



## **Specification For Approval**

Customer : \_\_\_\_\_

Description : DC48V Rack-mount Heater 500W/1000W

Customer Part No. : \_\_\_\_\_ Rev. : \_\_\_\_\_

Delta Model No. : HEH100PB Rev : 04

Sample Issue No. : \_\_\_\_\_

Sample Issue Date : Jan.09. 2017

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

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

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

Delta Electronics, Inc.

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\*\*\* SAMPLE HISTORY\*\*\*

CUSTOMER :

CUSTOMER P/N :

DELTA MODEL : HEH100PB

[illegible]

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## Specification For Approval

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Customer P/N :

rev. :

Delta model no. : HEH100PB

rev. : 04

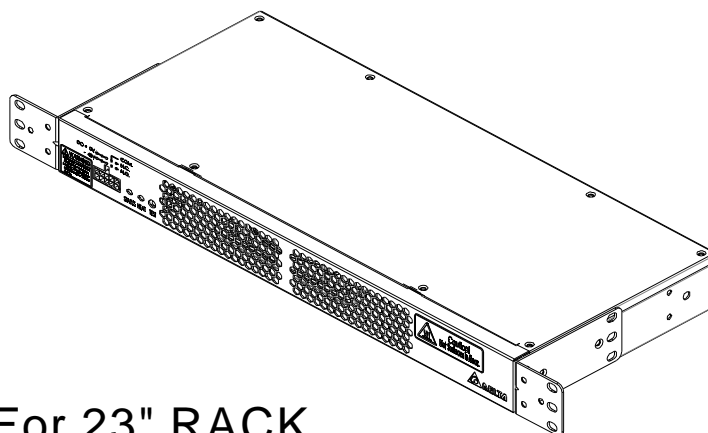
Sample revision :

Issue no. :

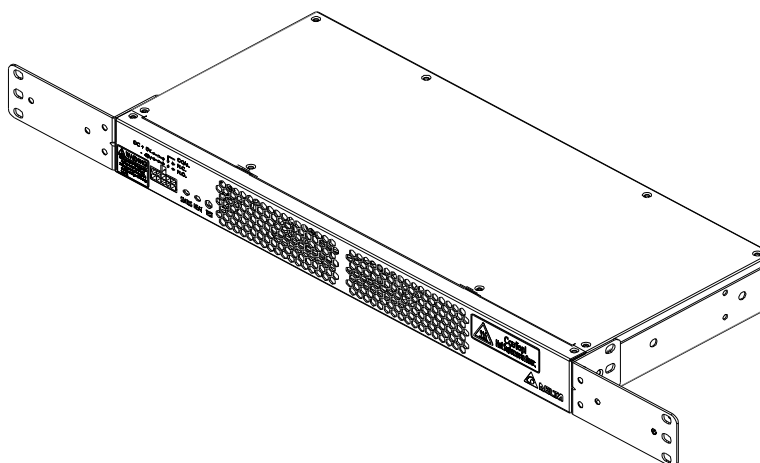
Sample issue date : JAN.09 2018

Quantity : sets

For 19" RACK



For 23" RACK



Part no. :

Delta model no. : HEH100PB

## 1. Description

### 1-1. General description

The heater is designed for warming up air in the cabinet. It warms air to avoid equipment damaged at much lower temperature . The heater can be mounted on the rack of cabinet.

### 1-2. Main feature & Model number

Main feature	Unit	Model Number
		HEH100PB
Outline Dimension (HXWXD)	mm/in	44x 483x177/1.75"x19"x7" for 483/19" mount 44 x584x177/1.75"x23"x7" for 584/23" mount
Weight	kg/lb	2.27/5
Heating Capacity (*Note1)	W	500/1000±20%
Rated Voltage	VDC	48
Operating Voltage Range	VDC	46-56
Operating Current	A	11A for 500W 22A for 1000W
Start Current	A	28
Operataing status	N/A	LED indicator
Fan / Heater/ Sensor alarm	N/A	Dry contact

\*Note1 : The Heating capacity (W) is defined as  $W=V \times A$ .

W : power consumption

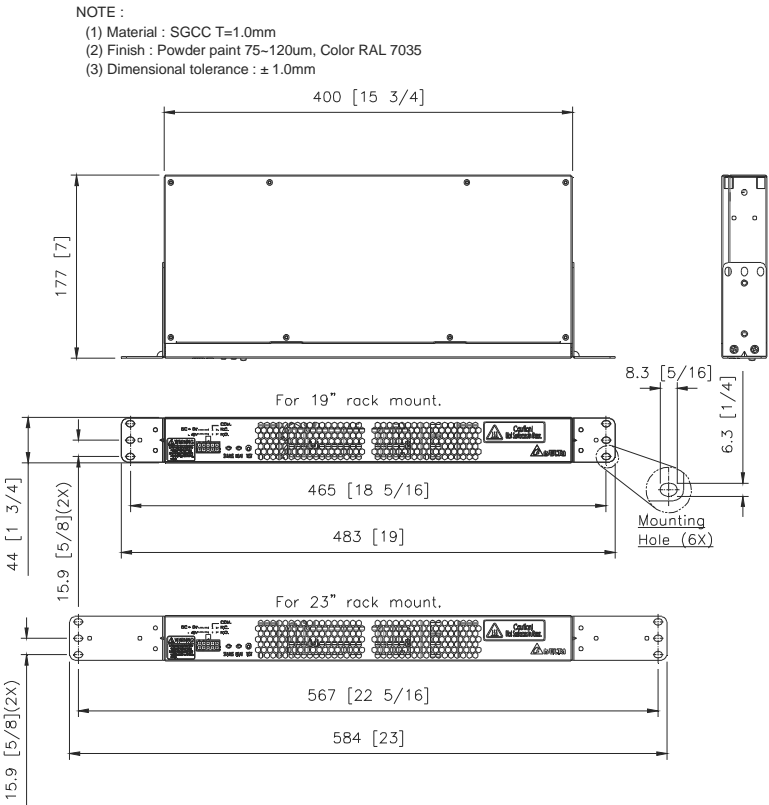
V: Operating Voltage

A : Operating current

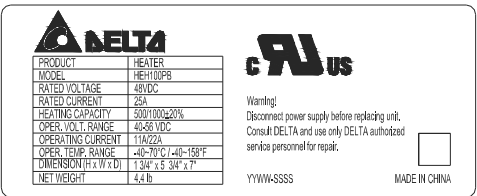
Part no. :  
Delta model no. : HEH100PB

1-3. Dimension

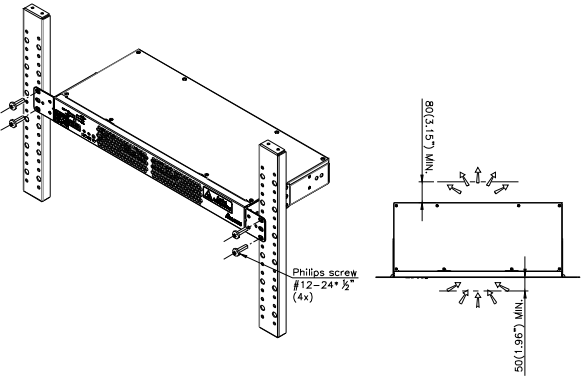
1-3-1 Drawing



1-3-2 Label



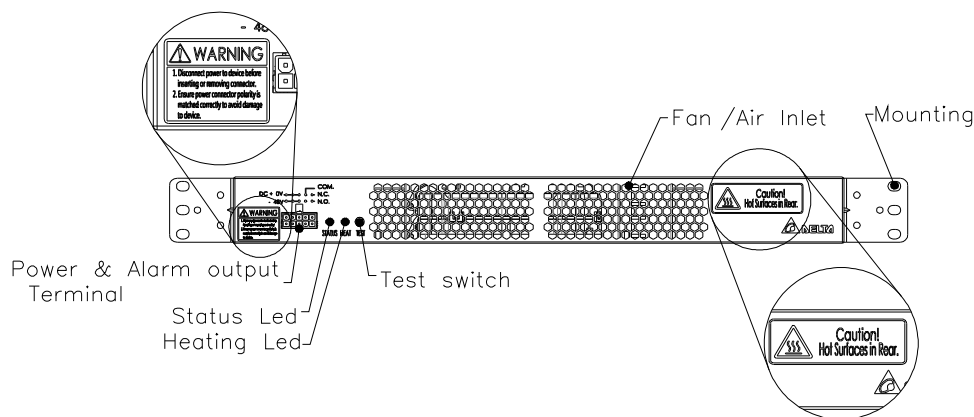
1-3-3 Mounting



A minimum clearance is required for the rack-mount heater at both the front cool air inlet and the rear warm air exhaust, as described in the figure above, to avoid damage to the heater. Trapping warm air impacts the mechanical thermostat and cutoff thermos-fuse's judgements and causes high temperature damage to the heater. No clearance is required above or below the heater element as these surfaces are designed to remain cool during the heating operation.

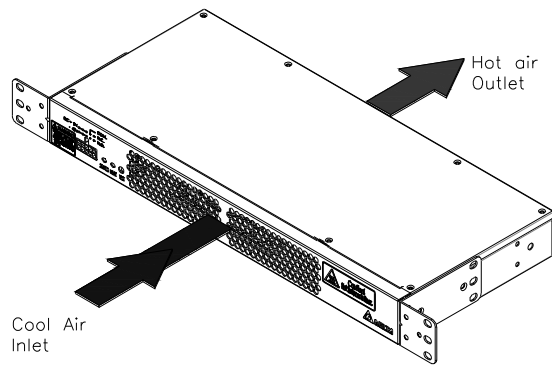
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### 1-4. Interface



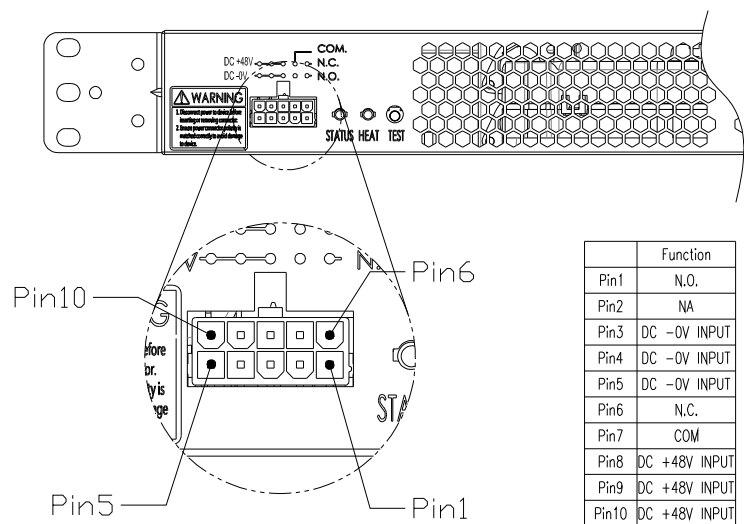
### 1-5. Airflow baffle

The cool air enters the heater from the front via fan, warms up by PTC heating element inside the case, and exhausts out the rear into the cabinet.



## 2. Functionality & Alarming

### 2-1. Alarming Dry contact, LED indicator and Test button:



Part no. :

Delta model no. : HEH100PB

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

For alarming, user may select a Normally Close (N.C.) or Normally Open (N.O.) output. Refer to the table below for the connector's pins designation and operational status.

Description	Status definition	
	N.O. (Pin1 - Pin7)	N.C. (Pin6 - Pin7)
Fan & Heater & Sensor are normal	OPEN	CLOSE
Fan or Heater or Sensor is failed	CLOSE	OPEN
Power OFF	CLOSE	OPEN
Lower voltage(Input power<45Vdc)	CLOSE	OPEN

**LED indicator**

	Status LED	Heating
Fan and sensor are normal	GREEN	
Fan or sensor is failed	RED	
Heater ON		GREEN
Heater fail		RED
Heater OFF		No light
Lower voltage(Input power<45Vdc)		RED

**Test button**

User may press the "TEST" button on the front panel to test the functionality of the heater whether normal or not. During the test, the LED indicators will blink continuously until the test process is complete within a few minutes. Heater output and fans speed will vary during this test.

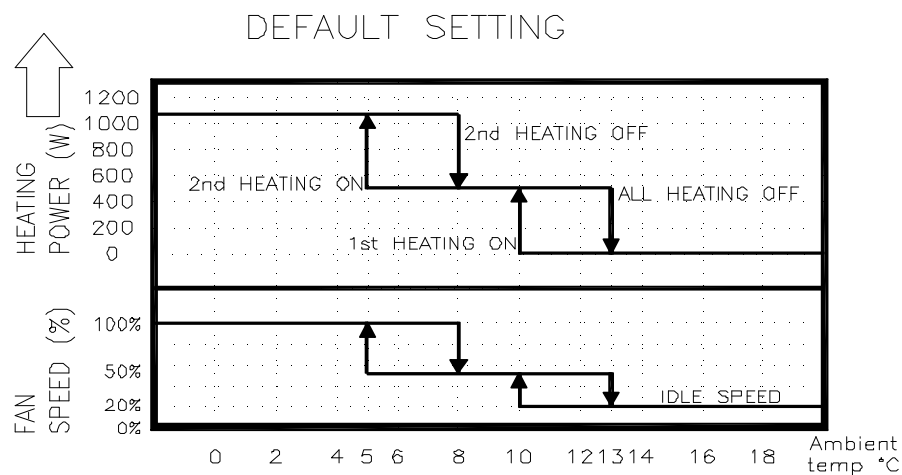


Part no. :

Delta model no. : HEH100PB

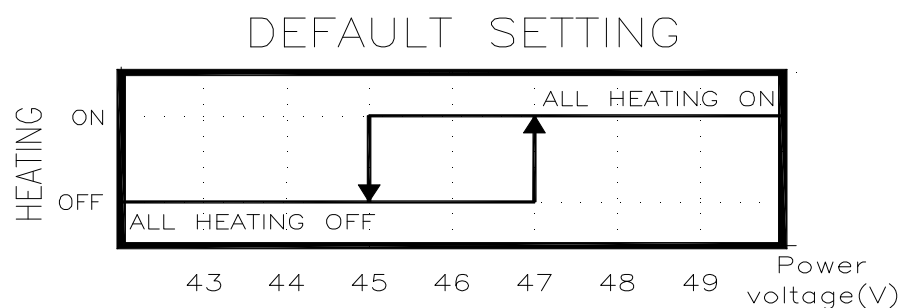
## 2-2. Heater control mode

The fan in the heater is designed to run continuously at low speed to accurately detect the cabinet temperature. Once the heater intake temperature falls below 10C, the PTC heating element will be activated at low output (~500W) to heat the cabinet. If the heater intake temperature continues to drop to below 5C, the heater will switch to high output (~1000W). The heating power output & fan speed vs. cabinet temperature curves are described in the figure below:



## 2-3. Lower voltage protection

The heater will turn off when the operating voltage is lower than 45Vdc, to limit power drain on the batteries during AC power fail. The heater will return to normal operation once the voltage increases above 47Vdc



Part no. :

Delta model no. : HEH100PB

### 3. Environmental condition

#### 3-1. Fan operating temperature

-40℃ to +65℃

#### 3-2. Storage temperature

-40℃ to +75℃

#### 3-3. Humidity

0 ~ 90% RH, non-condensing

#### 3-4. Ingress Protection rating

IP20 (IEC60529)

#### 3-5. MTBF

The L10 Fan life is expected to be at least 70,000 hours continuous operation at 40℃ 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	IEC 60529 IP20
Package bump	IEC 60068-2-29

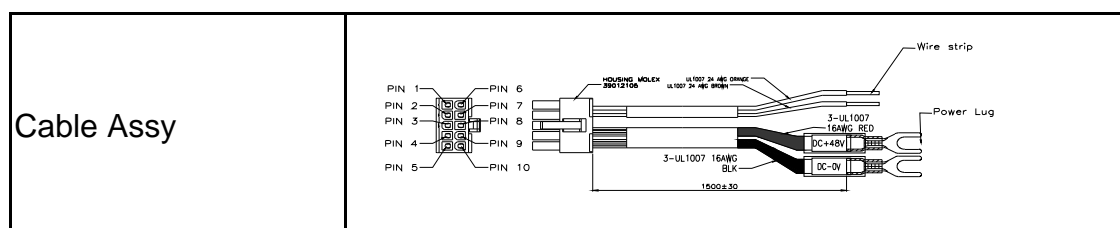
### 5. Safety Certification

UL Number: E239394






### 6. Package and Assembly

#### 6-1 Package



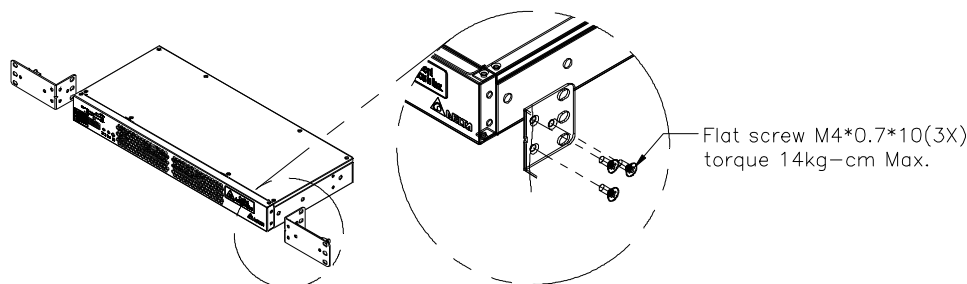
Part no. :

Delta model no. : HEH100PB

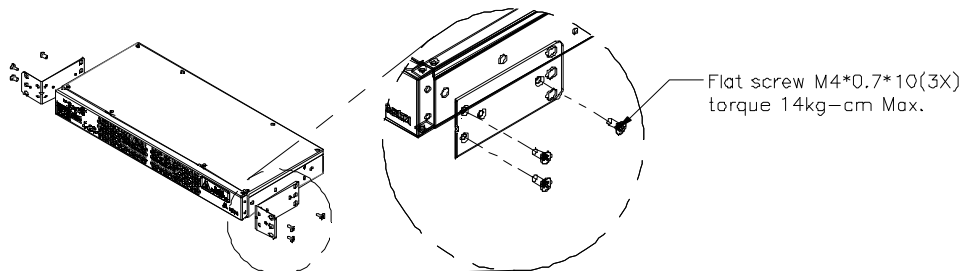
Screw kits	 Philips screw #12-24* 1/2" (5X)
Ear and screw kits	 Ear for mounting (2X)  Flat screw M4*0.7*10 (8X)

## 6-2 Assembly

for 23" mount:



for 19" mount:



## 7. Delta Electronics, Inc. Warranty for Cabinet Thermal Solutions Products

Delta Electronics, Inc warrants that HEATER and accessories within its Cabinet Thermal Solutions product family and manufactured by Delta Electronics, Inc., herein referred to as ("products"), will be free from defects in material and workmanship for a period of one (1) year from the date of shipment by Delta Electronics, Inc. This warranty covers repair or replacement of product at the sole discretion of Delta Electronics, Inc. and is subject to the following Conditions and Exclusions:

### A. Conditions.

- All products must be installed and operated according to Delta product Specification(s) and product Instruction/User Manual(s):
- Maximum voltage variation is no greater than normal operation and

Part no. :

Delta model no. : HEH100PB

instruction in Delta product Specification(s) and product Instruction/User Manual(s), with avoidance to power line disturbances of any kind.

- Application is not to exceed minimum and maximum stated operation temperatures and humidity range as indicated in the Delta product Specification(s) and product Instruction/User Manual(s).
- Filters (if applicable) must be cleaned regularly.
- Products and any parts thereof must not be modified, unless prior written authorization is received from Delta Electronics, Inc.
- All products must be installed and grounded in accordance with all relevant electrical and safety codes, as well as the National Electric Code and OSHA rules and regulations.
- All products must be installed in a stationery application, free of vibration and shock.
- A violation of any one of these conditions shall render the warranty hereunder void and of no effect.

## **B. Exclusions.**

This warranty does not cover the following:

- Applications where products are being misapplied. This includes inappropriate selection of products for the environment and conditions in which it is to be used.
- Damages caused by shipping carrier or any other accident after products have left Delta Electronics, Inc. manufacturing facility. Shipping claims are the responsibility of the customer and are to be completed in a timely manner.
- Reimbursement of labor for installation or removal of any warranted products, or for parts and labor resulting from repairs performed by any other source besides Delta Electronics, Inc.

This is the complete warranty and is in lieu of any other warranty expressed or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. Delta Electronics, Inc. will in no way be liable for incidental or consequential damage whatsoever or for any other claims by the customer for damages in connection with Delta Electronics Inc. products,

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even if advised in advance of the possibility of such damage.

### **Return Procedure**

All returns require a Return Material Authorization number (RMA #), regardless of reason for return, whether it be for warranty or out of warranty repair. Returns without an RMA # will be refused by Delta Electronics, Inc. Approval for return requests are at the sole discretion of Delta Electronics, Inc.

Buyer should provide the following information at the time of RMA request:

1. Complete Model Number, Serial Number and description of damaged unit requested to be returned.
2. Original Buyer Purchase Order number and date product was received by Buyer.
3. Quantity to be returned and a brief description of failure for each unit, if different.

All returns to Delta Electronics, Inc must be securely packed, using original cartons if possible. All returns must have the RMA number visible on the outside of the carton. Delta Electronics, Inc. is not responsible for material damaged in transit.

Shipping cost for all non-warranty repairs is the responsibility of the sender and must be shipped prepaid. Shipping costs for all warranty related repairs will be covered by Delta Electronics, Inc. provided the products are returned using a Delta Electronics, Inc approved carrier. If after diagnosis, products determined by Delta Electronics, Inc. are not covered under warranty, Buyer will be responsible for all shipping charges and will be billed accordingly.

### **LIMITATION OF LIABILITY**

DELTA ELECTRONICS, INC. WILL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LOST PROFITS OR LABOR COSTS, ARISING FROM THE SALE, USE OR INSTALLATION OF THE GOODS, FROM THE PRODUCTS BEING INCORPORATED INTO OR BECOMING A COMPONENT OF ANOTHER PRODUCT, FROM ANY BREACH

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