



## Specification For Approval

Customer : \_\_\_\_\_  
Description : Thermal Electric Cooling 200W  
Customer part no : \_\_\_\_\_ Rev. : \_\_\_\_\_  
Delta model no : HET200PB Rev. : 03  
Sample issue no : \_\_\_\_\_  
Sample issue date : JUN .21.2013

### Modify history

| Rev. | Description              | Drawn     | Approved     | Issue Date |
|------|--------------------------|-----------|--------------|------------|
| 00   | ISSUE SPEC               | Nick Wang | Diamond Chen | 2012/1/18  |
| 01   | Adding 2-4 & 6           | Ted.Tu    | Diamond Chen | 2012/12/12 |
| 02   | Modify the noise.        | Nick Wang | Diamond Chen | 2013/4/16  |
| 03   | Add the safety trademark | Nick Wang | Diamond Chen | 2013/06/21 |
|      |                          |           |              |            |
|      |                          |           |              |            |
|      |                          |           |              |            |
|      |                          |           |              |            |

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

Approved by : \_\_\_\_\_

Date : \_\_\_\_\_

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STATEMENT OF DEVIATION  
\*\*\*\*\*

NONE

DESCRIPTION :

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## Specification for approval

Customer :

.....  
Description : Thermal Electric Cooling 200W

.....  
Customer P/N :

.....  
Rev. :

.....  
Delta model no. : HET200PB

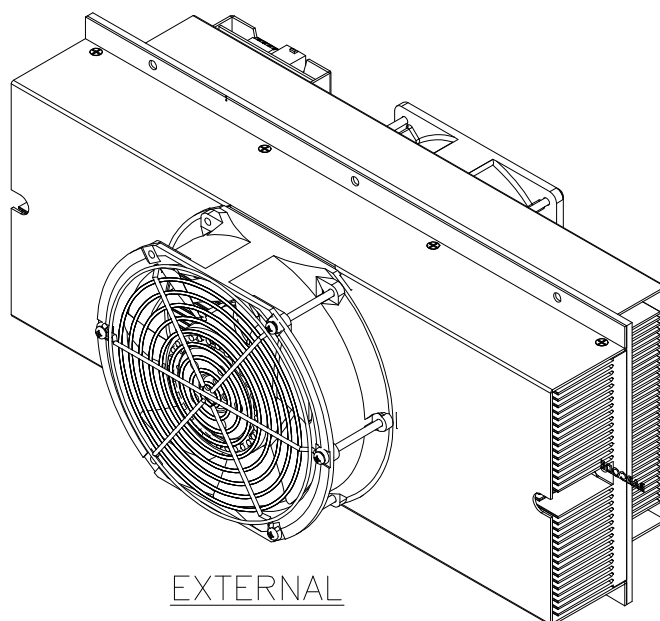
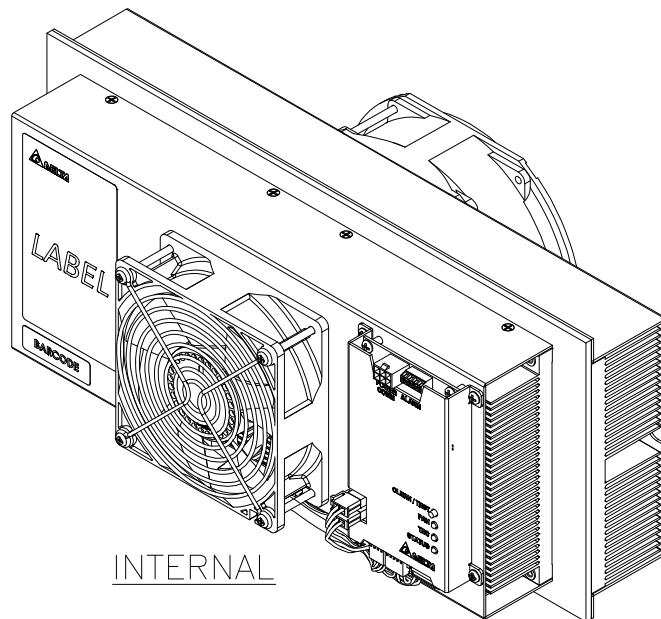
.....  
Rev. : 03

.....  
Sample revision :

.....  
Issue no. :

.....  
Sample issue date :

.....  
Quantity : sets



Part no. :

.....  
Delta model no. : HET200PB  
.....

## 1. Description

### 1-1. General description :

The Thermal Electric 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 protection rating on the external air circuit.

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

| Main feature                               | Unit | Model Number                  |
|--|------|-------------------------------|
|  |      | HET200PB                      |
| Outline dimension                          | mm   | 400 H x 180 W x 208 D         |
| Weight                                     | Kg   | 9.0 ± 0.5                     |
| Cooling capacity ( $\Delta T = 0$ °C)      | W    | 200                           |
| Heating capacity @ -40° C                  | W    | 225                           |
| Rated voltage                              | VDC  | 48 (TYP.)                     |
| Operating voltage range                    | VDC  | 40~56                         |
| Rated Current                              | A    | 6.7 (TYP.)                    |
| Rated Consumption                          | W    | 321.6                         |
| Operating temperature                      | °C   | -40~55                        |
| Internal airflow rate                      | cfm  | 100 (TYP.)                    |
| External airflow rate                      |      | 120 (TYP.)                    |
| Acoustic noise at 1M :<br>(Sound pressure) | dB-A | 61.0 dB-A(Typ.)<br>64.0(Max.) |

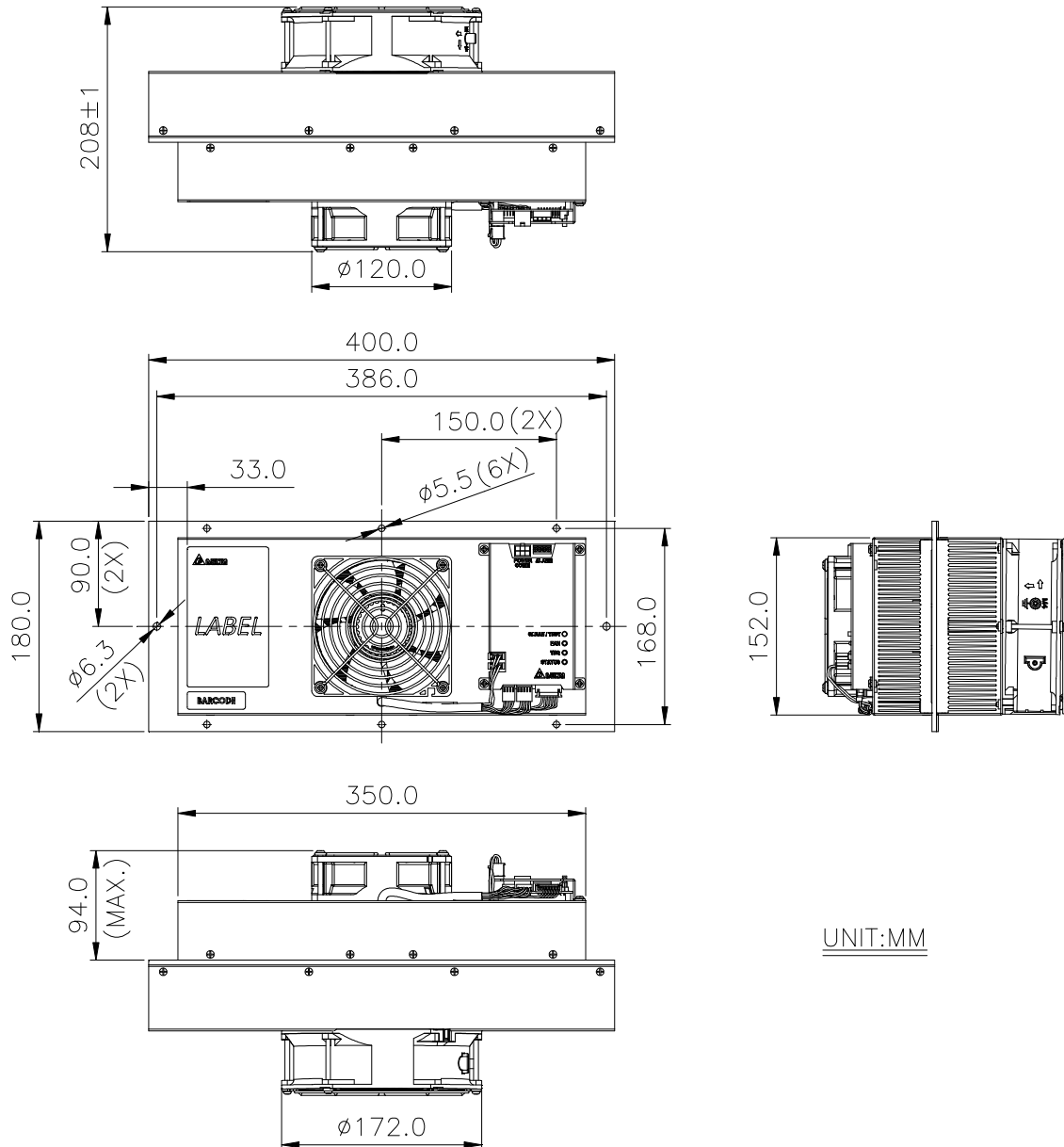
Cooling and heating capacity is for internal side.

Part no. :

Delta model no. : HET200PB

### 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:

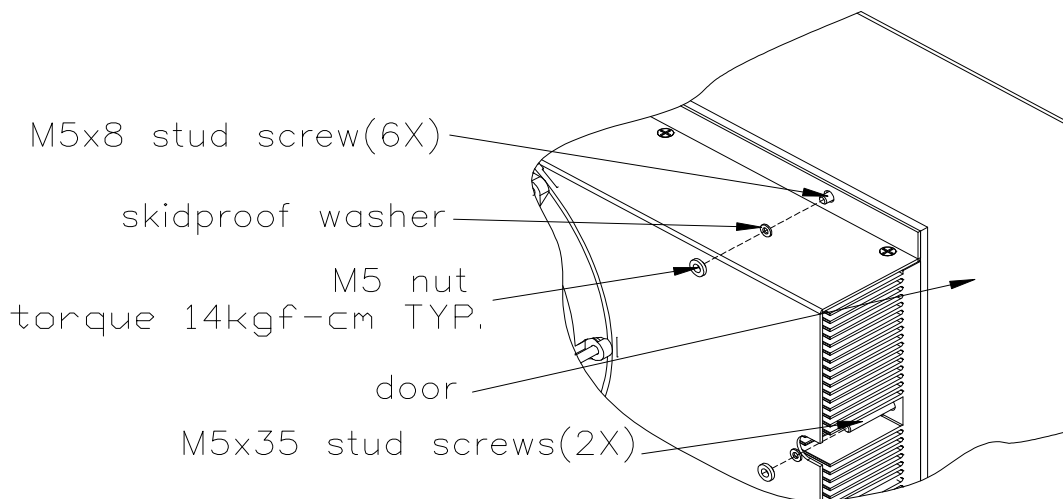
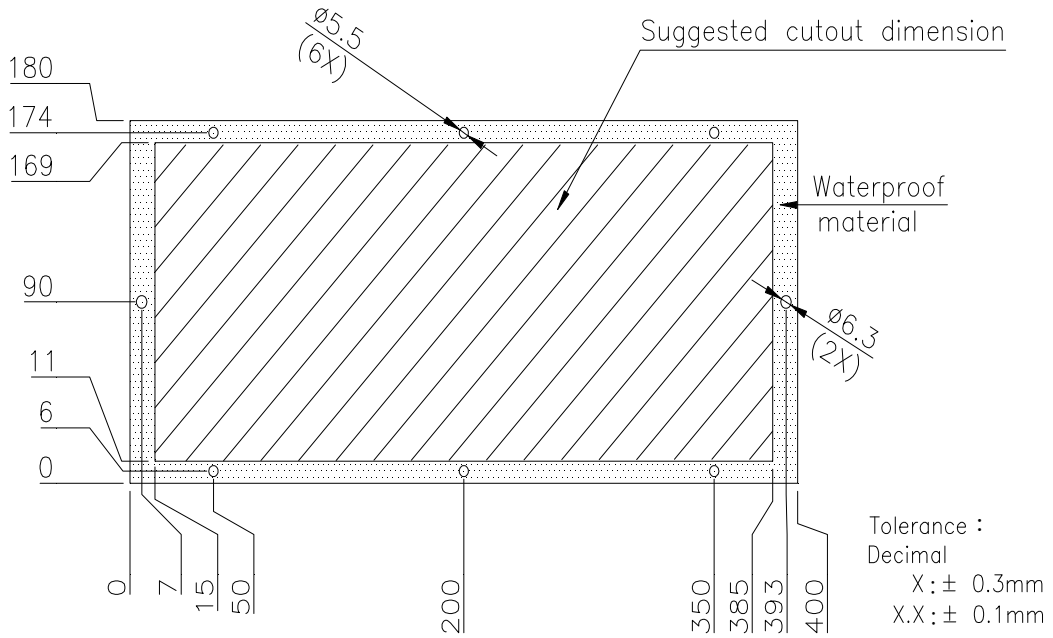
X.X [X.XX] :  $\pm 1.0\text{mm}$  [0.04"]

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

Part no. :

Delta model no. : HET200PB

### 1-3-2 Mounting panel cutout





Part no. :

-----  
Delta model no. : HET200PB  
-----

#### **1-4. Maintenance**

- 1-4-1. Be sure to disconnect power supply before disassembly TEC module from customer cabinet.
- 1-4-2. Please refer to Delta authorized engineers for TEC module component replacement service, no allow unauthorized personnel to repair the unit.
- 1-4-3. If the replacement by user himself is necessary, please refer to the exploded drawing shown as previous page and 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 .

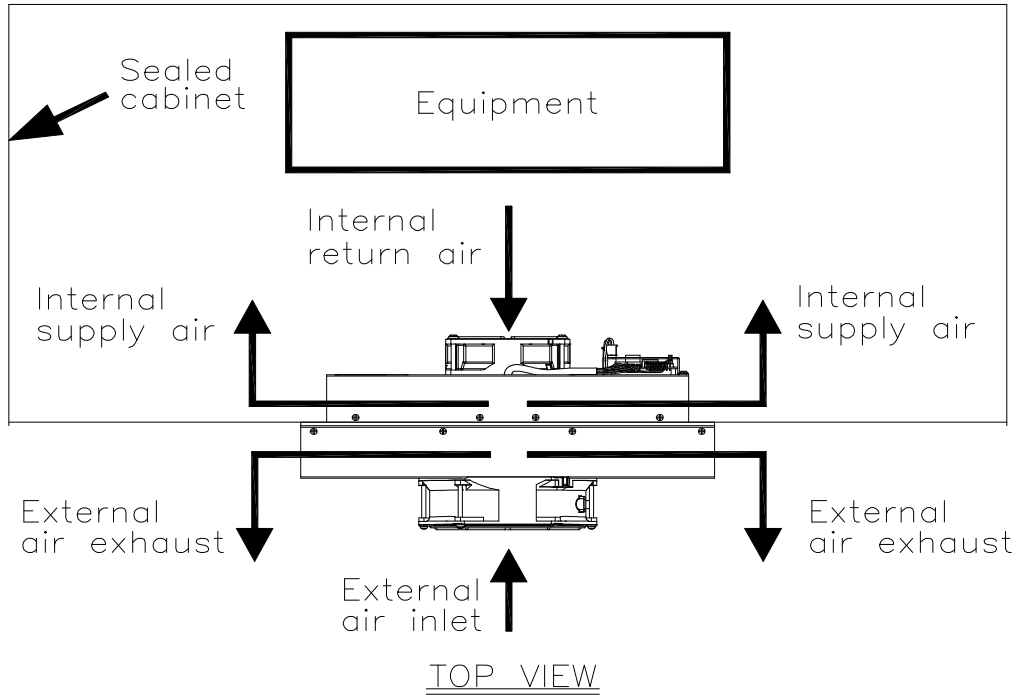
TEC device: Due to TEC device have waterproof sealant protection and thermal conductive compound with heat-sink, please kindly ship back to Delta for replacement.

Part no. :

Delta model no. : HET200PB

### 1-5. Thermal path and airflow baffle

The thermal exchange path is shown in the figure below.



Part no. :

Delta model no. : HET200PB

## 2. Electrical specification

### 2-1. Indicator & connector

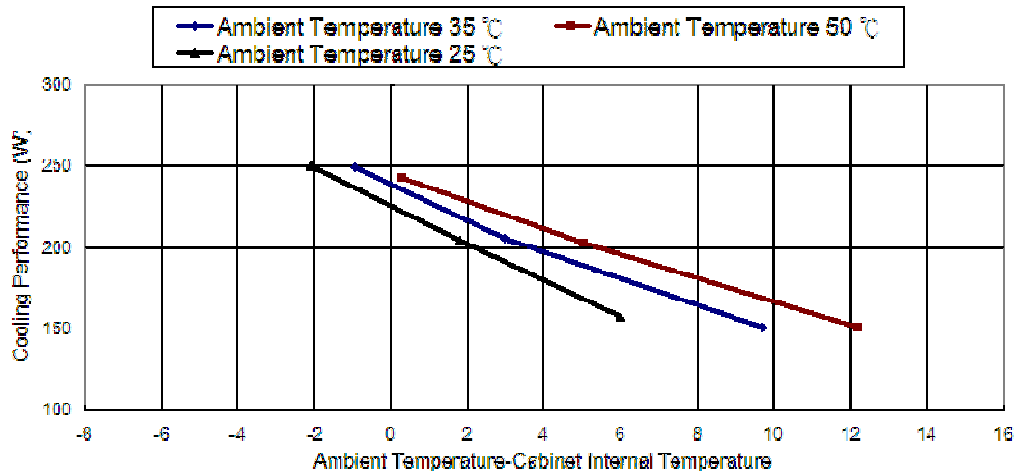
Connector " -48V VDC " mate with JWT C4201WR0-2\*3PNL



| PIN | Function | PIN | Function |
|-----|----------|-----|----------|
| 1   | -48V (-) | 4   | -48V (-) |
| 2   | NA       | 5   | NA       |
| 3   | 0V (+)   | 6   | 0V (+)   |

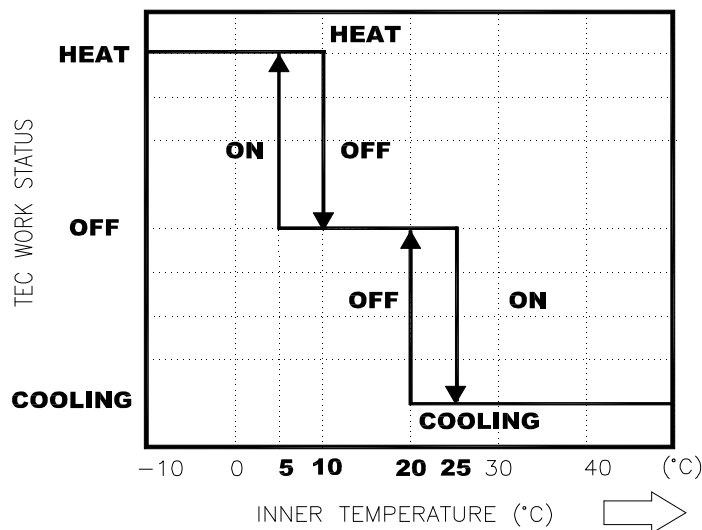
### 2-2. Cooling Performance VS Temperature Difference

Cooling Performance VS Temperature Difference



### 2-3. TEC work temperature range

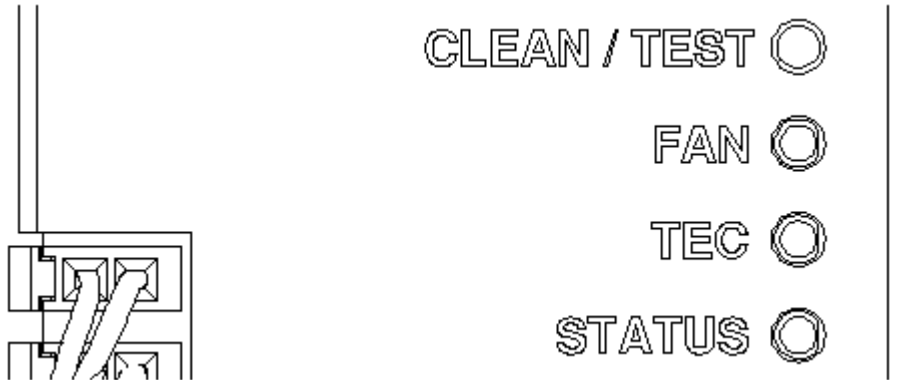
HET200PB has two work status, cooling and heating, according to the cabinet internal temperature (detect by on-board NTC).



Part no. :

Delta model no. : HET200PB

## 2-4. Interface

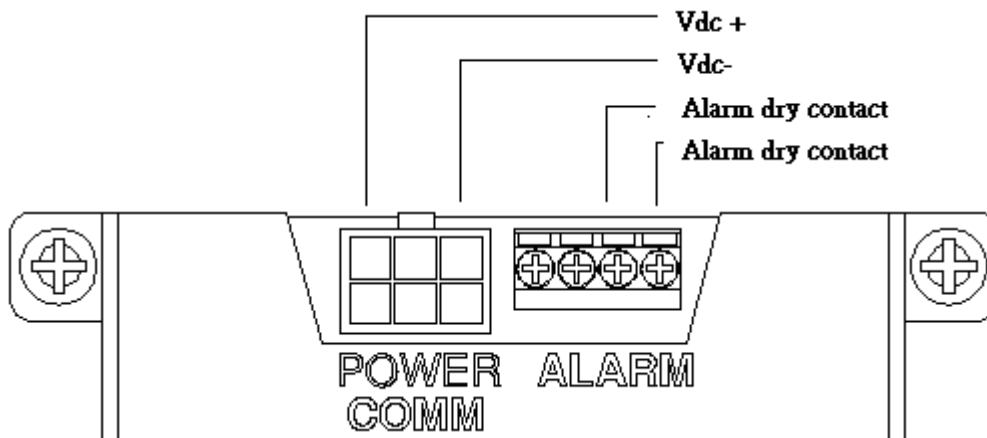


- LED "FAN"
  - (Green) : Fan normal
  - (Red) : Fan failed
  - (Blink Green) : Fan normal in test process
  - (Blink Red) : Fan failed in test process
- LED "TEC" \*
  - (Green) : TEC normal
  - (Red) : TEC failed
  - (Blink green) : TEC normal in test process
  - (Blink red) : TEC failed in test process or sensor failed
- LED "STATUS"
  - (Green) : HET200PB work in cooling mode
  - (Red) : HET200PB work in heating mode
  - (Dark): HET200PB TEC function OFF
- CLEAN/TEST
  - There is a auto test button on HET200PB, user can press this button to run HET200PB heating and cooling process, the process is about 7~8 mints. User can turn off this function by pressing this button again.

\*:HET200PB will detect internal fan income air temperature and sink surface temperature, It will compare two temperature to determine TEC is normal or not.

Part no. :

Delta model no. : HET200PB



Alarm dry contact:

- Pin to pin "Open":  
Normal
- Pin to pin "Close":  
Fan , TEC or sensor failed

Connector "Alarm"

Pin to Pin ----- MAX. (  $\pm 75\text{VDC}$  ) 50mA

### 3. Environmental conditions

#### 3-1. Operating temperature :

-40°C ~ +55°C ( 14°F ~ 149°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 ~ 90% RH, Non-condensing

#### 3-4. Protection rating

IP55 (IEC60529) on external side with mounting on door.

#### 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

Part no. :

Delta model no. : HET200PB

#### 4. Certified safety

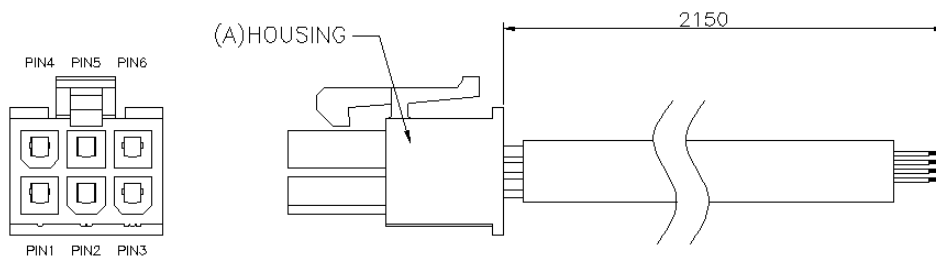
4-1. UL , CUL, TUV, CE



#### 5. User cable

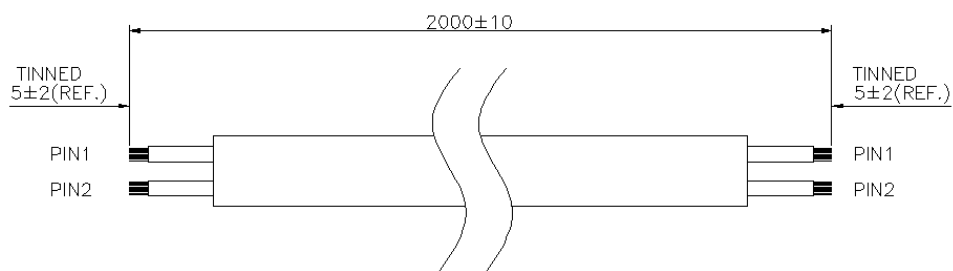
Each HET200PB will provide 2 cables with shipment.

##### 5-1 Power cable



| PINOUTS       | CABLE WIRE COLOR | CABLE WIRE COLOR | CABLE WIRE TYPE   |
|---------------|------------------|------------------|-------------------|
| CONNECTOR (A) |                  |                  |                   |
| (A) - PIN 1   | BLACK            | -48V             | UL 1061<br>AWG#22 |
| (A) - PIN 3   | RED              | +0V              |                   |
| (A) - PIN 4   | BLACK            | -48V             |                   |
| (A) - PIN 6   | RED              | +0V              |                   |

##### 5-2 Alarm cable



| PINOUTS | CABLE WIRE COLOR | CABLE WIRE TYPE   |
|---------|------------------|-------------------|
| Wire    |                  |                   |
| PIN 1   | BROWN            | UL 1061<br>AWG#22 |
| PIN 2   | BLUE             |                   |



## ***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.**