



Specification and Manual

Customer: _____
Description: Heat Exchanger
Customer Part No.: _____ Rev.: _____
Delta Model No.: HEX110QA Rev.: 00
Sample Date Code: _____
Sample Issue Date: June. 2.2020

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 CITY 333, TAIWAN

TEL: 886-(0)3-3591968
FAX: 886-(0)3-3591991

Part no.:

Delta model no.: HEX110QA

Table of content

Description.....	3
Packing & Shipping.....	3
Safety Notes.....	3
1. Product Instruction	7
1-1. General Description	7
1-2. Main Feature & Model Number	7
1-3. Dimension.....	9
1-4. Mounting Panel Cutout.....	10
1-5. Configuration & Maintenance	11
1-6. Thermal and Airflow	12
2 Electrical Specification.....	13
2-1. Indicator & Connector	13
2-2. Cooling capacity & temperature setting.....	14
3. Environmental Condition	14
4. Reliability Table.....	15
5. Safety Certification	15
6. Accessory	15
7. Fault analysis and processing.....	16
8. Installation Notice	16
9. Reclaim	17

Part no.:

Delta model no.: HEX110QA

Description

This document is an installation and the characteristics of Delta HEX series. Before installing the unit, please read this manual thoroughly, and following the instructions contained in it. The document is the exclusive property of Delta Electronics, Inc. it should not be distributed, reproduced, or any other format without prior permission of Delta. Specifications are subject to change without notice.

Packing & Shipping

The heat exchanger is a precision instrument; it should be handled and transported with care. Do not place heavy objects on top of the box. Pay attention to the below icons on the package. Please check product function by self-test process and make sure no alarm signal and abnormal acoustic noise before firstly setup.

Safety Notes

Please read the safety notes carefully before installing the heat exchanger, and be sure to install it correctly. After completing installation, check that the unit operates properly during start-up operation.

Meaning of WARNING and CAUTION notices:

 **Warning:**

Failure to follow these instructions properly may result in personal injury or loss of life.

 **Caution:**

Failure to observe these instructions properly may result in property damage or personal injury, which may be serious depending on the circumstance.

Part no.:

Delta model no.: HEX110QA

 **Warning:**

1. Installation work and electrical wiring should be done only by qualified personnel in accordance with all applicable codes, standards and national wiring regulations.
2. Use this unit only in the manner intended by the manufacturer. If you have questions, please contact the manufacturer.
3. Install the heat exchanger in accordance with the instructions in this installation manual. Improper installation may result in water leakage, electric shock or fire.
4. Make sure that all wiring is secured, that specified wires are used, and there is no strain on the terminal connections or wires.
5. For siphon, if refrigerant gas leaks during installation, ventilate the area immediately. Do not directly touch refrigerant that has leaked from refrigerant pipes or other areas, as there is a danger of frostbite.
6. Before serving or cleaning unit, switch power off and disconnect power supply.
7. When cutting or drilling into wall or ceiling, do not damage electrical wiring or hidden utilities.
8. Be sure to use only the specified accessories and parts to complete installation.
9. Protective grounding connection: The enclosure must be grounded at the protective ground terminal. Use 2 mm² (14 AWG) wire and use spring washer to avoid loosening.
10. The heat exchanger should not be accessible to the general public.
11. The installation must contain a device to disconnect all poles of the heat exchanger from the power supply. The contact distance in all poles must be 3 mm minimum.
12. To reduce the risk of electrical shock: Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
13. This appliance is intended for use only by qualified personnel.

Part no.:

Delta model no.: HEX110QA

 **Caution :**

1. Install the heat exchanger on a wall or door strong enough to withstand the weight of the unit.
2. Do not allow a child to mount onto the outdoor unit. Avoid placing any object on it.
3. Do not block the air inlets or exits.
4. Do not install the heat exchanger at any place where there is a danger or flammable gas leakage.
5. Arrange the drain to ensure complete drainage.
6. To avoid injury, do not touch the air inlet or aluminum fins of the unit.
7. Watch your step at the time of fin cleaning or heat exchanger inspection.
8. This appliance is not to be used by any persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given proper supervision or instruction.
9. Children should be prevented from playing with the appliance.

Part no.:

Delta model no.: HEX110QA

Specification for Approval

Customer :

Description : Heat Exchanger 110W/K

Customer P/N

Rev. :

Delta model no. : HEX110QA

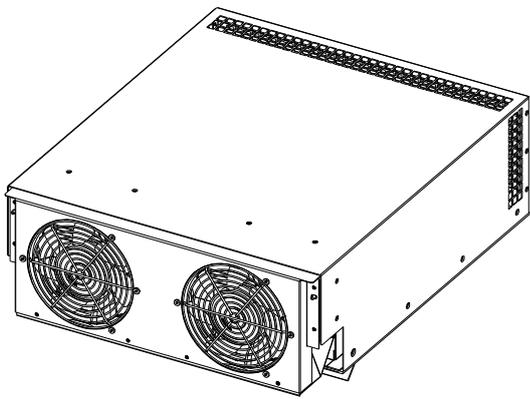
Rev. : 00A

Sample revision. :

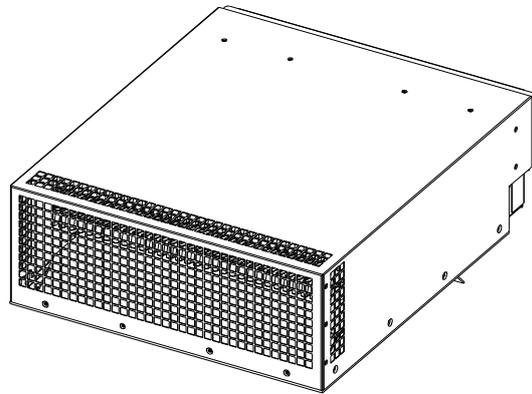
Date Code :

Sample issue date :

Quantity : 1 pcs



INTERNAL



EXTERNAL

Part no.:

Delta model no.: HEX110QA

1. Product Instruction

1-1. General Description

HEX110QA is a DC heat exchanger with -48VDC power input, it is designed for IP55 sealed outdoor telecom cabinet to provide stable and optimum internal conditions for equipment and avoid hotspot inside the cabinet.

HEX X1 Q A - XXX

(1) (2) (3) (4) (5)

No	Item	Digit	Specification
(1)	Product Message	HEX	Heat exchanger
(2)	Cooling Capacity	X1	X1=110
(3)	Operation Voltage	Q	DC 48 V with roof
(4)	Product Version	A	N/A
(5)	Customer ID	XXX	N/A

1-2. Main Feature & Model Number

Dimensions, Weight & Mounting method		
Dimension (H x W x D) (without flange)	mm (inch)	536 x 447 x 220 (21.1 x 17.6 x 8.7)
Application		Outdoor
Weight	Kg (lbs)	15.0 (33.1)
Mounting Method		Roof
Color (optional)		RAL7035
Environmental Protection & Performance		
Operating Temperature Range	°C (°F)	-10 to +55 (-14 to +131)
Operating Humidity		External: 0~100% RH Internal: 0~90% RH
Storage Temperature	°C (°F)	-40 to +70 (-40 to +158)
Storage Relative Humidity	RH	5~95%
Protection for Dust, Wind and Water (External)	IEC 60529 / GR487	IP55 / GR487
Noise (1.0m / 1.5m)	dB-A	80 / 75
Operating Status	N/A	LED Indicator / Display Board
Cooling Capacity & Operational Data		
Operating Cooling Capacity	W/K	100±10%
Operating Cooling Current	A	4.0
Operating Internal Airflow	m ³ /h (CMH)	500

Part no.:

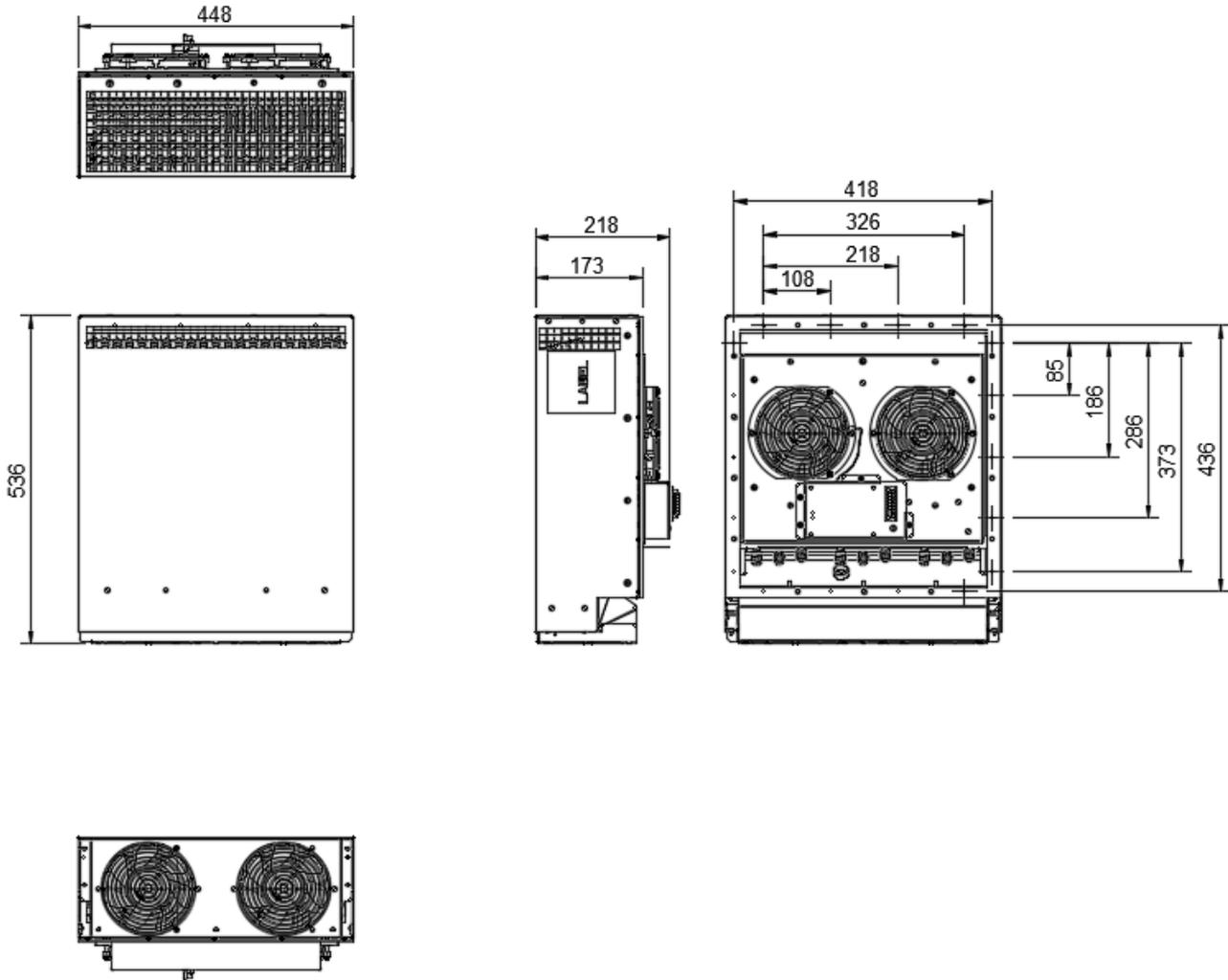
Delta model no.: HEX110QA

Operating External Airflow	m ³ /h (CMH)	400
Power & Range		
Input Voltage	VDC	48
Input Voltage Range	VDC	40 - 60
Rated DC Current	A	5.0
Alarm	N/A	Dry Contact Output
Key Components		
Controller		Built-in Smart Controller
Communication port		RS485
Fans		Delta High Efficiency Axial Fans

Part no.:

Delta model no.: HEX110QA

1-3. Dimension



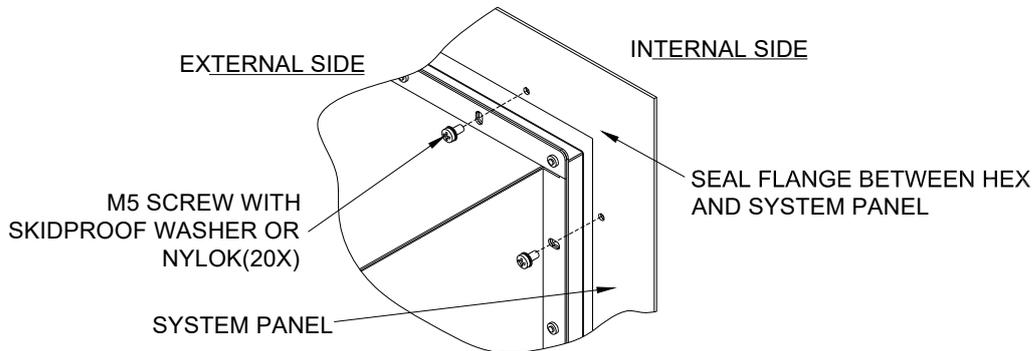
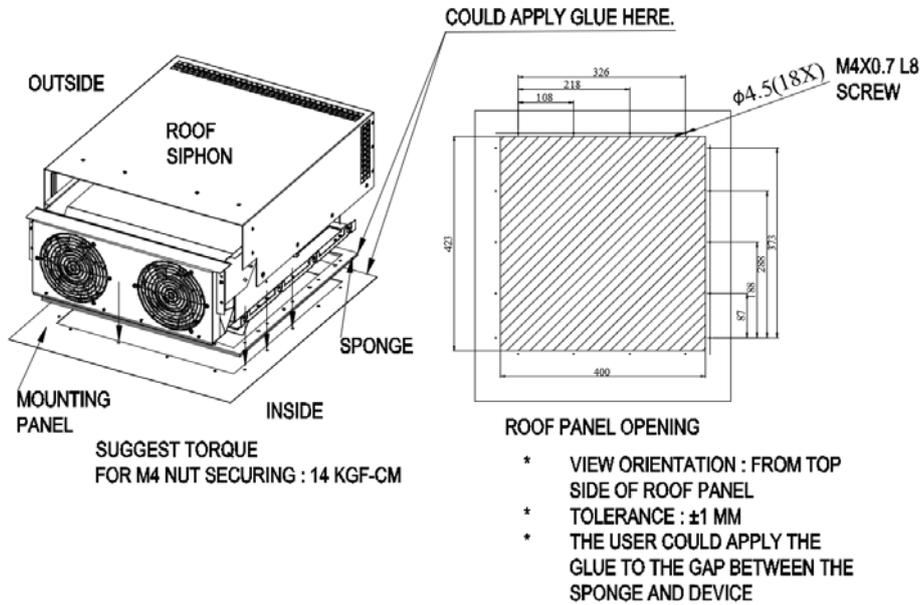
- (1) Material : Aluminum sheet t=1.5mm
- (2) Finish : Powder painting 75um(MIN.)
- (3) Color : RAL 7035
- (3) Dimension tolerance : X.X : ± 1.0 mm

mm

Part no.:

Delta model no.: HEX110QA

1-4. Mounting Panel Cutout



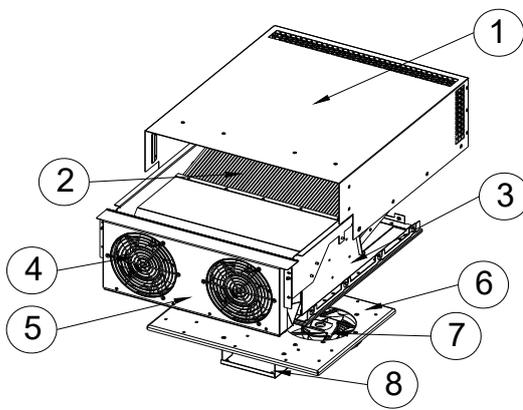
Part no.:

Delta model no.: HEX110QA

1-5. Configuration & Maintenance

Make sure the heat exchanger surface sealed with mounting flange to avoid water penetrates into shelter through mounting interface. It is suggested to use gaskets sticking on the mounting flange and seal the gap between flange and cabinet with silicone gel during installation. There should be **NO** any gap surround gaskets to avoid water penetrates into enclosure.

The HEX is composed of the key components as the following: Chassis, Heat Exchange Core, Controller and Fan tray, user can slide out the fan tray easily for replacement of the controller and fans.



NO.	Q'TY	DESCRIPTION
1	1	Case Cover
2	1	Heat exchange (Core)
3	1	Case Body
4	2	External Fans
5	1	External Case Cover
6	1	Internal Case Cover
7	2	Internal Fans
8	1	Controller

In order to assure the heat exchanger running at optimal condition, the core should be cleaned once annually at least; user can clean the core with water directly. The external side fan blade can also be cleaned with normal pressure water if there is dust accumulation. Please do not use strong water jet to impact the center of fan and the surface of core. The bottom hole of the heat exchanger should be clear when the maintenance. Please also notice that:

1. Check wires are connected correctly, and the insulation is not cracking or broken.
2. Use Self-test to check the unit running correctly or not. And the supplied air of internal side should be as cooled air.
3. Do not wipe the product with organic solvent, volatile substances like toluene or gasoline, it will destroy the powder-coated surface.
4. Turn off the power before maintaining.
5. Please turn off power and remove dry contact connector while non-operating for a long time.

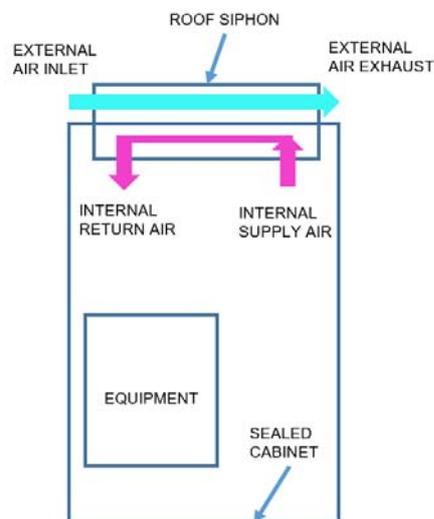
Part no.:

Delta model no.: HEX110QA

- 6. If any abnormal acoustic noise from heat exchanger happened, please turn off the product and contact with customer services.

1-6. Thermal and Airflow

With the forced convection using the axial fan, the warm air generated by the equipment will be blowing into the internal return opening and pass through the HEX, then flow out from internal supply opening, the cold supply air will be used to cool down the system; while on the opposite side, cooler air from the out environment will be drawn from the external air inlet side and bring the heat of the HEX out from the external air exhaust side. The thermal exchange path is shown in the figure below.



Part no.:

Delta model no.: HEX110QA

2 Electrical Specification

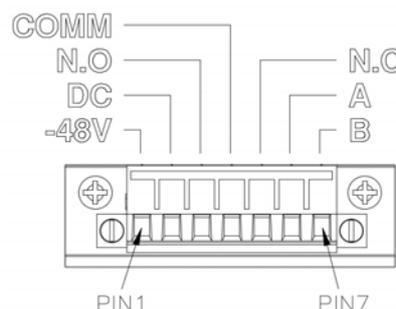
2-1. Indicator & Connector

➤ Power Supply & Alarm Connector

(1) DC Power Connect :

Mate plate: DINKLE 2ESDVM-07P

Pin	Description	Note
1	DC -	
2	DC +	
3	Alarm N.O dry contact	
4	Alarm dry contact comm	
5	Alarm N.C dry contact	
6	RS485 A	Reserved
7	RS485 B	Reserved



HEX status	Alarm dry contact N.O to COMM	Alarm dry contact N.C to COMM
Power off	Close	Open
HEX normal (power on)	Open	Close
Temp sensor fail (sensor open or short)	Close	Open
Fan fail	Close	Open

Alarm contact rating: max. (± 60VDC) 100mA

(2) LED Indicator :

Mate with: DINKLE 2ESDVM-07P

HEX status	FAN	SENSOR
Power off	Dark	Dark
HEX normal (power on)	Green	Green
Temp sensor fail (sensor open or short)	-	Red
Fan fail		

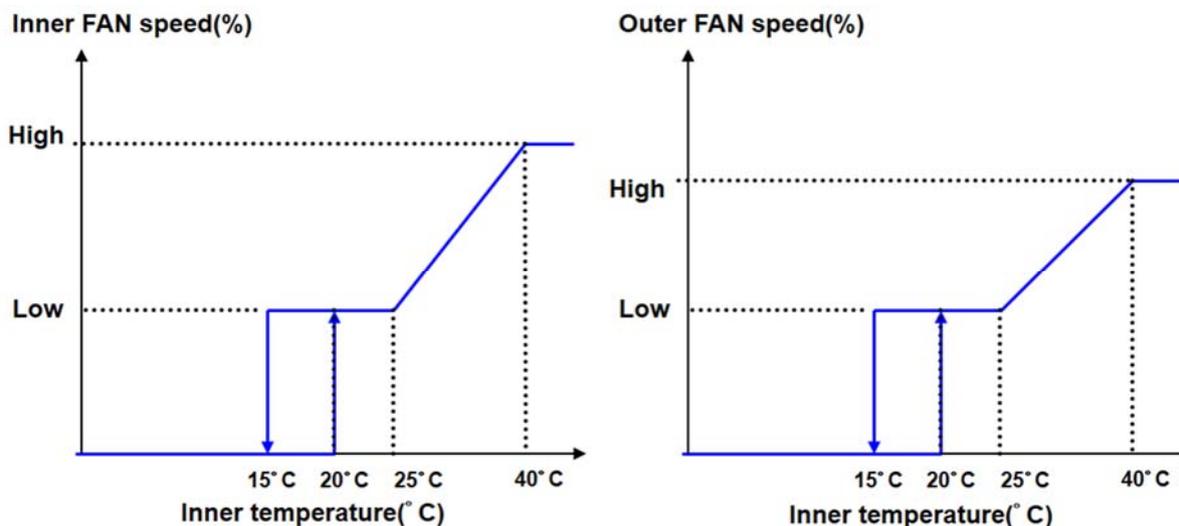


Part no.:

Delta model no.: HEX110QA

2-2. Cooling capacity & temperature setting

Hex detects Inner temperature to control cooling capacity.



3. Environmental Condition

- **Operating Temperature**
-10 °C ~ +55 °C (-14 °F ~ +131 °F)
- **Storage Temperature**
-40 °C ~ +70 °C (-40 °F ~ 158 °F)
- **Operation Humidity**
External air loop: 0 ~ 100 % RH
Internal air loop: 0 ~ 90 % RH, non-condensing
- **Ingress Protection Rating**
IP55 (IEC60529) on external side
GR487 on external side
- **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

Part no.:

Delta model no.: HEX110QA

4. Reliability Table

Test item	Condition
High temperature	IEC 60068-2-2
Low temperature	IEC 60068-2-1
High temp. / High humidity	IEC 60068-2-3
Temperature cycle	IEC 60068-2-14 test Nb
Vibration	ETSI 300 019-1-4 CLASS 4.1
Ingress protection (external side)	IEC 60529 IP55 / NEMA TYPE 4
Salt fog test (external side)	IEC 60068-2-11 severity 4 , 6cycles
Package bump	IEC 60068-2-29

5. Safety Certification

NA

6. Accessory

6-1 Power Cable

NA

6-2 Function Cable

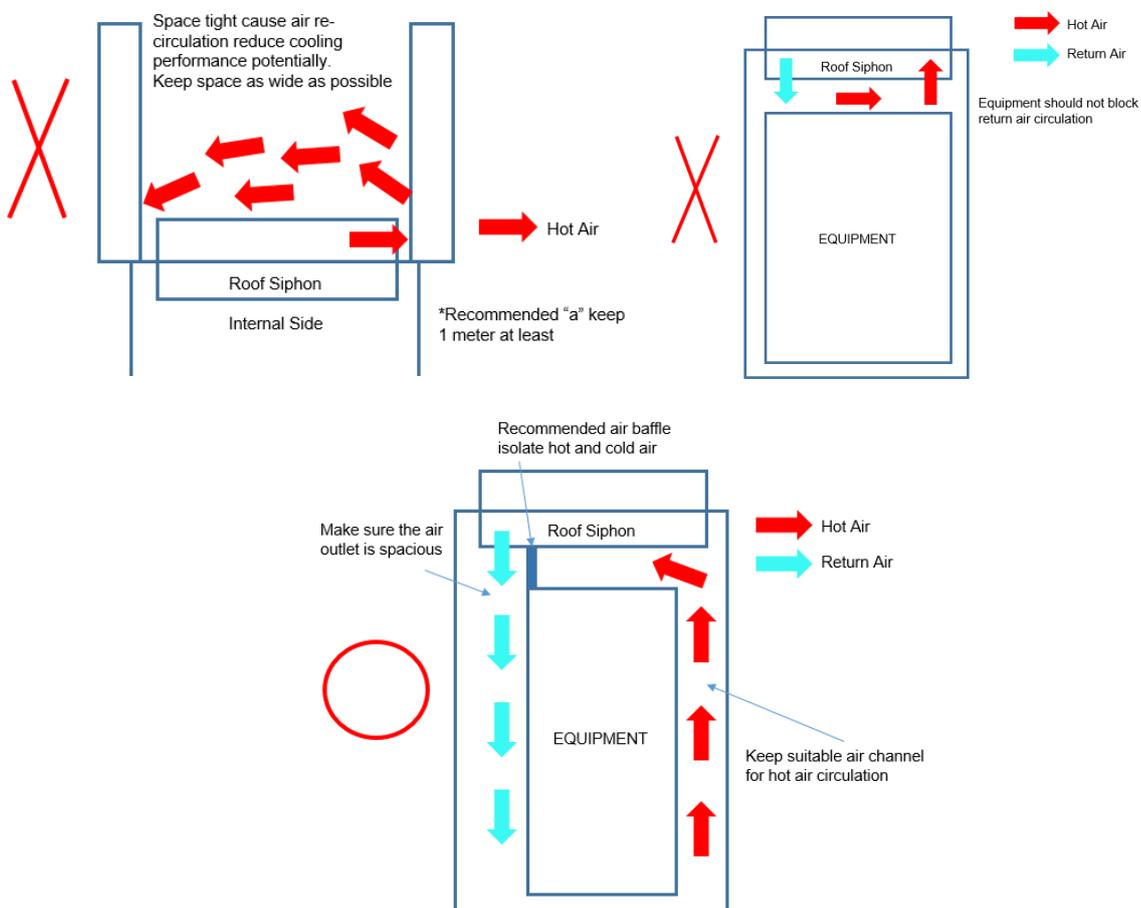
NA

7. Fault analysis and processing

Fault State	Analysis of the Reasons	Solutions
<p>The HEX is running but the cabinet temperature is still high, no obvious cooling effect.</p>	<ul style="list-style-type: none"> The HEX capacity is not match the load of the system. The ambient temperature is too high. Low efficiency of the outside. Other system failure 	<ul style="list-style-type: none"> Check the heating load of the system. Ensure the TEC is operating in correct temperature range. Clean the sink. Please contact Delta or authorized Delta service agent.

8. Installation Notice

Check the surrounding obstacles to make sure the product get enough space for air circulate.



Part no.:

Delta model no.: HEX110QA

9. Reclaim



At the end of the unit working life, the produce must not be disposed of as urban waste. It must be taken to a special local authority differentiated waste collection center or to a dealer providing this service.

Part no.:

Delta model no.: HEX110QA

10. Versions

REV.	DESCRIPTION	DRAWN	CHECKED			APPROVED	ISSUE DATE
			ME	EE	CE		
00	ISSUE SPEC	KC Liao	KC Liao	Ted.Tu		Mars.Wu	2020/6/02