



Specification For Approval

Customer : STD

Description : Thermoelectric Cooling 400W

Customer part no : _____ Rev. : _____

Delta model no : HET400PA Rev. : 07

Sample issue no : _____

Sample issue date : AUG.05 2020

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

Approved by : _____

Date : _____

Part no. :

Delta model no. : HET400PA

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Part no. :

Delta model no. : HET400PA

Specification for approval

Customer : STD

Description : Thermoelectric Cooling 400W

Customer P/N :

Rev. :

Delta model no. : HET400PA

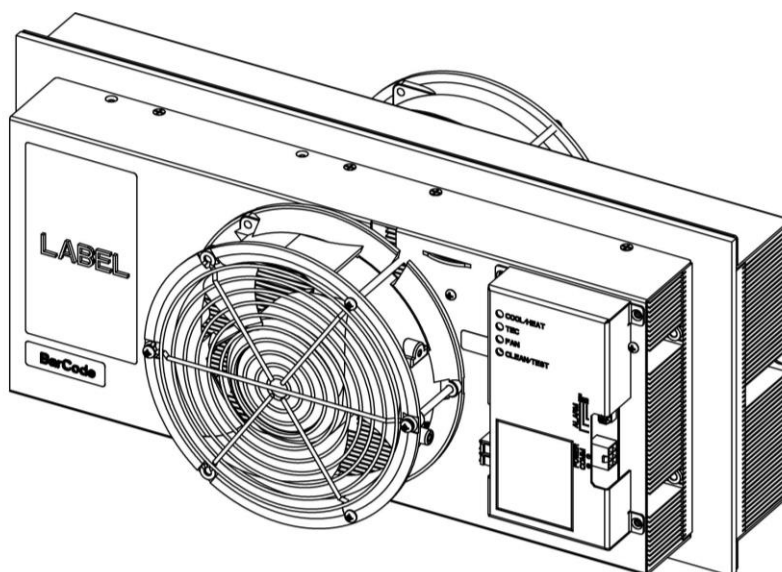
Rev. : 07

Sample revision:

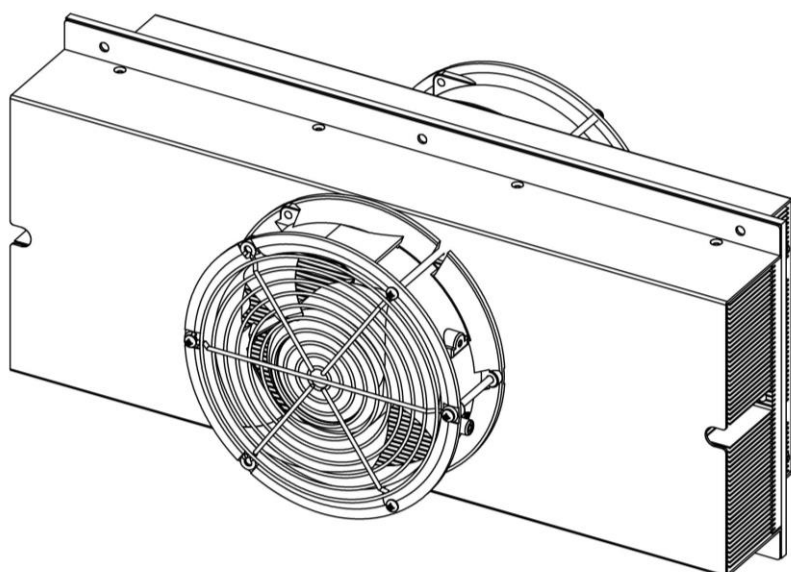
Issue no. :

Sample issue date : 5.AUG.2020

Quantity : sets



INTERNAL



EXTERNAL

Part no. :

Delta model no. : HET400PA

1. Description

1-1. General description :

The Thermoelectric Cooling (TEC) is designed for direct air to air heat removal in the cabinet. It is easy to be installed in the cabinet (recommended on the door of the cabinet) with the nuts.

The internal and external air circulation loops of the TEC Module are separated to prevent the entry of dust, humidity and dirt. The unit conforms to IP55 & GR487 salt fog protection rating on the external air circuit.

1-2. Main feature (Operating 48VDC at 25°C)

Main feature	Unit	Model Number
		HET400PA
Outline dimension	mm	450 H x 210 W x 228 D
Weight	kg/ lb	11.0 ± 0.5/24.2± 1.1
Cooling capacity ($\Delta T = 0^{\circ}\text{C}$)	W	400 (TYP.)
Heating capacity @ -40 ° C	W	450 (TYP.)
Rated voltage	VDC	48 (TYP.)
Operating voltage range	VDC	40~56
Actuality Current	A	11.7(TYP.)
Rated Current	A	16.2(Max)
Rated Consumption	W	778(Max)
Operating temperature	°C	-40~55
Internal airflow rate	CFM	190 (TYP.)
External airflow rate		200 (TYP.)
Acoustic noise at 1M : (Sound pressure)	dB-A	65.0 (TYP.) 69.0 (Max.)

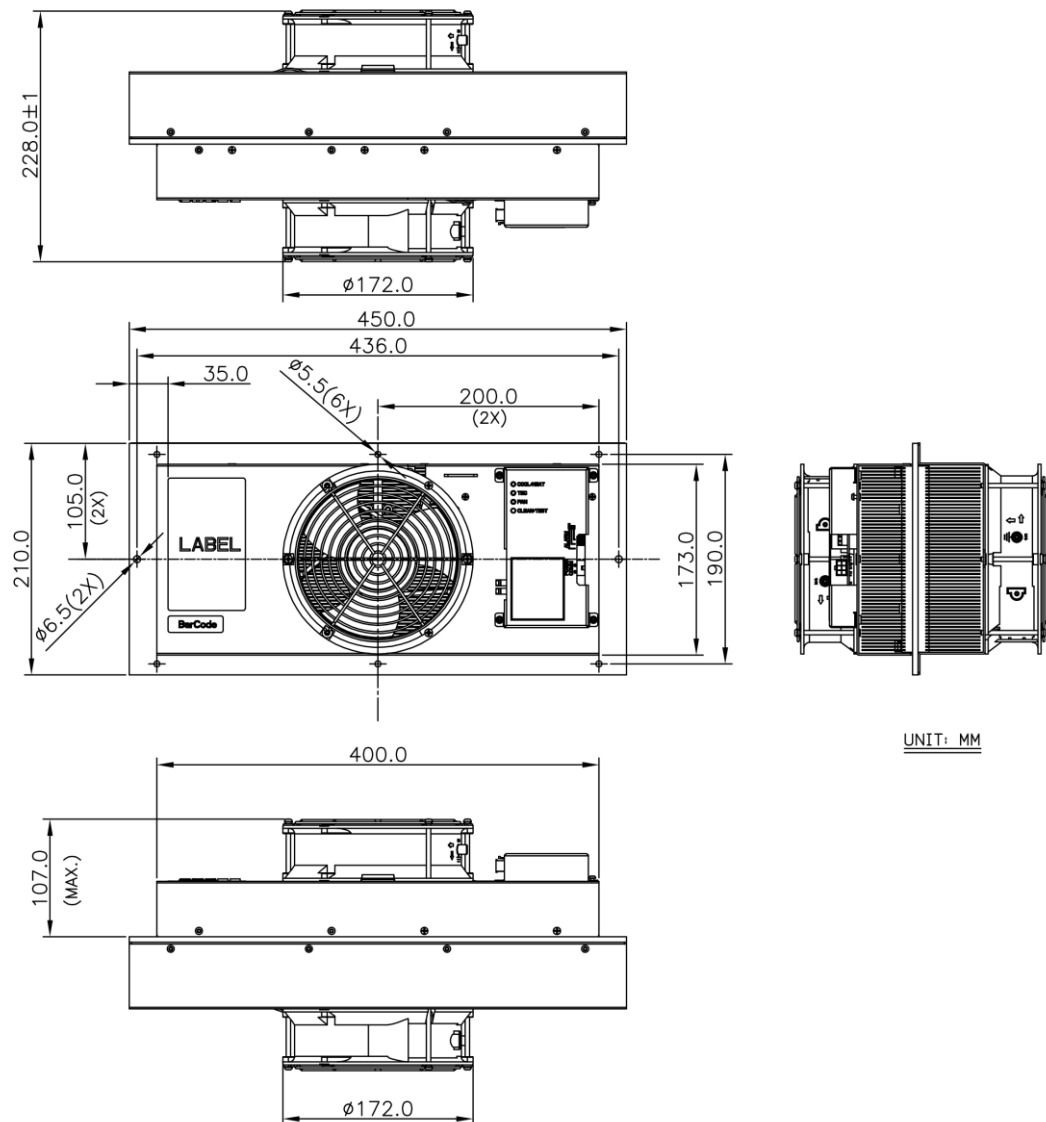
Cooling and heating capacity is for internal side.

Part no. :

Delta model no. : HET400PA

1-3. Dimension

1-3-1. Drawing



(1) Material : case aluminum sheet , t=1.5mm

(2) Finish : Power paint 75~120um,

(3) Color : RAL 7032

(4) Dimension tolerance:

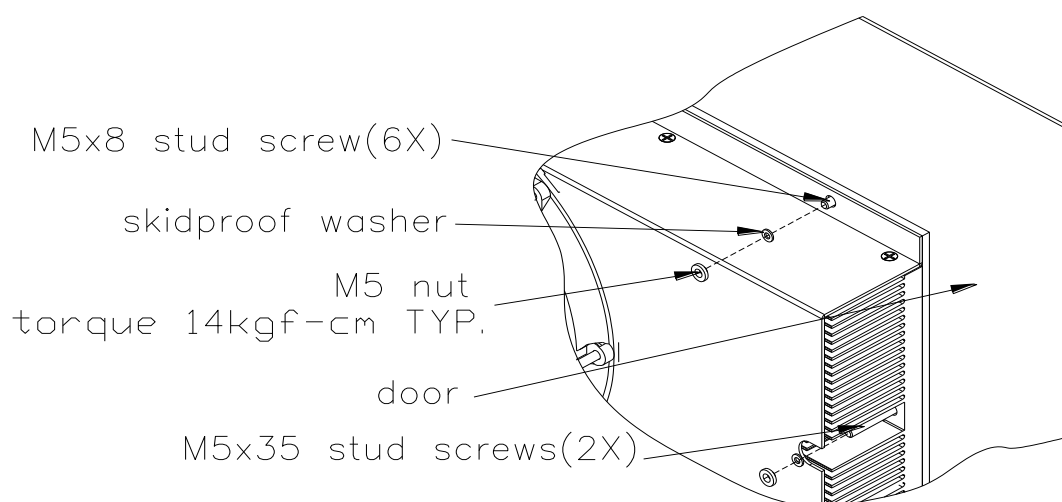
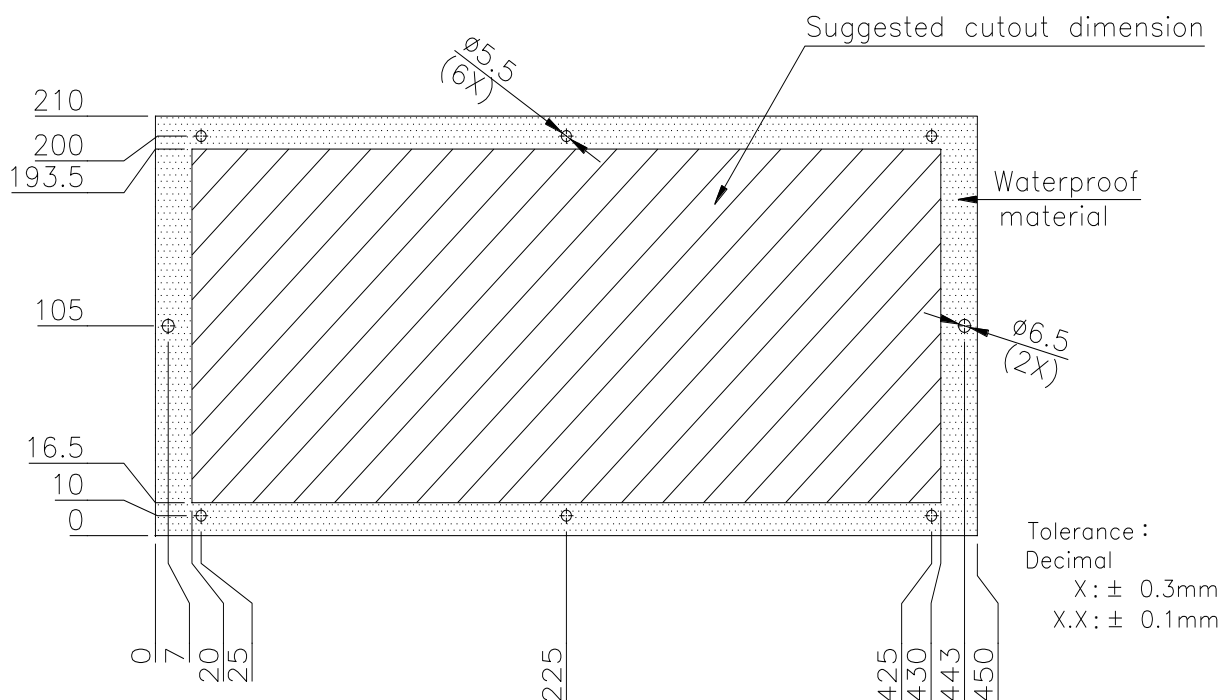
X.X [X.XX] : $\pm 1.0\text{mm}$ [0.04"]

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

Part no. :

Delta model no. : HET400PA

1-3-2. Mounting panel cutout



Part no. :

Delta model no. : HET400PA

1-4. Maintenance

1-4-1. This device is to be repaired by authorized technician.

Please refer to the exploded drawing shown as previous page and follow below description for disassembly.

External fan: Disassemble mounting screw of external fan via screw driver & pull out the connector.

Internal fan: Disassemble mounting screw of internal fan via screw Driver & pull out the connector.

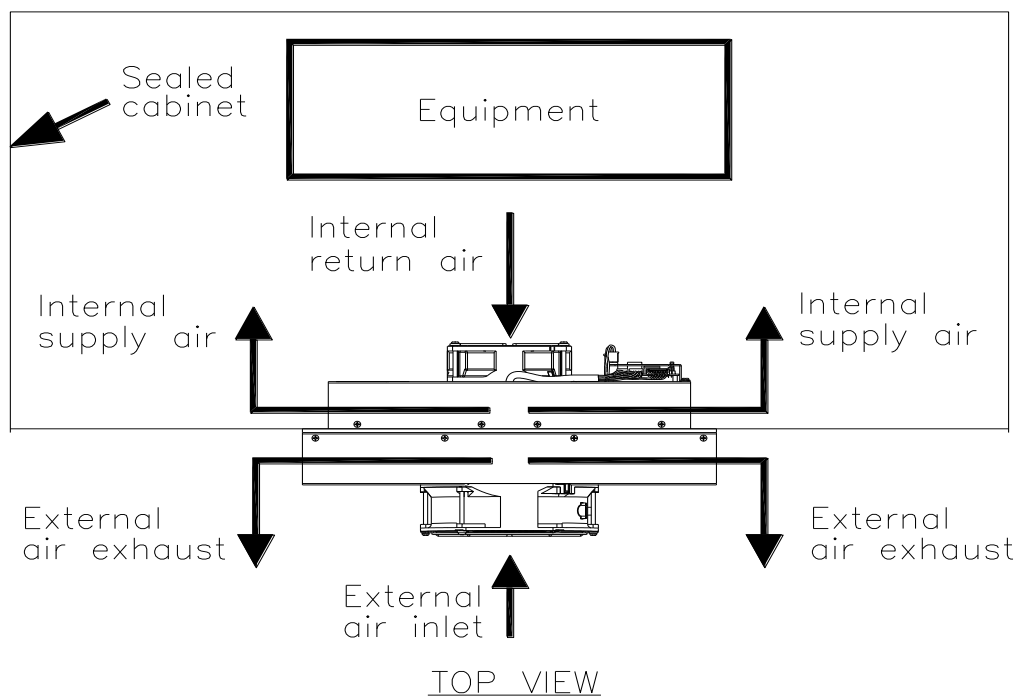
Controller: Need to disassemble internal fan first, then pull-out all cable connection on controller, take off mounting screw of controller finally.

TEC device: Due to TEC device have waterproof sealant protection and thermal conductive compound with heat-sink; please kindly ship back to Delta for replacement.

1-4-2. Please disconnect the power supply before replacing the TEC module.

1-5. Thermal path and airflow baffle

The thermal exchanged path is shown in the figure below.



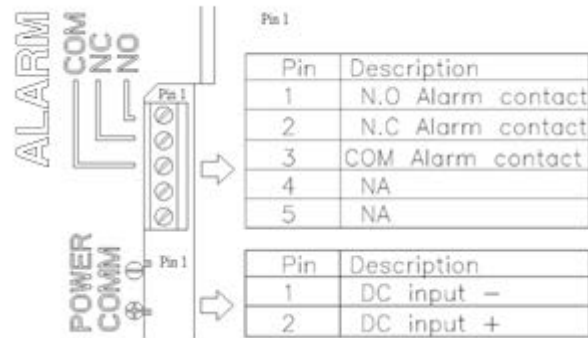
Part no. :

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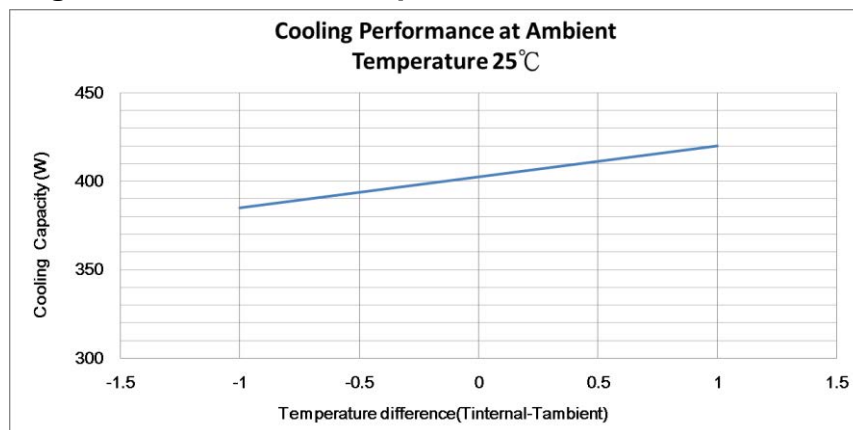
2. Electrical specification

2-1. Indicator & connector

Power connector mate with Kang Yang FDFD2-250

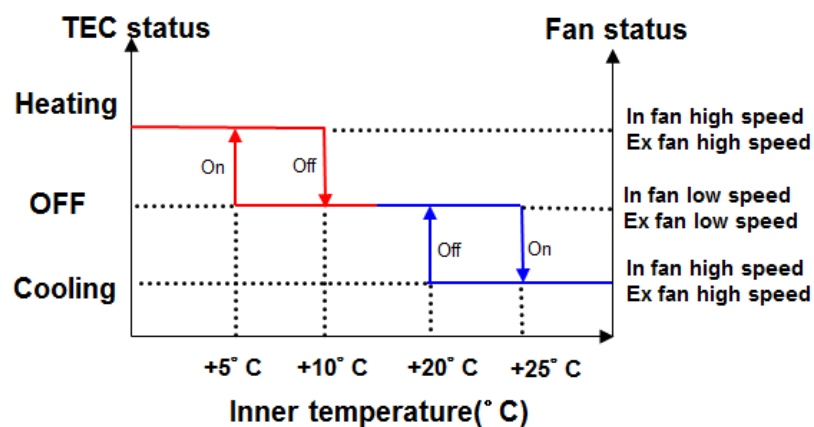


2-2. Cooling Performance VS Temperature Difference



2-3. TEC work temperature range

TEC module has two work status, cooling and heating, according to the cabinet internal temperature (detected by the NTC at inlet of internal fan).



Part no. :

Delta model no. : HET400PA

2-4. Interface



- "COOL/HEAT" LED STATUS:
 - (Green) : TEC in Cooling Mode
 - (Orange) : TEC in Heating Mode
 - (Dark) : TEC OFF - No Cooling or Heating
 - "TEC" LED STATUS:*
- (Green) : TEC Normal Operation
 - (Red) : TEC Failure
 - (Blink Green) : TEC Normal in Test Process
 - (Blink Red) : TEC Failure in Test Process or Temperature Sensor Failure
- "FAN" LED STATUS:
 - (Green) : Fan Normal Operation
 - (Red) : Fan Failure
 - (Blink Green) : Fan Normal in Test Process
 - (Blink Red) : Fan Failure in Test Process
- CLEAN/TEST

There is an auto test button on control board, user can press this button to run heating and cooling process, the process is about 3.5 min. User can turn off this function by pressing this button again.

* The TEC will report a "TEC" failure via a Red LED when any abnormality in electrical current is detected.

Note: When any failure during Cooling or Heating mode is detected, the "FAN" and/or "TEC" LED(s) will remain Red even when the TEC enters in idle mode. However, before performing any maintenance, it is recommended that the "TEST" button be pressed, allowing the TEC to run for approximately 3.5 minutes, to validate any failure.

Part no. :

Delta model no. : HET400PA

Alarm dry contact:

- Pin1 to pin3 "Open":
Normal
- Pin1 to pin3 "Close":
Fan, TEC, sensor failed or power off
- Pin2 to pin3 "Close":
Normal
- Pin2 to pin3 "Open":
Fan, TEC, sensor failed or power off

Connector "Alarm"

Pin to Pin ----- MAX. ($\pm$ 60VDC) 400mA

Part no. :

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3. Environmental conditions

3-1. Operating temperature :

-40°C ~ +55°C (-40°F ~ 131°F)

3-2. Storage temperature :

-40°C ~ +65°C (-40°F ~ 149°F)

3-3. Humidity

External air circuit: 0 ~ 100% RH

Internal air circuit: 0 ~ 95% RH

3-4. Protection rating

IP55 (IEC60529) on both external fan and internal fan.

IP51 (IEC60529) on controller.

Comply with GR487 salt fog test on external fan

3-5. MTBF

Fan lifetime is expected to have a minimum L10 life of 80,000 hours
continuous operation at 40°C with 15 ~ 65%RH at 48 voltage

PS: The TEC module inside circuit is designed for application in without anti-sulfide condition,
If user have any special condition for application environment, please contact the TEC
development department for verify first.

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4. Certified safety

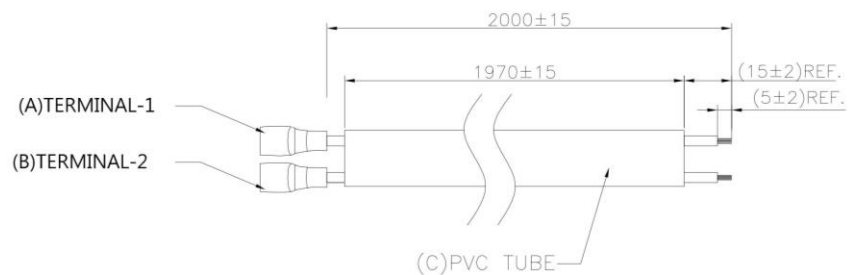
4-1. Safety Mark



5. User cable

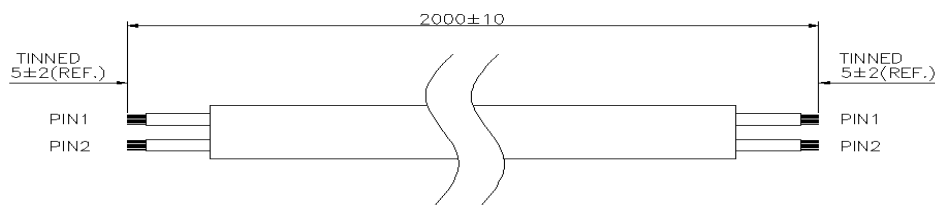
Each TEC module will provide 2 cables with shipment.

5-1 Power cable



PINOUTS		
TERMINAL	CABLE WIRE COLOR	CABLE WIRE TYPE
THERMINAL-1	RED	UL 1015 AWG#14
THERMINAL-2	BLACK	

5-2 Alarm cable



PINOUTS		
Wire	CABLE WIRE COLOR	CABLE WIRE TYPE
PIN 1	BROWN	UL 1061 AWG#22
PIN 2	BLUE	

Part no. :

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History

Rev.	Description	Drawn	Approved	Issue Date
00	ISSUE SPEC	Nick Wang	Diamond Chen	2012/01/18
01	Modify the airflow	Nick Wang	Ken Chou	2014/02/21
02	ADD PWB. Page3 Adding Fan status	CS Wang	Ken Chou	2015/01/13
03	ADD SAFTY MARK.	CS Wang	Diamond Chen	2015/05/20
04	Change rated current to 11.7A on page 4	Derek.JH.Tsai	Jerry Yang	2015/11/03
05	Add chapter 6 warranty and correct some data	CS Wang	Jerry Yang	2016/04/01
06	Add chapter 6 warranty and correct some data	Stern Li	CW. Chen	2017/11/08
07	Remove non-condensing and safety depiction and warranty	KC.Liao	Mars.Wu	2020/08/05