



## Specification and Manual

Customer : \_\_\_\_\_  
Description : Heat Exchanger 180 W/K  
Customer Part No. : \_\_\_\_\_ Rev.: \_\_\_\_\_  
Delta Model No. : HEX180PB Rev : 02  
Sample Date Code: \_\_\_\_\_  
Sample Issue Date : Jun.3'20

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 District  
Taoyuan City 33341, Taiwan, R. O. C.

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



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Part no. :

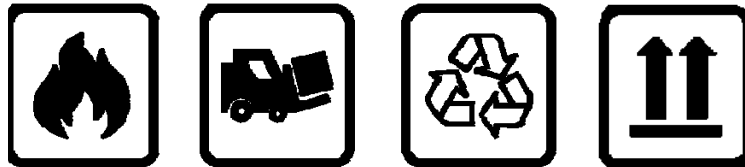
Delta model no.: HEX180PB

## Description

This document is an installation and the characteristics of Delta HEX180PB. 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

HEX is a precision instrument, it should be handled or transported with care, do not stand on the box, or place heavy objects on it. Please pay attention to the following icons on the package.



## Safety Notes

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

Meaning of WARNING and CAUTION notices :

⚠ Warning :

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

⚠ Caution :

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

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 Warming:

1. Installation work and electrical wiring must be done by qualified person(s) 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.

Install the HEX in accordance with the instructions in this installation manual. Improper installation may result in water leakage, electric shocks or fire. Make sure that all wiring is secured, the specified wires are used, and there is no strain on the terminal connections or wires.

3. 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.
4. Before serving or cleaning unit, switch power off and disconnect power supply.
5. When cutting or drilling into wall or ceiling, do not damage electrical wiring or hidden utilities.
6. Be sure to use only the specified accessories and parts for installation work.
7. This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons”.

 Caution :

1. Install the HEX on a wall/ door strong enough to withstand the weight of the unit.
2. Do not allow a child to mount on the outdoor unit or avoid placing any object on it.
3. Do not block air inlets or exits.
4. Do not install the HEX at any place where there is a danger or flammable gas leakage.
5. To avoid injury, do not touch the air inlet or aluminum fins of unit.
6. Watch your steps at the time of fin cleaning or HEX inspection.
7. Do not topple the HEX while moving or storage.
8. The appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
9. Children being supervised not to play with the appliance.

Specification for Approval

Customer :

Description : Heat Exchanger 180 W/K

Customer P/N :

Rev. :

Delta model no. : HEX180PB

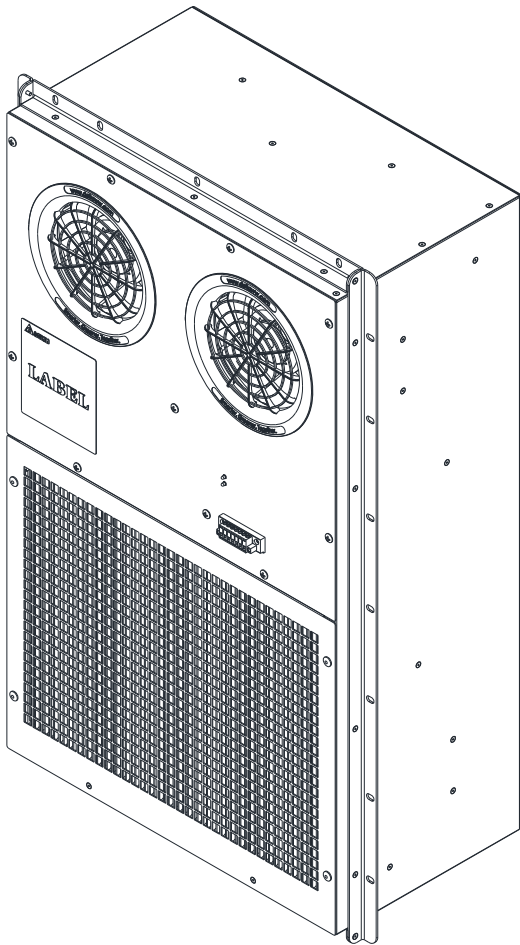
Rev. : 02

Sample revision. :

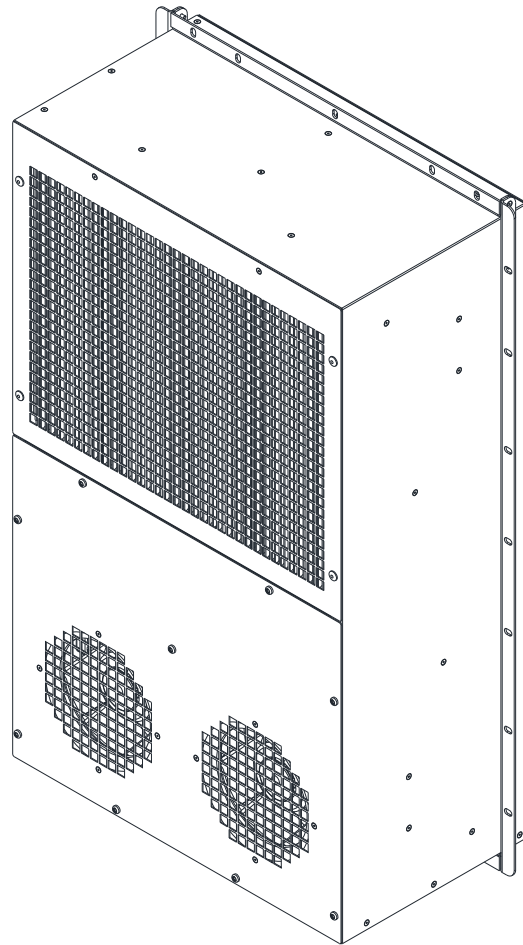
Date Code :

Sample issue date :

Quantity :



INTERNAL



EXTERNAL

Part no. :

Delta model no.: HEX180PB

## 1. Product Instruction

### 1-1. General Description

The Heat Exchanger (HEX) is designed for direct air to air heat exchange to remove the heat from the cabinet, and there is designed for IP55 sealed outdoor telecom cabinet to provide stable and optimum internal conditions for equipment and avoid hotspot inside the cabinet. It is easy to be installed in the cabinet with the nuts.

### 1-2. Main Feature & Model Number

Dimensions, Weight & Mounting method		
Dimension (without flange)	mm	(H)740 x (W)440 x (D)250
Application / Mounting	N / A	Outdoor / Door
Weight	Kg	24.0
Color (optional)	N / A	RAL7035
Environmental Protection & Performance		
Operating Temperature Range	°C	-25 to +70
Refrigerant type	N / A	R134a
Ingress Protection (External)	N / A	IEC60529 IP55
Sound pressure level noise (1.5m)	dB-A	67
Operating Status / Alarm	N/A	LED Indicator / Dry Contact
Cooling Capacity & Operational Data		
Rated Cooling Capacity	W / K	180
Operation Cooling Current	A	5.3
Rated Internal / External Airflow	CMH	IN : 935 / EX : 810
Power & Range		
Input Voltage	VDC	48
Operation Voltage range	VDC	40-60
Max. Operating DC Current	A	6.4
Key Components		
Controller	N / A	Built-in Smart Controller
Fans	N / A	Delta High Efficiency Blowers

\*Note 1 : The cooling capacity (W/K or W/°C) is defined as  $Q / (T_I - T_A)$

Q : Heat dissipation (W) from inside of cabinet

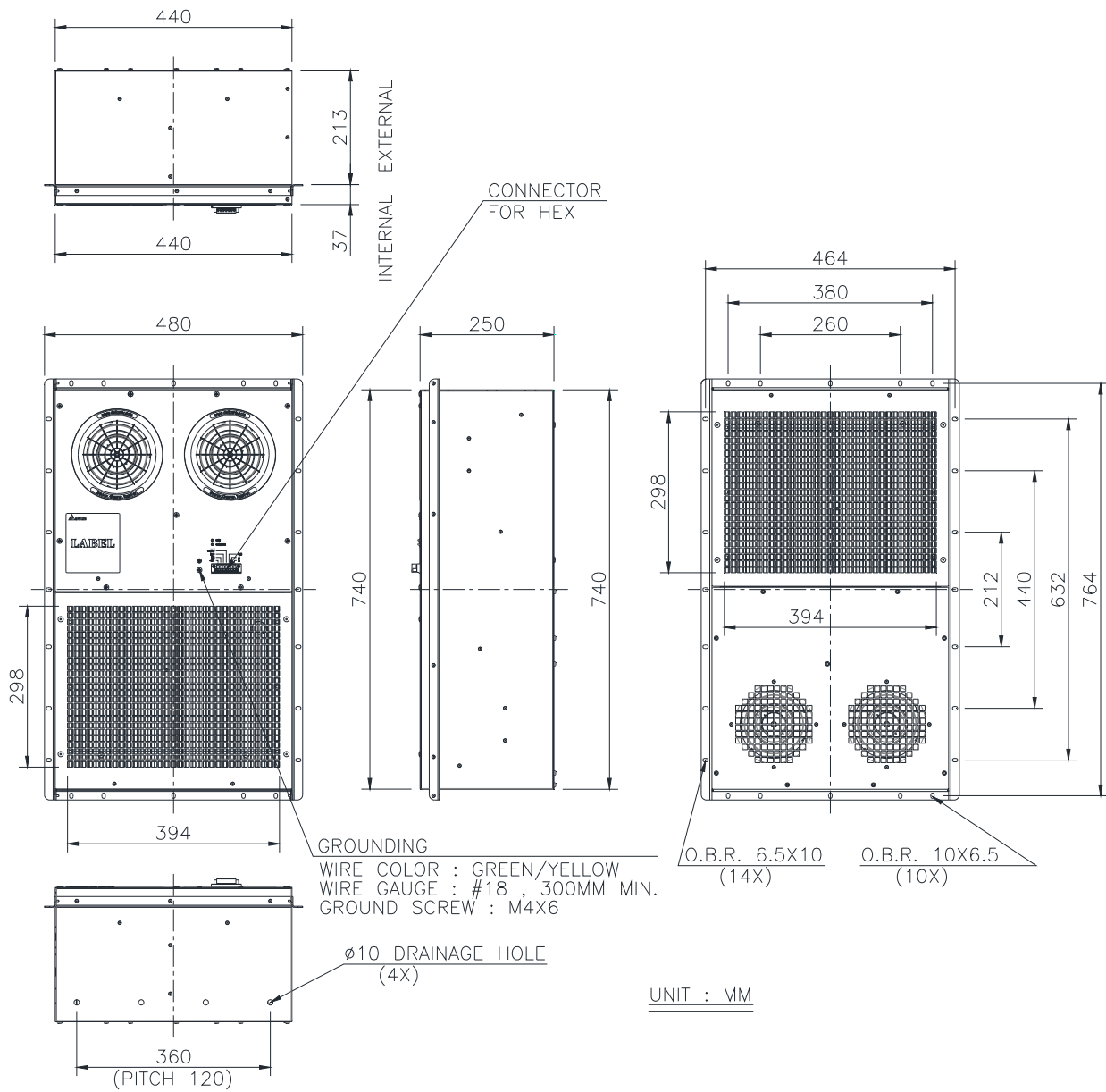
T<sub>I</sub> : Return temperature of internal air circuit (K OR °C)

T<sub>A</sub> : Ambient temperature of external air circuit (K OR °C)

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### 1-3. Dimension



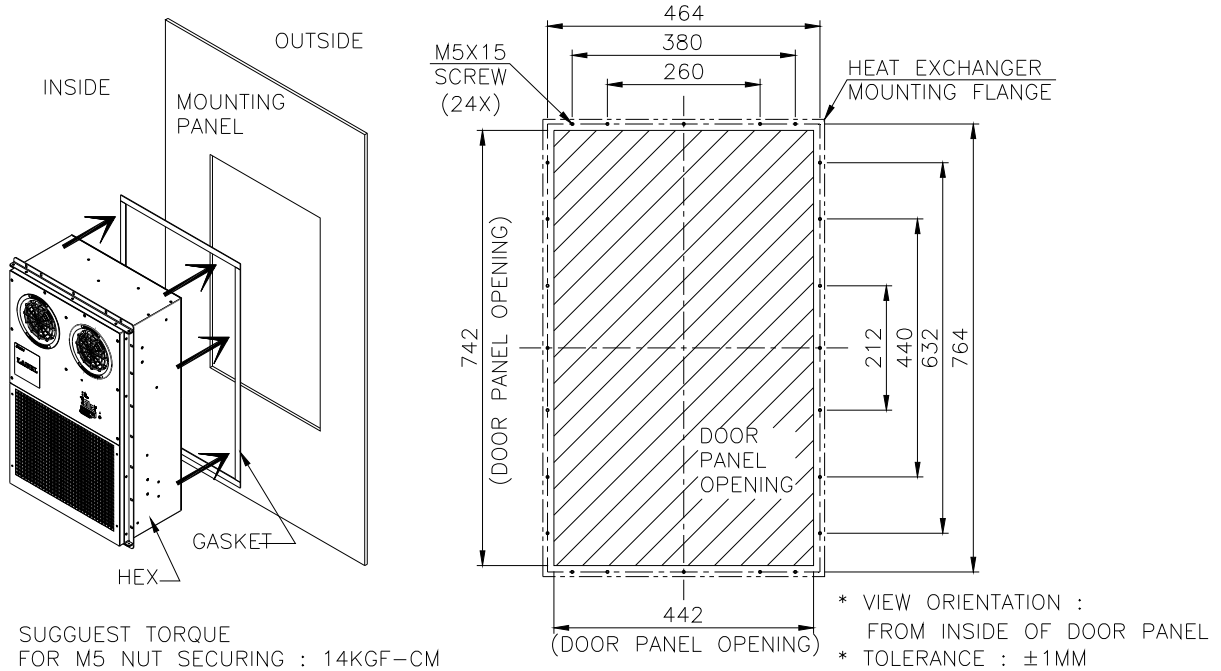
- (1) Material : steel sheet SGCC t=1.0mm.
- (2) Finish : Powder coating 75µm min. , Color RAL 7035.
- (3) Dimensional Tolerance : ± 1.0mm



Part no. :

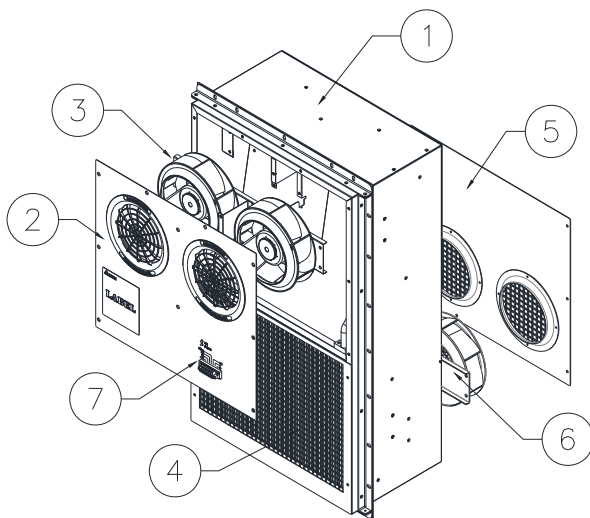
Delta model no.: HEX180PB

### 1-4. Mounting Panel Cutout



### 1-5. Configuration & Maintenance

Make sure the HEX 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.



NO.	Q'TY	DESCRIPTION
1	1	Case Chassis
2	1	Internal Case Cover
3	2	Internal Fans
4	1	Heat Exchange unit
5	1	External Case Cover
6	2	External Fans
7	1	Controller

Part no. :

Delta model no.: HEX180PB

In order to assure the HEX running at optimal condition, the condenser should be cleaned once annually at least; user can clean heat exchange unit with flow 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 heat exchange unit.**

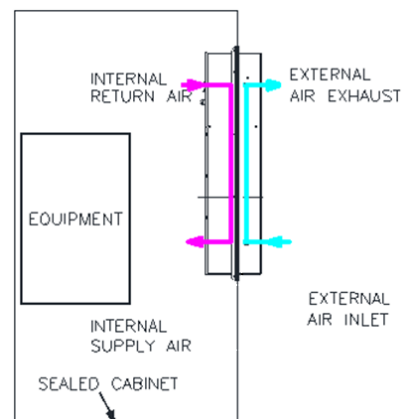
The bottom hole of the heat exchangers is used for drainage, please clear drain holes when the maintenance. Please also notice that following:

1. Check wires are connected correctly, and the insulation is not cracking or broken.
2. Do not wipe the product with organic solvent, volatile substances like toluene or gasoline, it will destroy the powder-coated surface.
3. Turn off the power before maintaining.
4. Please turn off power and remove dry contact connector while non-operating for a long time.
5. If any abnormal acoustic noise from HEX happened, please turn off the product and contact with customer services.
6. The refrigerant is environmental friendly product of R134a. Little refrigerant leakage (< 5 g/ year) is allowed for application. If refrigerant leakage seriously, please turn off the power and wait for at least 2 hours to make sure the refrigerant fully exhaust. Please also contact the services to replace spare parts.

### 1-6. Thermal and Airflow

The internal and external air flow circulation is shown as the figure. Through separated mechanism design, internal and external air flow won't be mixed since the waste heat can be dissipated from the cabinet to the ambience. Internal temperature sensor is placed at return air stream to provide reliable temperature measurement and safety of operation.

The waste heat generated from the internal equipment will be absorbed by the refrigerant through the evaporator and dissipate to the ambience by the condenser of external side.



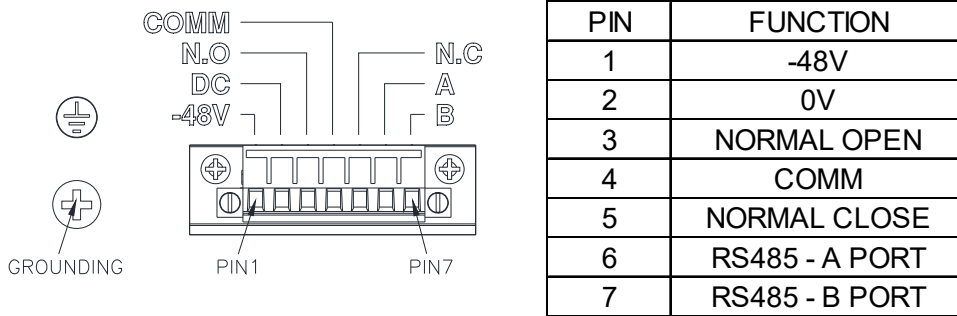
Part no. :

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## 2. Electrical Specification

### 2-1. Indicator & Connector

#### 2-1-1 Power Supply & Alarm Connector / Grounding



Dry contact rating : **60VDC/400mA** max.

Grounding :

Wire color : Green/Yellow (recommend)

Wire gauge : #18 , 300mm min. (recommend)

Ground screw : M4X6

User can select dry contact definition both normal open (N.O. Pin3 & Pin4) or normal close (N.C.Pin5 & Pin4) for alarm output

	Normal open	Normal close
Connection	Pin 3 & Pin 4	Pin 5 & Pin 4
Control board, NTC and fan are in normal status	OPEN	CLOSE
Power-off or control board is disabled	CLOSE	OPEN
NTC resistance is over range such as "open circuit" or "short circuit"	CLOSE	OPEN
Fan speed is lower than 50% of definition or fan locked	CLOSE	OPEN

#### 2-1-2 Panel Operation

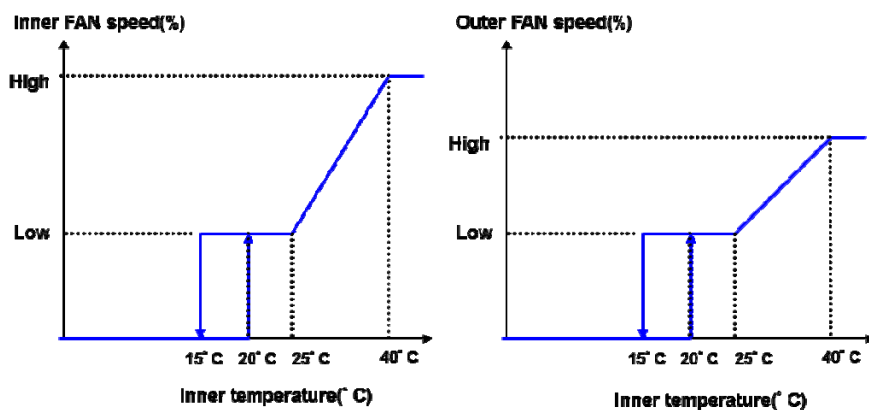
- FAN
- SENSOR

	Fan	NTC sensor
Normal	GREEN	GREEN
Abnormal or failed	RED	Blinking RED

Part no. :

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## 2-2. Fan Control Curve



## 3. Environmental Condition

### 3-1. Operating Temperature

-25 °C ~ +70 °C (-13 °F ~ 158 °F)

### 3-2. Storage Temperature

-40 °C ~ +70 °C (-40 °F ~ 158 °F)

### 3-3. Operation Humidity

External air loop: 0 ~ 100 % RH

Internal air loop: 0 ~ 80 % RH, non-condensing

### 3-4. Ingress Protection Rating

IP55 (IEC60529) on external side

GR487 on external side

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#### 4. Reliability Table

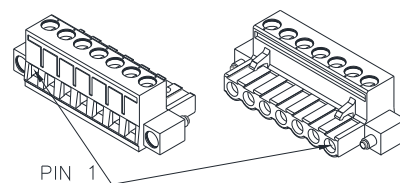
Test item	Condition
High temperature	IEC 60068-2-2
Low temperature	IEC 60068-2-1
High temp. / High humidity	IEC 60068-2-3
Temperature cycle	IEC 60068-2-14 test Nb
Vibration	ETSI 300 019-1-4 CLASS 4.1
Ingress protection (external side)	IEC 60529 IP55
Salt fog test (external side)	GR487 , 720hrs
Package bump	IEC 60068-2-29

#### 5. Safety Certification



#### 6. Accessory

Pin	HEX CONNECTION DINKLE : 2ESDVM-07P	
	Description	Cable wire size
1	-48V	16 AWG
2	0V	16 AWG
3	Normal open	24 AWG
4	Common	24 AWG
5	Normal close	24 AWG
6	RS485 A port	24 AWG
7	Rs485 B port	24 AWG

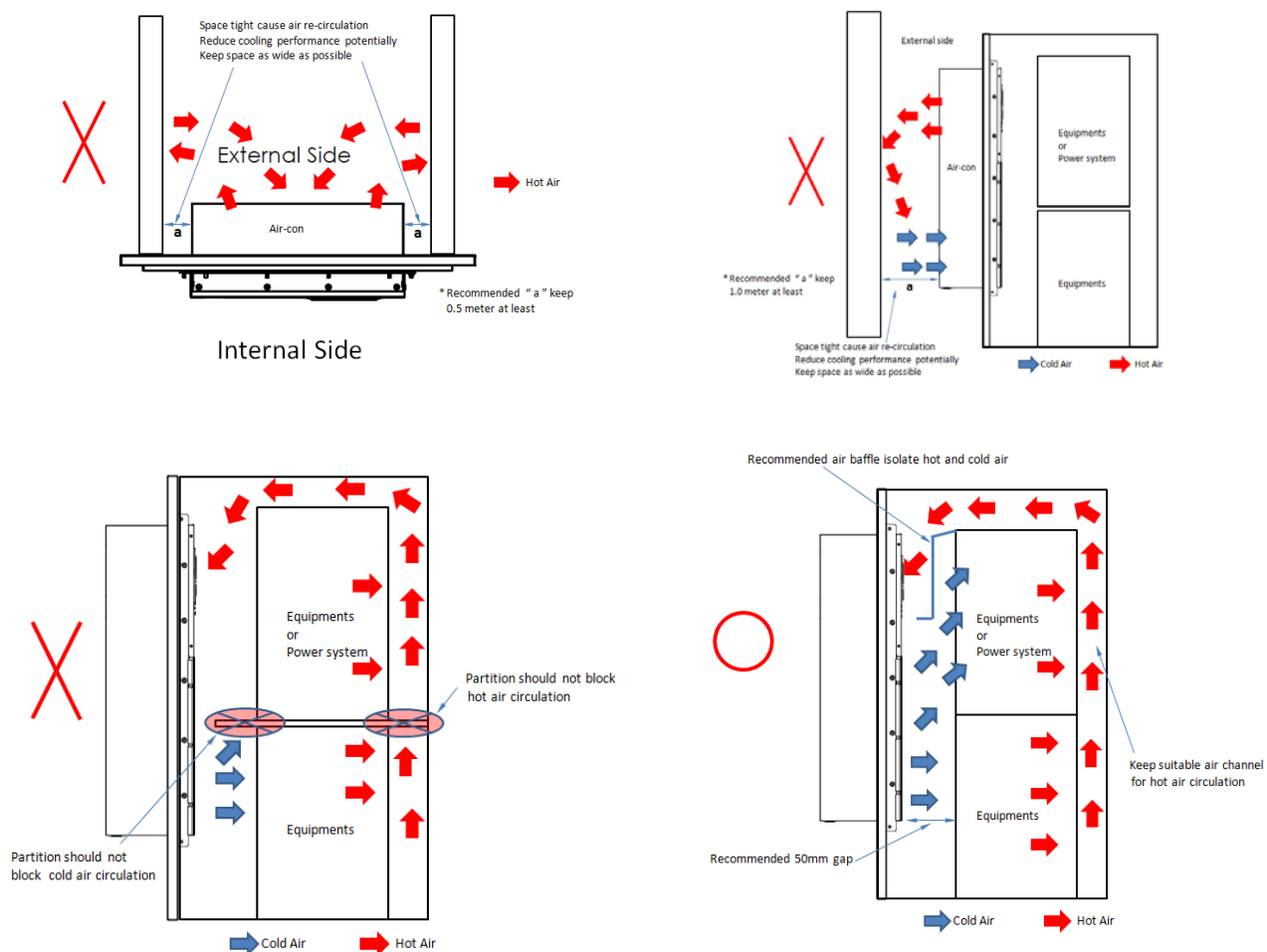


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### 7. Installation Notice

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



### 8. 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.

