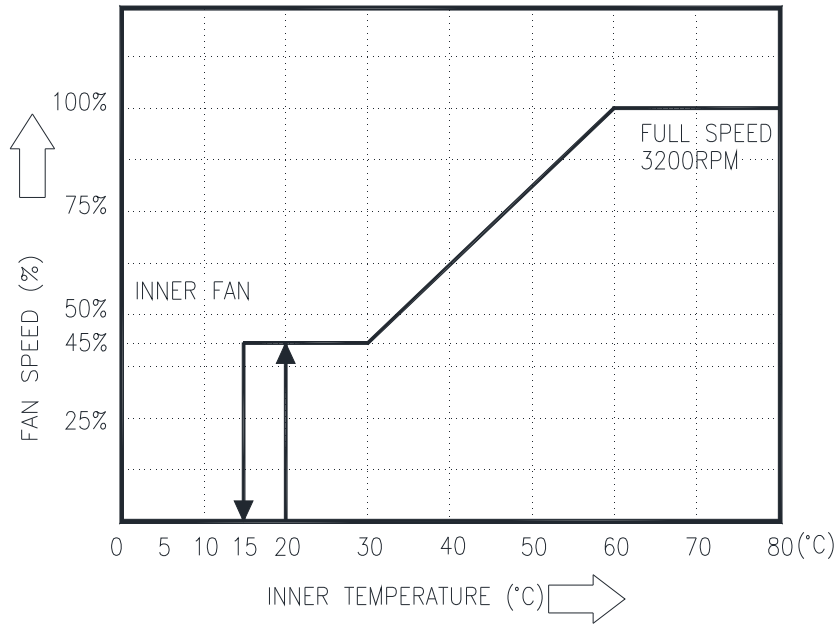
HEX detects ambient temperature to control cooling capacity.



Part no. :

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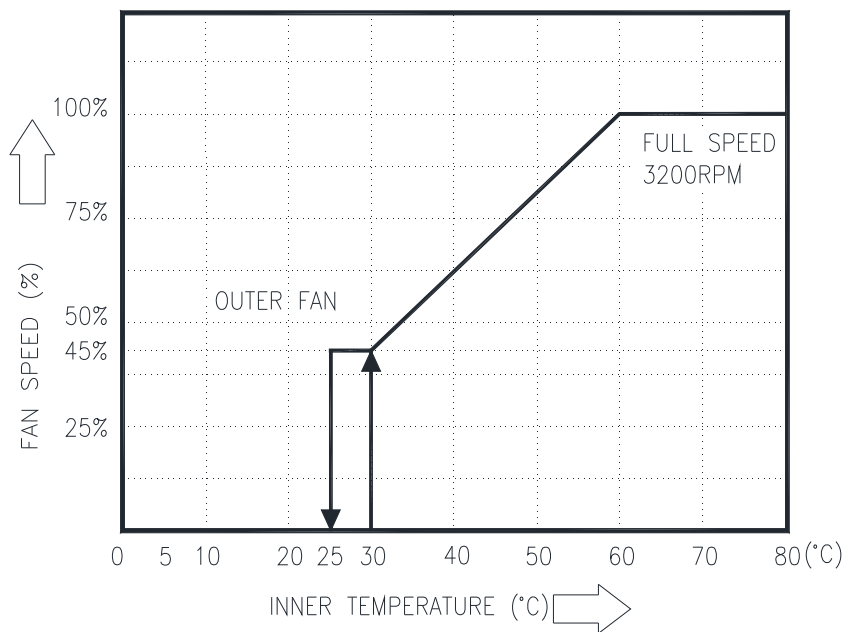
Inner fan speed V.S. Temperature



Full speed: 3200 RPM \pm 10%

Half speed: 1450RPM \pm 200RPM (45% of full speed)

Outer fan speed V.S. Temperature



Full speed: 3200 RPM \pm 10%

Half speed: 1450RPM \pm 200RPM (45% of full speed)

Part no. :

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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

IP55 (IEC60529) on external side

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
Thermal shock	GR-487 3.30
Temp. Cycling/ High Humidity	GR487 3.38.2
Water , Dust Intrusion and Water Resistance (EXTERNAL SIDE)	GR-487 3.38.1 (follow IEC60529 IP55)
Salt fog test (EXTERNAL SIDE)	GR487 3.38.1
Transportation Shock	GR-487 3.39.1
Transportation Vibration Packaged Environment	GR-487 3.39.3 (follow ETSI 300 019-2-2 T2.3 random vibration)
Environmentally Induced Vibration	GR-487 3.39.5 (follow ETSI 300 019-2-4 table 3 class 4M5 random vibration)

5. Safety Certification

5-1. UL , cUL, TUV, CE

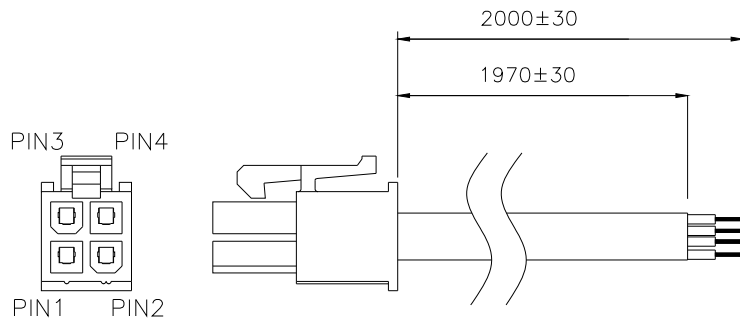


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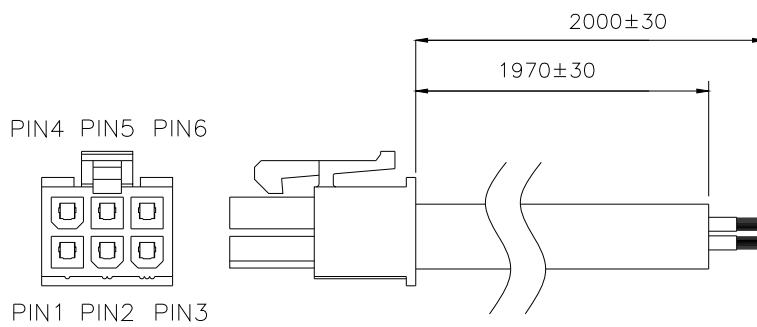
6. Accessory

6-1. Power cable



PIN	FUNCTION	COLOR
1	-48V	RED
2	0V	BLACK
3	-48V	RED
4	0V	BLACK

6-2. Function cable



PIN	FUNCTION	COLOR
1	ALARM CONTACT	BROWN
2	ALARM CONTACT	BLUE
3	NA	NA
4	NA	NA
5	NA	NA
6	NA	NA