Specification For Approval

Customer :

Description : Thermoelectric Cooling 400W

Customer part no : Rev. :

Delta model no : HET400PA-A01 Rev. : 00

Sample issue no :

Sample issue date : FEB.15 2022

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
TAOYUAN HSIEN 333, TAIWAN, R. O. C.
TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

Part no. :

Delta model no. : HET400PA-A01

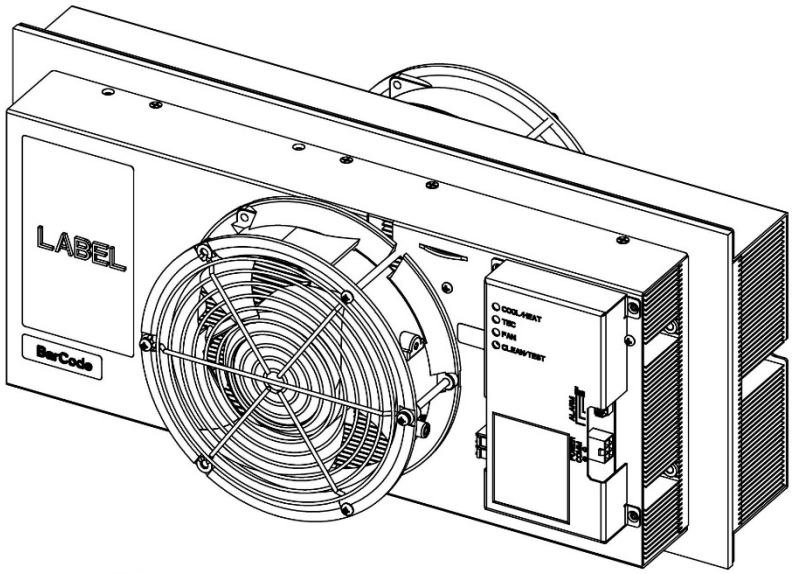
Table of content

Part no. :

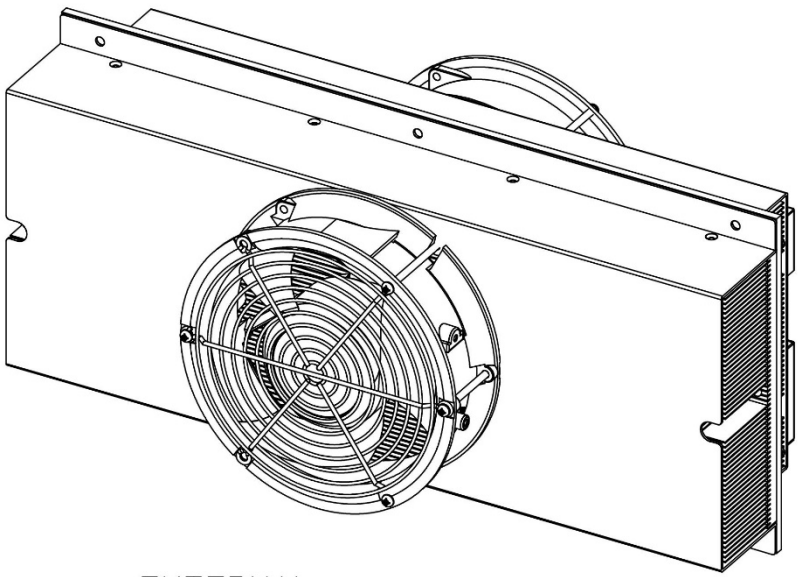
Delta model no. : HET400PA-A01

Specification for approval

Customer :	
Description : Thermoelectric Cooling 400W	
Customer P/N :	Rev. :
Delta model no. : HET400PA-A01	Rev. : 00
Sample revision:	Issue no. :
Sample issue date :	Quantity : sets



INTERNAL



EXTERNAL

Part no. :

Delta model no. : HET400PA-A01

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 IP68 protection rating on the external air circuit.

*IP68: 1.1 m underwater for one hour

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

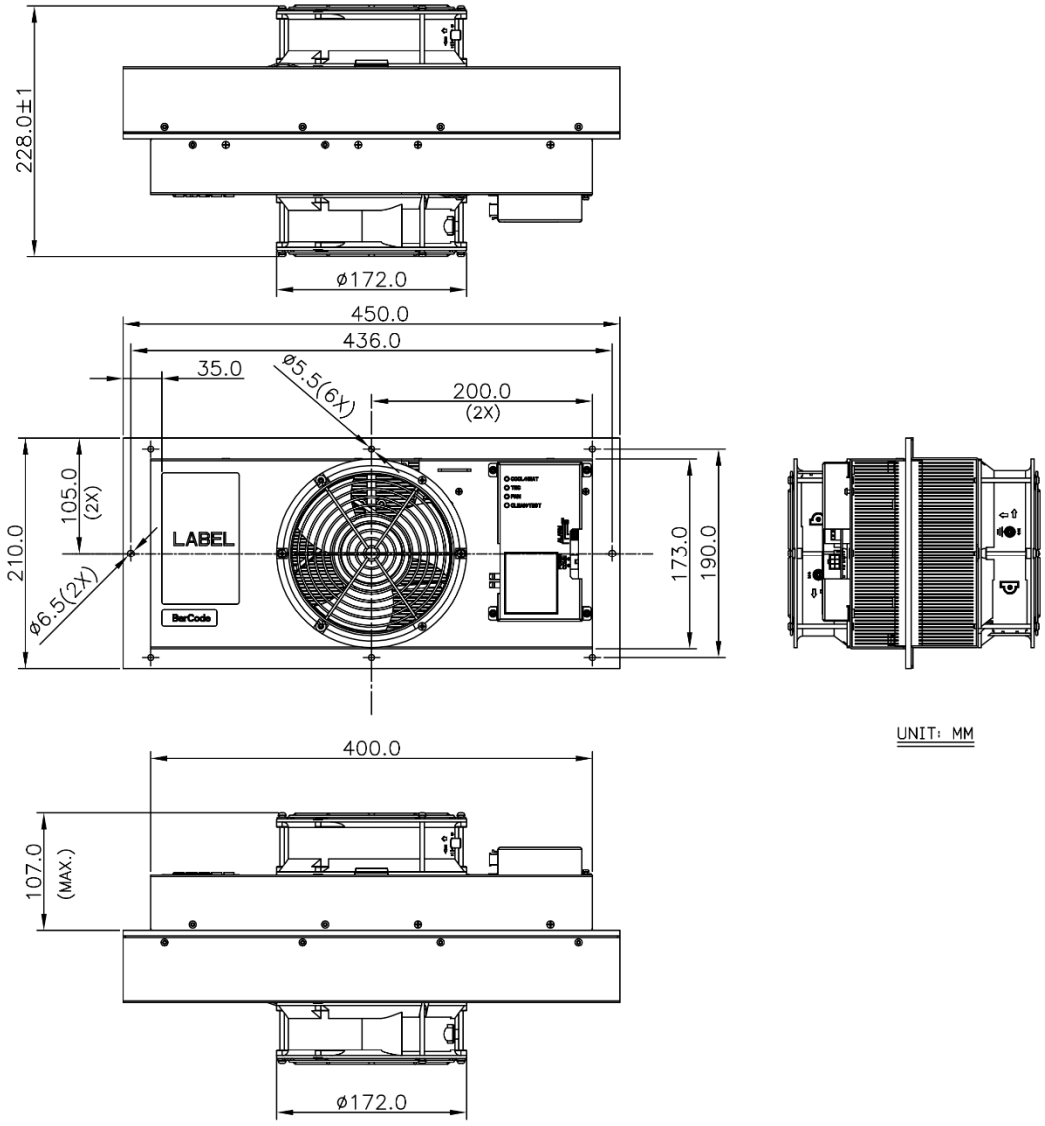
Main feature	Unit	Model Number
		HET400PA-A01
Outline dimension	mm	450 H x 210 W x 228 D
Weight	kg/ lb	11.0 ± 0.5/24.2± 1.1
Cooling capacity (△T =0℃)	W	400 (TYP.)
Heating capacity @ -40° C	W	450 (TYP.)
Rated voltage	VDC	48 (TYP.)
Operating voltage range	VDC	40~56
Actuality Current	A	11.7(TYP.)
Rated 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 :	dB-A	65.0 (TYP.)
(Sound pressure)		69.0 (Max.)

*Cooling capacity is defined at △T=0℃ and Tambient =25℃

*Cooling and heating capacity is for internal side.

1-3. Dimension

1-3-1. Drawing



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

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

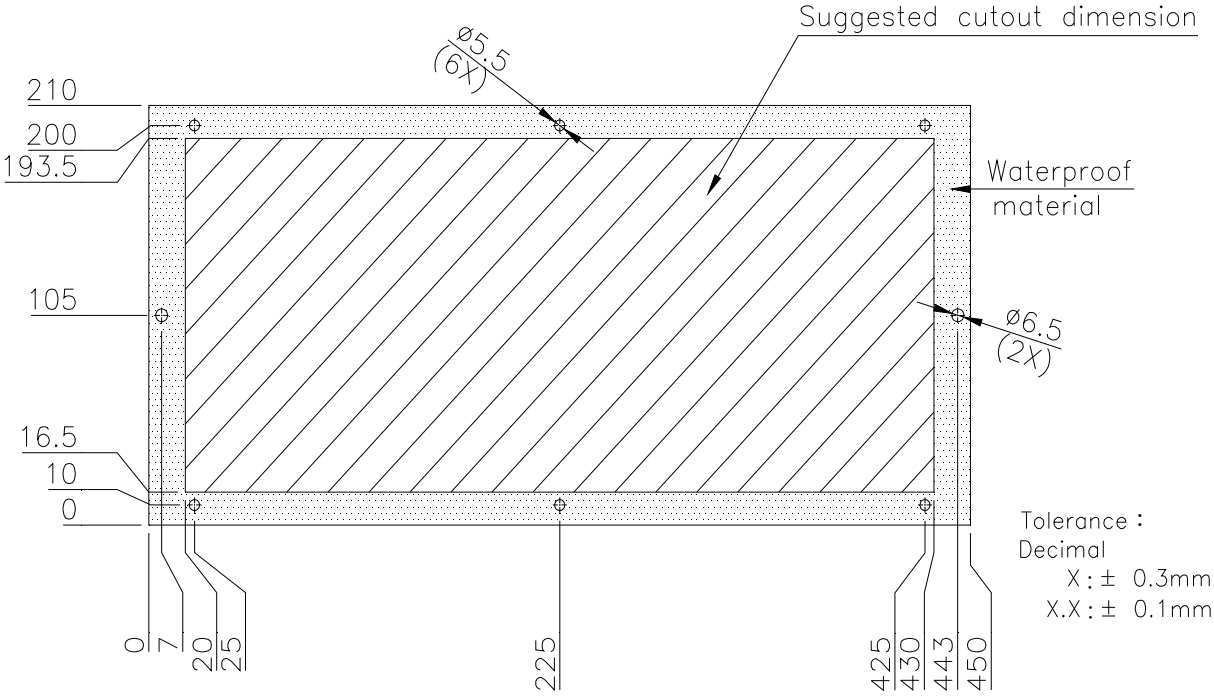
(3) Color : RAL 7032

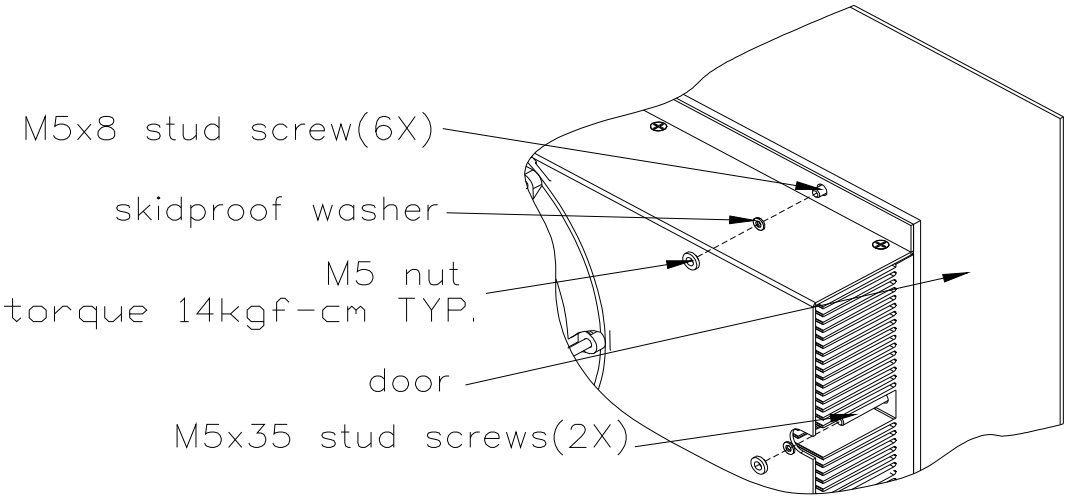
(4) Dimension tolerance:

X.X [X.XX] : ± 1.0mm [0.04”]

X.XX [X.XXX] : ± 0.3mm [0.012”]

1-3-2. Mounting panel cutout





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.

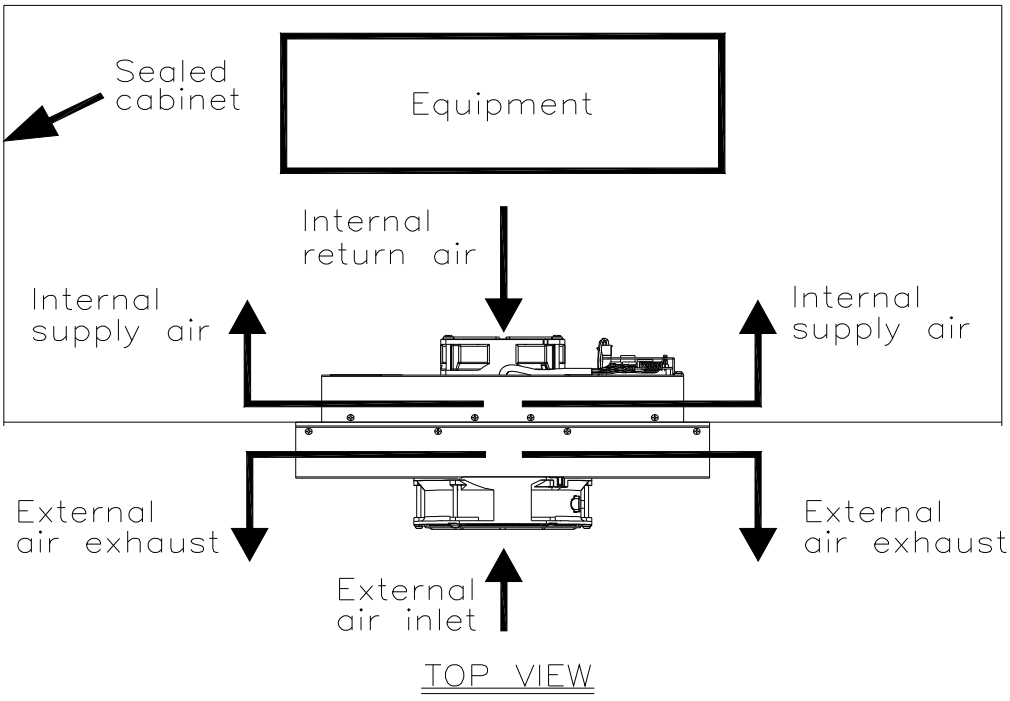
Controller: Need to disassemble internal fan first, then pull-out all cable connection on controller, take off mounting screw of controller finally.

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

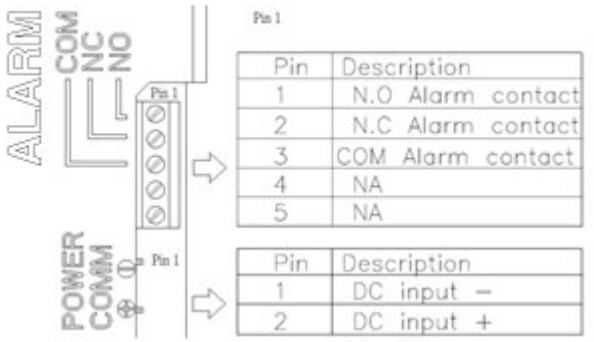
The thermal exchanged path is shown in the figure below.



2. Electrical specification

2-1. Indicator & connector

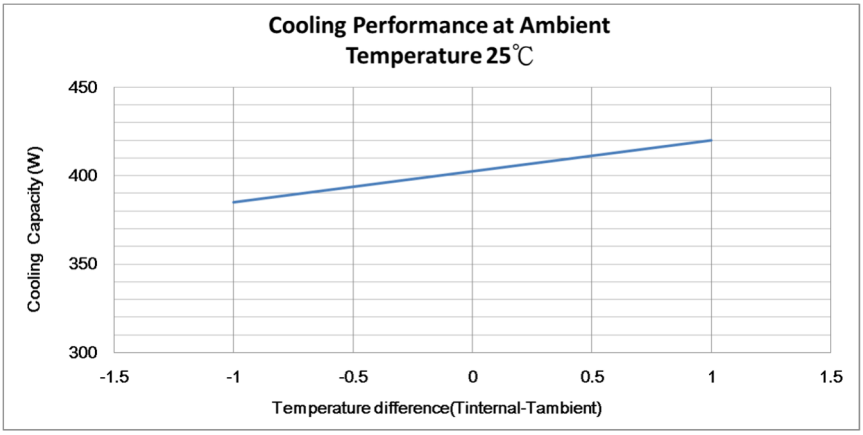
Power connector mate with Kang Yang FDFD2-250



Pin	Description
1	N.O Alarm contact
2	N.C Alarm contact
3	COM Alarm contact
4	NA
5	NA

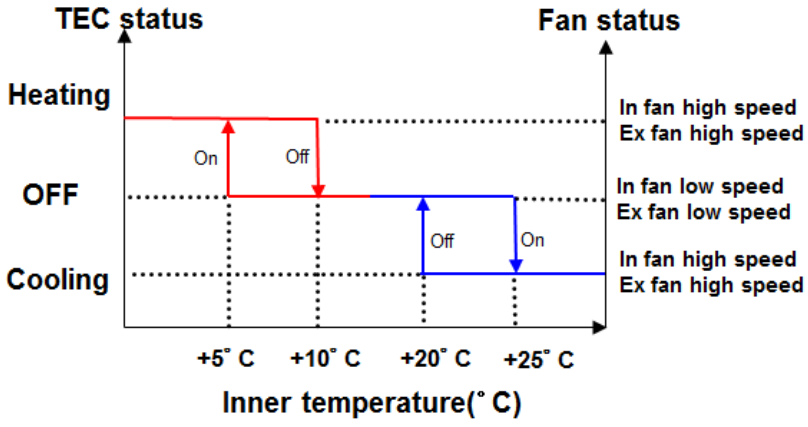
Pin	Description
1	DC input −
2	DC input +

2-2. Cooling Performance VS Temperature Difference

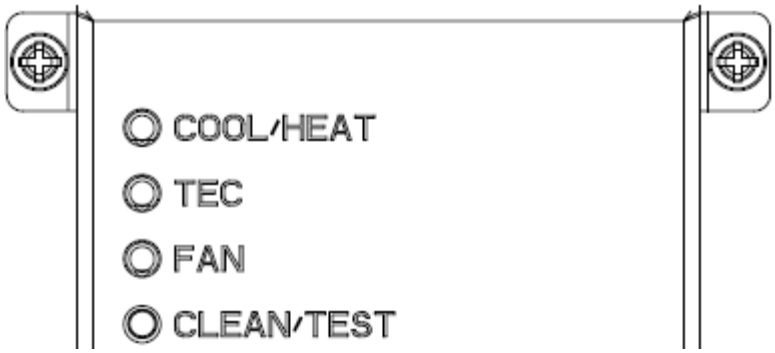


2-3. TEC work temperature range

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



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.

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. (± 60VDC) 400mA

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

IP68 (IEC60529) on external side with mounting on door.

*IP68: 1.1 m underwater for one hour

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.

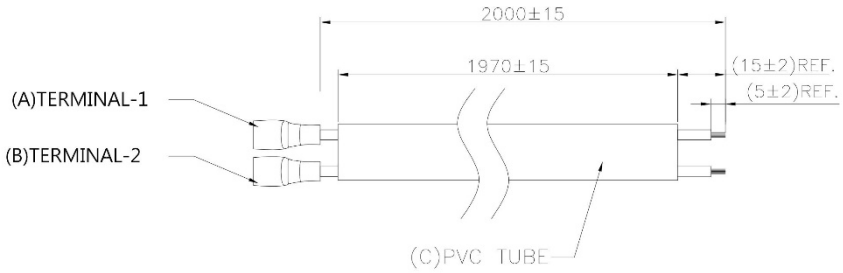
4. Certified safety

4-1. Safety Mark

5. User cable

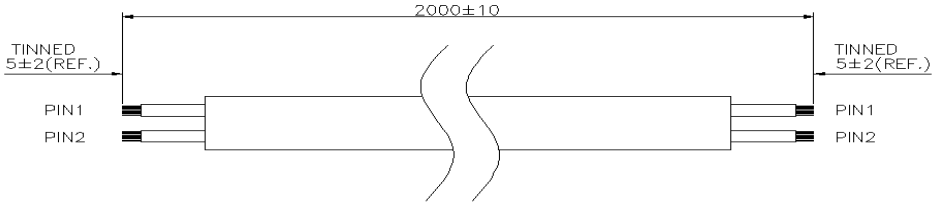
Each TEC module will provide 2 cables with shipment.

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	

6. Versions

REV	DESCRIPTION	DRAWN	CHECKED			APPROVED	ISSUE DATE
			ME	EE	CE		
00	ISSUE SPEC	Rex.Lyu 02.15'22	Rex.Lyu 02.15'22	Ted.Tu 02.15'22	------	Diamond CHEN / MARS.WU 02.15'22	02.15'22