



Specification For Approval

Customer : _____
Description : Heat Exchanger 45W/K
Customer Part No. : _____ Rev. : _____
Delta Model No. : HEX050PA Rev. : 03
Sample Issue No. : _____
Sample Issue Date : Jun.04 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 District
Taoyuan City 33341, Taiwan, R. O. C.

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

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Specification For Approval

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Description : Heat Exchanger 45W/K

Customer P/N :

rev. :

Delta model no. : HEX050PA

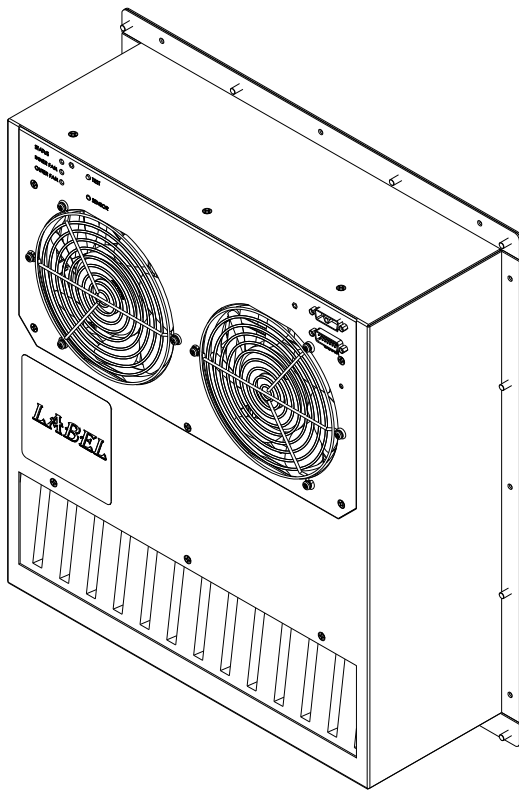
rev. : 04

Sample revision :

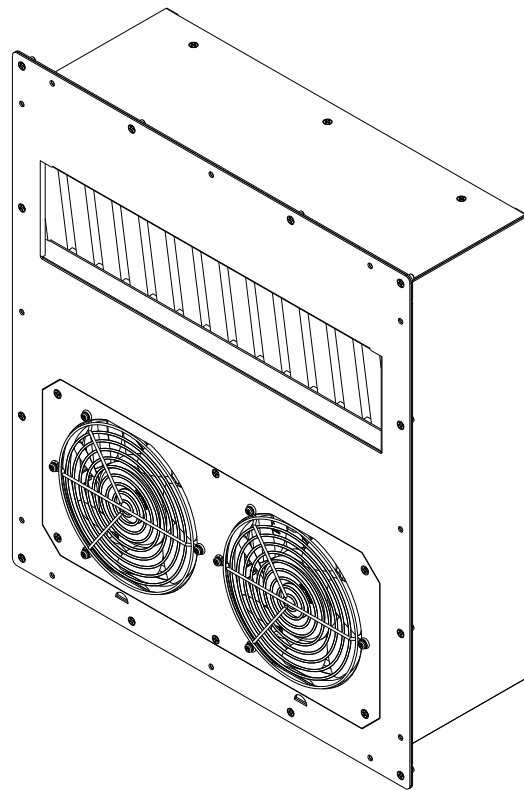
Issue no. :

Sample issue date :

Quantity : sets



Internal



External

Part no. :

Delta model no. : HEX050PA

1. Description

1-1. General description :

The Heat Exchanger (HEX) is designed for direct air to air heat exchange to remove the heat from the cabinet . It is easy to be installed in the cabinet with the nuts. (Recommended on the door of the cabinet)

The internal and the external air circulation loops of the HEX are separated to prevent the introduction of dust, humidity and dirt. The fan on the external air loop conforms to IP55 protection rating.

1-2. Main feature & Model number (Operation 48VDC)

Main feature	Unit	Model Number
		HEX050PA
Outline Dimension	Mm	500 W x 445 H X 152 D
Weight	Kg	10 ± 0.5
Cooling Capacity (*Note 1)	W/K	45 (MAX.)
Rated Voltage	VDC	48 (TYP.)
Operating Voltage Range	VDC	40 ~ 60
Rated current (Safety current on label)	A	1.2 (1.44 MAX.)
Consumption	W	62.4 (MAX.)
Maximum Ambient Temperature	°C	65
Maximum Return Temperature	°C	50
Internal Airflow Rate	CFM	210 (TYP.)
External Airflow Rate		210 (TYP.)
Mounting Location		Internal door / Wall
Fan Speed Control	N/A	PWM 5 ~ 100% duty cycle
Controller	N/A	Built-in
Operating Status	N/A	LED indicator
Fan Over Temperature Alarm	N/A	Dry contact output
Acoustic Noise at 1.5M (SPL)	dB-A	65.0 (TYP.)

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

Q : Heat dissipation (W) from inside

T_I : Return temperature of internal air circuit (K OR °C)

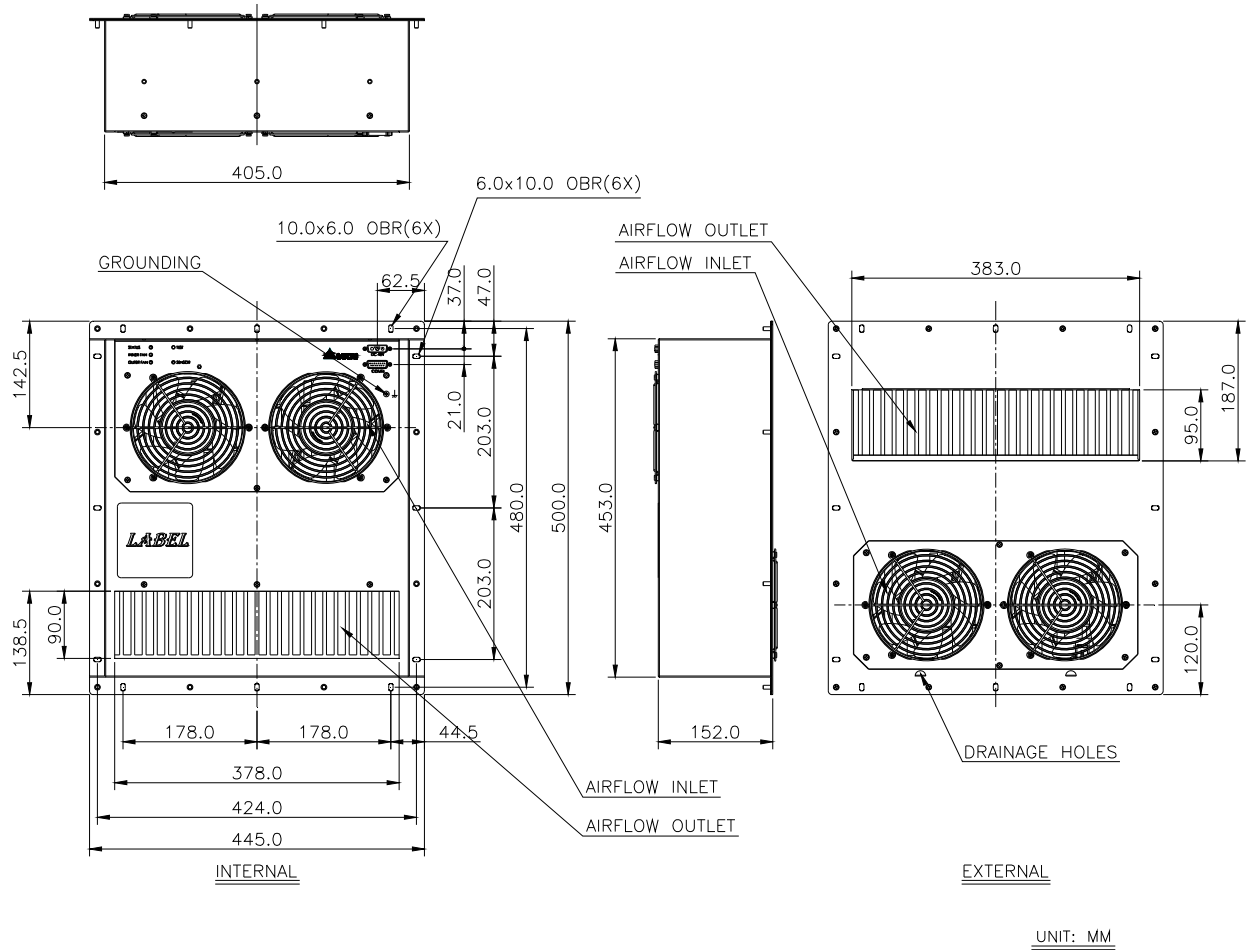
T_A : Ambient temperature of external air circuit (K OR °C)

Part no. :

Delta model no. : HEX050PA

1-3. Dimension

1-3-1 Drawing



(1) Material : Aluminum sheet t=1.5mm

(2) Finish : Powder paint 75~120um, Color RAL 7032.

(3) Dimensional tolerance :

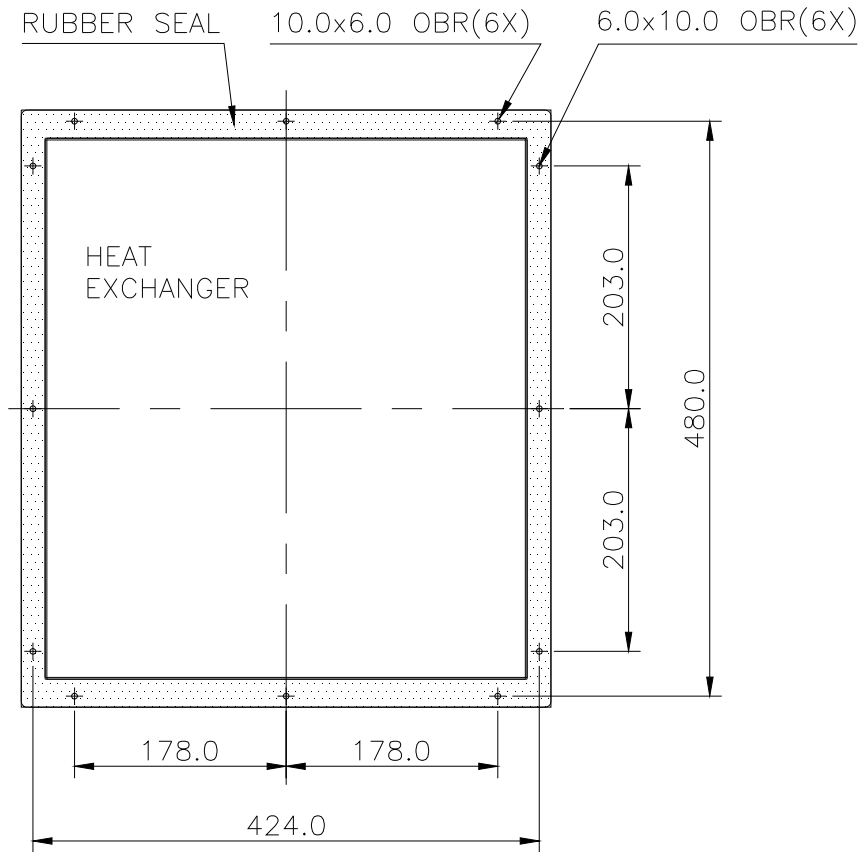
X.X [X.XX] : ± 1mm [0.04"]

X.XX [X.XXX] : ± 0.3mm [0.012"]

Part no. :

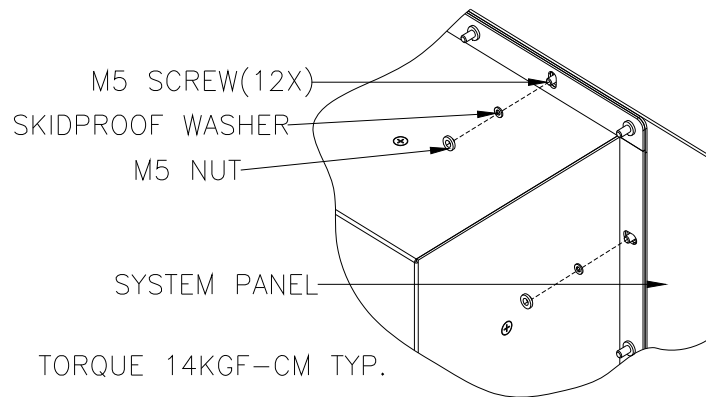
Delta model no. : HEX050PA

1-3-2 Mounting panel cutout



TOLERANCE $\pm 0.5\text{mm}$

UNIT: MM



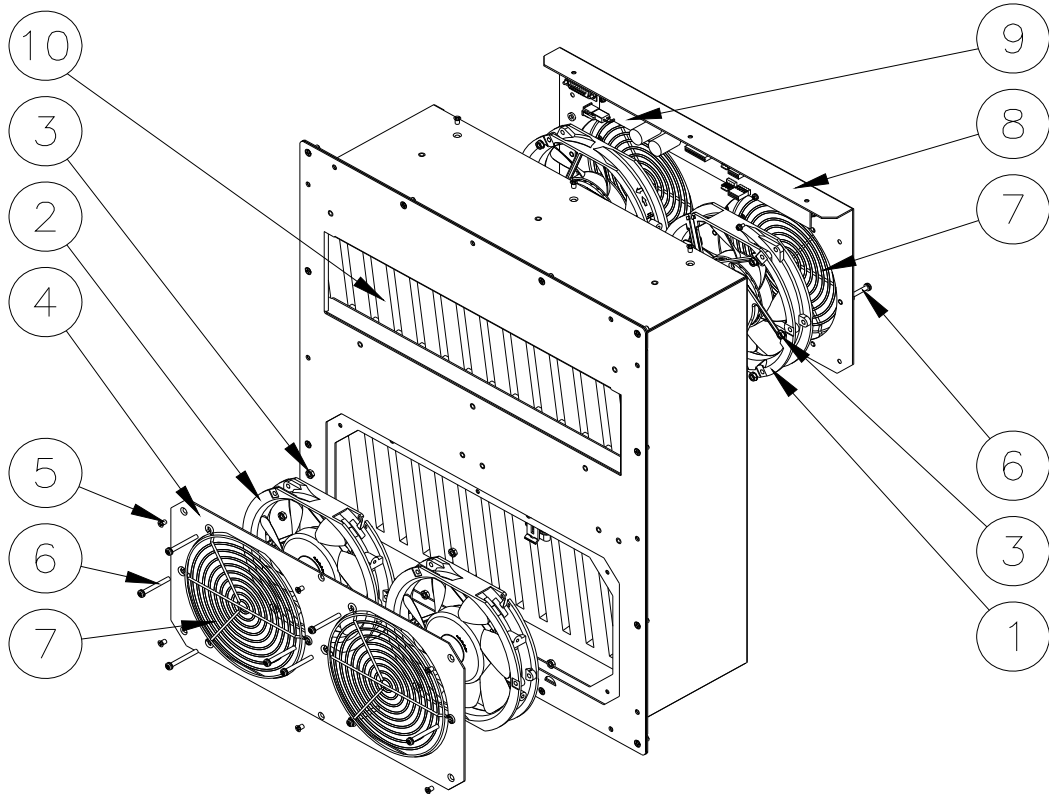
Part no. :

Delta model no. : HEX0050PA

1-4. Configuration & Maintenance

The HEX is composed of the key components as the following:

Chassis , Heat Exchange Core , Controller and Fan Tray . The user can slide out the fan tray easily for replacement of the controller and fans .



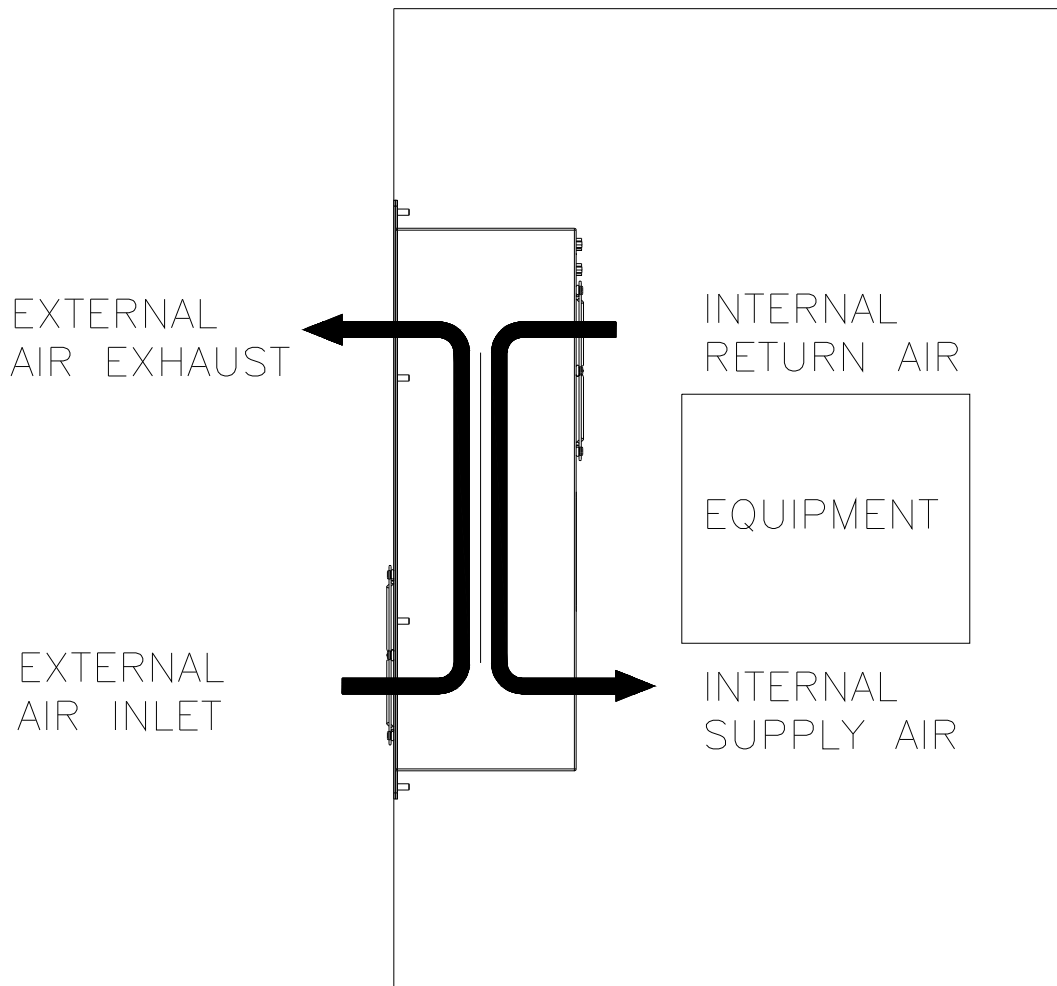
Item	Q'ty	P/N	Description
1	2	3815332400	Internal fan (BJ51)
2	2	3815332200	External fan (AL1F)
3	16	3110125400	Mounting nut (M4)
4	1	3323121100	External fan plate
5	14	3105555300	Mounting screw (M4)
6	16	3102383500	Mounting screw (M4)
7	4	3462494900	Fan guard
8	1	3900212800	Internal fan plate
9	1	5509557321	Controller
10	1	3346847100	Heat exchange CORE

Part no. :

Delta model no. : HEX050PA

1-5. Thermal path and Airflow baffle

With the forced convection using the axial fan , the warm air generated by the equipment will be blowing into the upper inlet and pass through the HEX core, the temperature will be lower on the other side of the core. The air return of the cold air will be used to cool down the system ; While on the opposite side , cooler air from the out environment will be drawn into the lower inlet and bring the heat of the HEX core out from the upper outlet . The thermal exchange path is shown in the figure below.



Part no. :

Delta model no. : HEX050PA

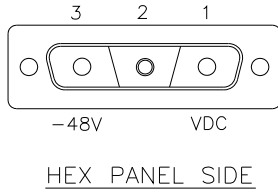
2. Electrical specification

2-1. Indicator & Connector

Connector " -48V VDC "

on panel plate : CVILUX 3W3CS0000100000

mate with : CVILUX 3W3CP0000100000

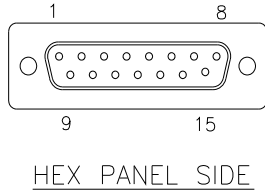


PIN	FUNCTION
1	OV
2	NA
3	-48V

Connector "COMM"

on panel plate : CVILUX CD5115PA100

mate with : CVILUX CD5115SA100



PIN	FUNCTION	PIN	FUNCTION
1	NA	9	NA
2	NA	10	ALARM_C
3	NA	11	STATUS_ALARM
4	NA	12	NA
5	NA	13	TO BE DEFINED
6	NA	14	TO BE DEFINED
7	(reserved for EXTERNAL NTC) GND	15	TO BE DEFINED
8	(reserved for EXTERNAL NTC)		

Alarm logic depends on user setting (Normal Close)

- Normal
Pin11 and Pin10 dry contact output close
- Fan failed
Pin11 and Pin10 dry contact output open
- NTC fail (only work in standalone mode)
Pin11 and Pin10 dry contact output open

Connector "COMM"

Pin11 to Pin10 ----- MAX. (± 75VDC)50mA

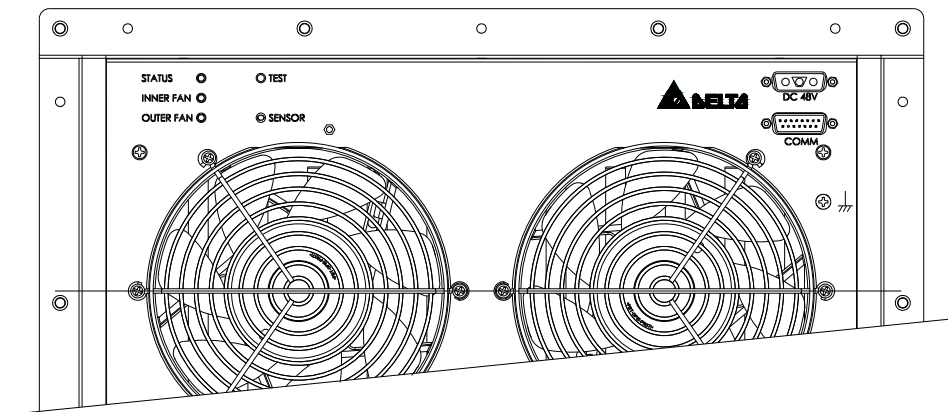
Part no. :

Delta model no. : HEX050PA

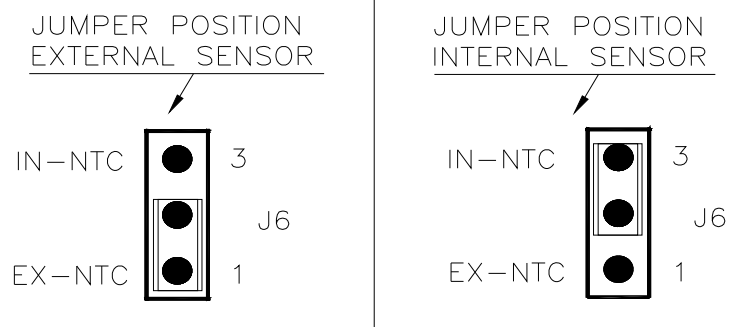
Switch "TEST"

When pressing the "TEST/CLEAN" button, both outer fans and inner fans will run from low speed to high speed for testing purpose . The testing process is around 2 minutes, and the LED of INNER FAN and OUTER FAN will be blinking in GREEN color.

When the fan failed, the LED will be blinking in RED . and it can be turned off by pressing the "TEST/CLEAN" button again .



- LED of "INNER FAN & OUTER FAN"
 - (GREEN) : Fan normal
 - (RED) : Fan failed
 - (Blinking GREEN) : Fan is normal during test
 - (Blinking RED) : Fan failed during test
- LED of "STATUS"
 - (GREEN) : NTC normal at Standalone mode
 - (RED) : NTC open or short at Standalone mode
- NTC position : J6 for choosing
 - Inner sensor (on control panel) or
 - External sensor (COMM port Pin7 & Pin8)



Part no. :

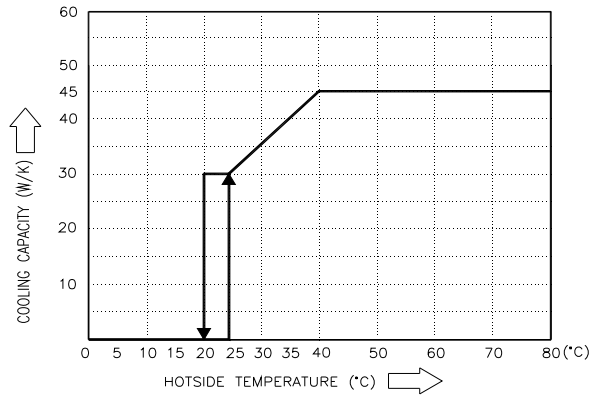
Delta model no. : HEX050PA

2-2. Standalone control mode

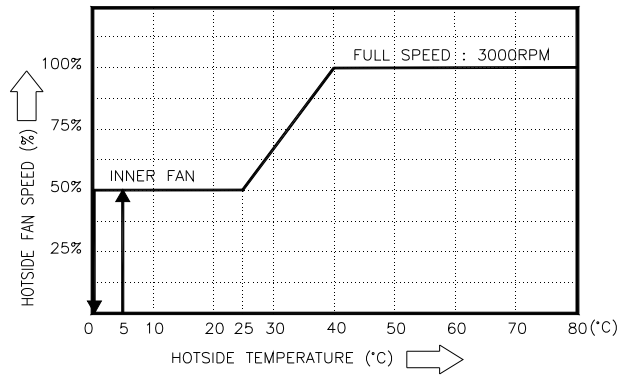
HEX detects ambient temperature to control cooling capacity.

User can choose inner-sensor on panel or outer-sensor on cable to detect ambient temperature by changing J6 jumper position (inside of controller)

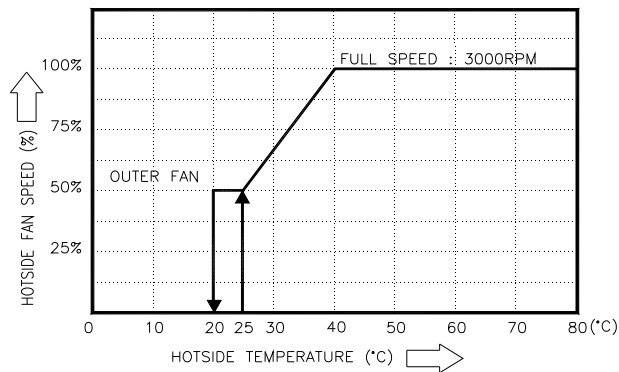
Cooling capacity (W/K) V.S Temperature



Inner fan speed V.S. Temperature



Outer fan speed V.S. Temperature



Part no. :

Delta model no. : HEX050PA

3. Environmental condition

3-1. Operating temperature

-10°C ~ +65°C (14°F ~ 149°F)

3-2. Storage temperature

-40°C ~ +70°C (-40°F ~ 158°F)

3-3. Humidity

External air loop : 0 ~ 100% RH

Internal air loop: 0 ~ 90% RH, non-condensing

3-4. Ingress Protection rating

IP55 (IEC60529) on external side

3-5. 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

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 (External side)	IEC 60529 IP55
Salt fog test (External side)	IEC 60068-2-52 severity 4 , 6cycles
Package bump	IEC 60068-2-29
ESD(TO CASE)	air +/-8KV 10 times / point contact +/-6KV 10 times / point
EFT	+/-2KV , 10 times at power input
EMI	CISPR 22 CLASS B

5. Safety Certification

5-1. UL , CUL, TUV, CE

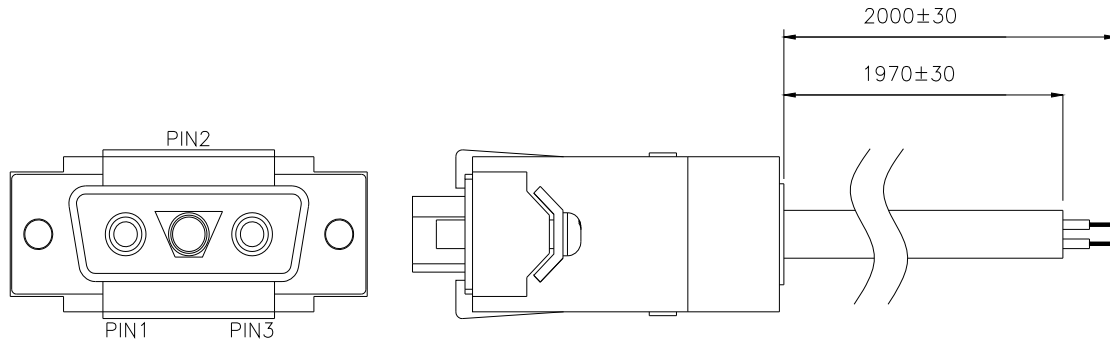


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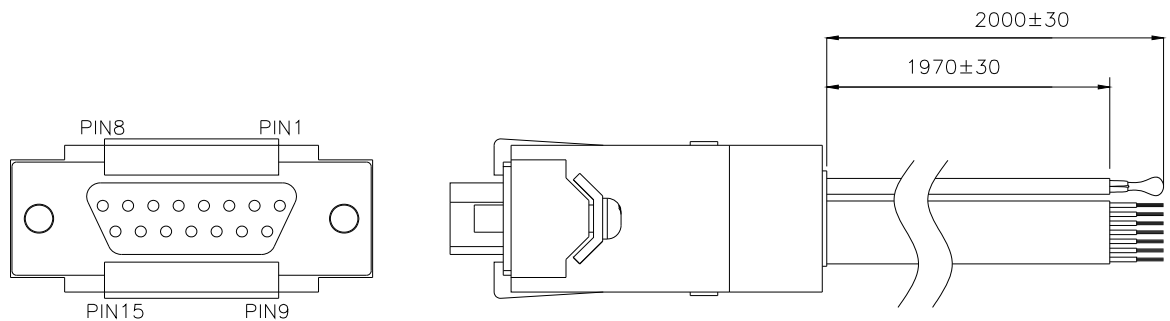
6. Accessory

6-1. Power cable



PIN	FUNCTION	COLOR
1	0V	RED
2	NA	
3	-48V	BLACK

6-2. Function cable



PIN	FUNCTION	COLOR	PIN	FUNCTION	COLOR
1	NA		9	NA	
2	NA		10	ALARM_C	BROWN
3	NA	BLUE	11	STATUS_ALARM	RED
4	NA	GREEN	12	NA	
5	NA		13	TO BE DEFINED	ORANGE
6	NA		14	TO BE DEFINED	YELLOW
7	(RESERVED for EXTERNAL NTC)	BLACK	15	TO BE DEFINED	GREY
8	(RESERVED for EXTERNAL NTC)	WHITE			