Specification For Approval

Customer : TMEIC

Description : Heat Exchanger 80W/K

Customer Part No. : _____ Rev. : ____

Delta Model No. : HEX080QA Rev : 07

Sample Issue No. : _____

Sample Issue Date : DEC.15 2017

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

Approved by : _____

Date : _____

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TEL : 886-(03)-3591968
FAX : 886-(03)-359199

*** SAMPLE HISTORY***

CUSTOMER: TMEIC
CUSTOMER P/N:
DELTA MODEL : HEX080QA

REV.	DESCRIPTION	DRAWN	CHECKED			APPROVED	ISSUE DATE
			ME	EE	CE		
00	ISSUE SPEC	陳英琦 5/12'11	陳英琦 5/12'11	涂雅森 5/12'11	------	陳李龍 5/12'11	5/12'11
01	CORRECT TEXT TYPE ADD SAFETY (P.15)	陳英琦 12/14'11	陳英琦 12/14'11	涂雅森 12/14'11	------	陳李龍 12/14'11	12/14'11
02	CORRECT SPEC.	汪則鑫 4/14'15	汪則鑫 4/14'15	涂雅森 4/14'15	------	陳英琦 4/14'15	4/14'15
03	ADD SECTION 2.2 DESCRIPTION	黃威智 9/19'16	黃威智 9/19'16	涂雅森 9/19'16	------	陳英琦 9/21'16	9/21'16
04	MODIFY OPERATING CURRENT	黃威智 12/08'16	黃威智 12/08'16	涂雅森 12/08'16	------	陳英琦 12/08'16	12/08'16
05	MODIFY SECTION 1-3-2	黃威智 02/06'17	黃威智 02/06'17	涂雅森 02/06'17	------	陳英琦 02/06'17	02/08'17
06	MODIFY SECTION 1-3-2	黃威智 03/30'17	黃威智 03/30'17	涂雅森 03/30'17		陳英琦 03/30'17	03/30'17
07	Cancel power suppier(section 1-6)	黃威智 11/30'17	黃威智 11/30'17	涂雅森 11/30'17		陳加偉 11/30'17	12/15'17

Table of content

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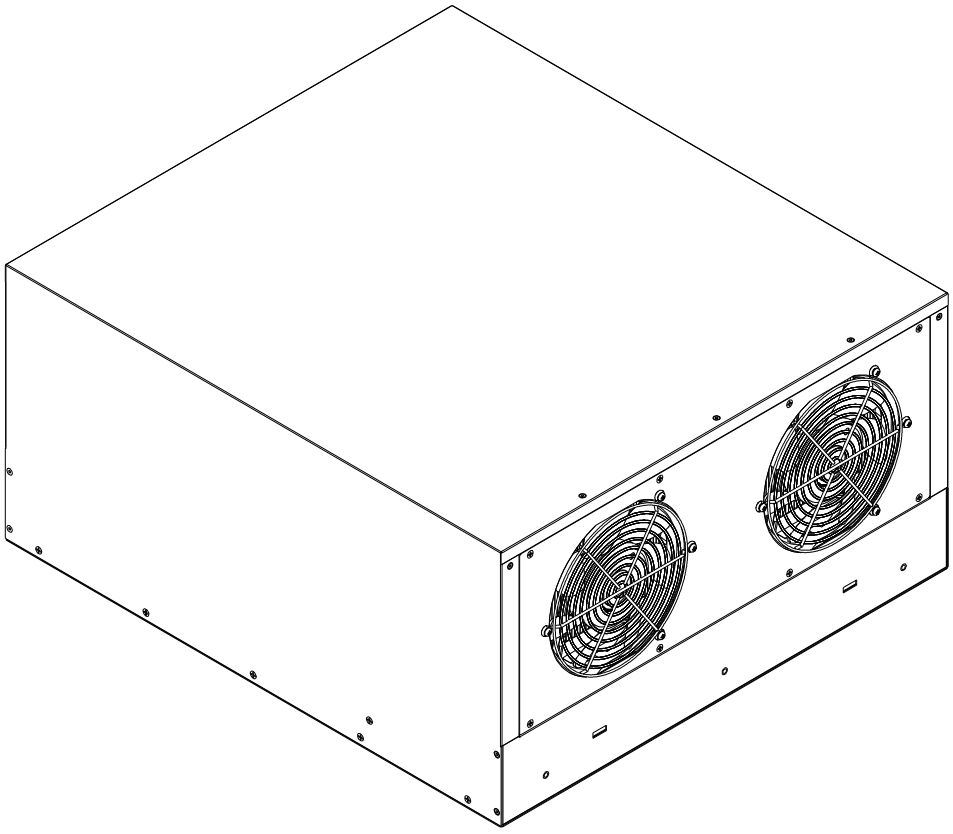
Description :	Heat Exchanger 80W/K
Customer P/N :	Rev. :
Delta model no. : HEX080QA	Rev. : 07
Sample revision. :	Issue no. :
Sample issue date :	Quantity : sets



Part no. :

Delta model no. : HEX080QA

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 on the top of the cabinet with the nuts.

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
		HEX080QA
Outline Dimension	Mm	500 D x 555 W x 265 H
Weight	Kg	22.0 ± 0.5
Cooling Capacity(*Note 1)	W/K	80
Rated Voltage	VDC	48 (TYP.)
Operating Voltage Range	VDC	40 - 60
Operating Current	A	1.8(TYP.)
Consumption	W	86.4 (TYP.)
Maximum Ambient Temperature	℃	65
Mounting Location	N/A	Roof Mount
Fan Speed Control	N/A	PWM 5 ~ 100% duty cycle
Acoustic Noise at 1.5M (SPL) (with cabinet)	dB-A	64.0 dB-A (Operating)

Note 1 : The cooling capacity (W/K or W/℃) is defi ned as Q/ (TI-TA)

Q : Heat dissipation (W) from inside

TI : Return temperature of internal air circuit (K OR ℃)

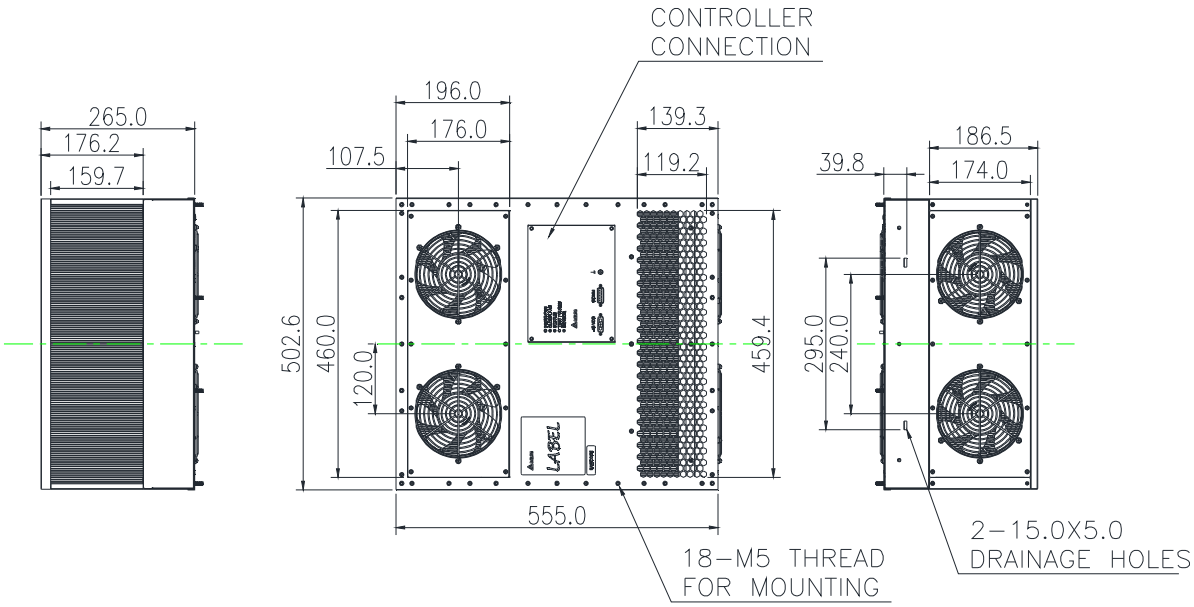
TA : Ambient temperature of external air circuit (K OR ℃)

Part no. :

Delta model no. : HEX080QA

1-3. Dimension

1-3-1 Drawing

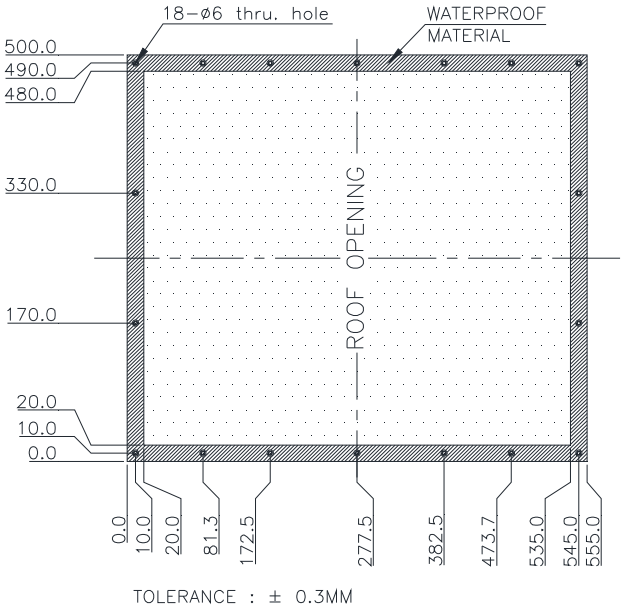


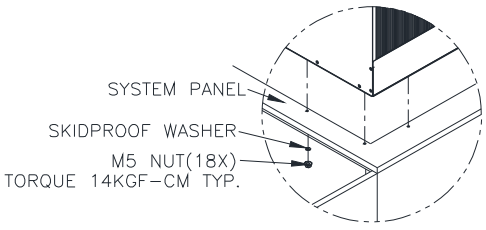
(1) Material : SPCC sheet t=0.8mm

(2) Finish: Power paint 75um(Min), Color RAL 7032

(3) Dimensional tolerance : ± 1mm [0.04”]

1-3-2 Mounting panel cutout



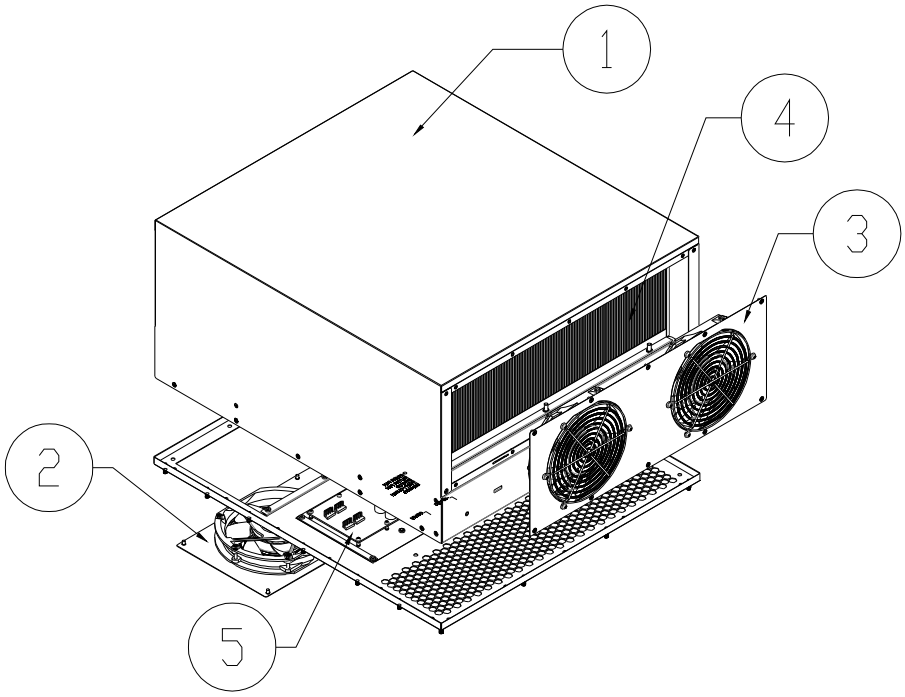


1-4. Configuration & Maintenance

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

Chassis , Heat exchange core , Internal / External fan tray & Controller.

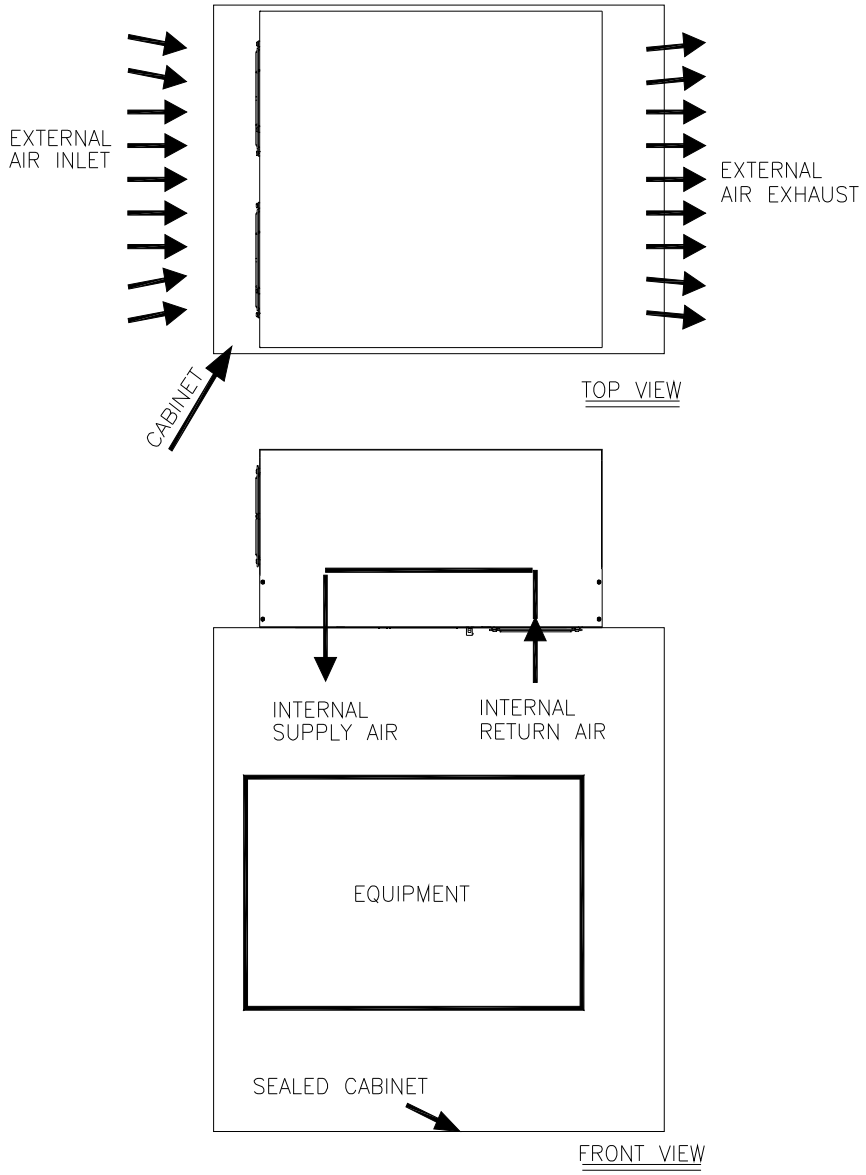
The user can slide out the fan tray easily to replace fans .



Item	Q'ty	Description
1	1	Chassis assy
2	1	External fan tray
3	1	Internal fan tray
4	1	Heat exchange CORE
5	1	Controller

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 internal return opening and pass though the HEX core, then flow out from internal supply opening , the air supply 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 from external air inlet side and bring the heat of the HEX core out from the external air exhaust side . The thermal exchange path is shown in the figure at next page .



Part no. :

Delta model no. : HEX080QA

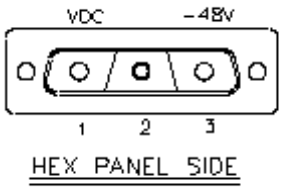
2. Electrical specification

2-1. Indicator & Connector (HEX panel side)

Connector " -48V VDC "

on panel plate : CVILUX 3W3CS0000100000

mate with : CVILUX 3W3CP0000100000

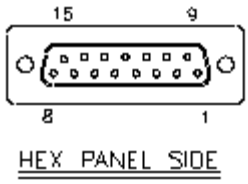


PIN	FUNCTION
1	0V
2	NA
3	-48V

Connector "COMM"

on panel plate : CVILUX CD5115PA100

mate with : CVILUX CD5115SA100



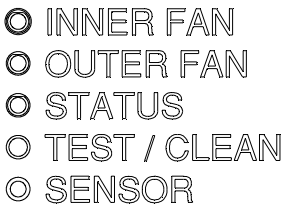
PIN	FUNCTION	PIN	FUNCTION
1	NA	9	NA
2	NA	10	ALARM_C
3	NA	11	STATUS_ALARM
4	NA	12	NA
5	NA	13	NA
6	NA	14	NA
7	(reserved for EXTERNAL NTC) GND	15	NA
8	(reserved for EXTERNAL NTC)		

User can follow dry contact definition that is Normal Close (N.C) to detect abnormal status from pin10 & pin11

Definition	N.C
Connection	Pin10 & Pin11
Control board, NTC and fan are in normal status	CLOSE
NTC resistance is over range such as “open circuit” or “short circuit”	OPEN
Fan speed is lower than 50% of definition or fan locked	OPEN

Dry contact max. rating: **75VDC/50mA**

LED indicator



There are INNER FAN / OUTER FAN / STATUS LED to indicate the fan and NTC sensor status. Besides, touch the switch “TEST” button can force both outer fan and inner fan running from low speed to high speed around 2 minutes for auto test, It can be turned off by touching the “TEST” button again.

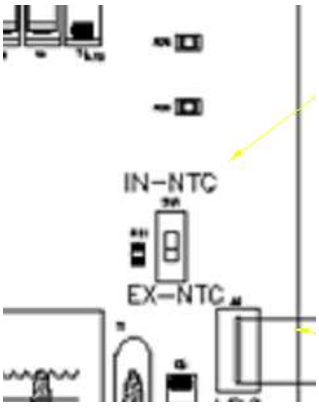
	INNER FAN	OUTER FAN	STATUS sensor
Normal	GREEN	GREEN	GREEN
Failed*	RED	RED	RED
Normal (touch TEST / CLEAN)	Blinking in GREEN	Blinking in GREEN	N/A
Failed* (touch TEST / CLEAN	Blinking in RED	Blinking in RED	N/A

*FAN failed : Fan speed is lower than 50% of definition or fan locked

*STATUS failed : NTC resistance is over range such as “open circuit” or “short circuit”

SW1 for Temp sensor location

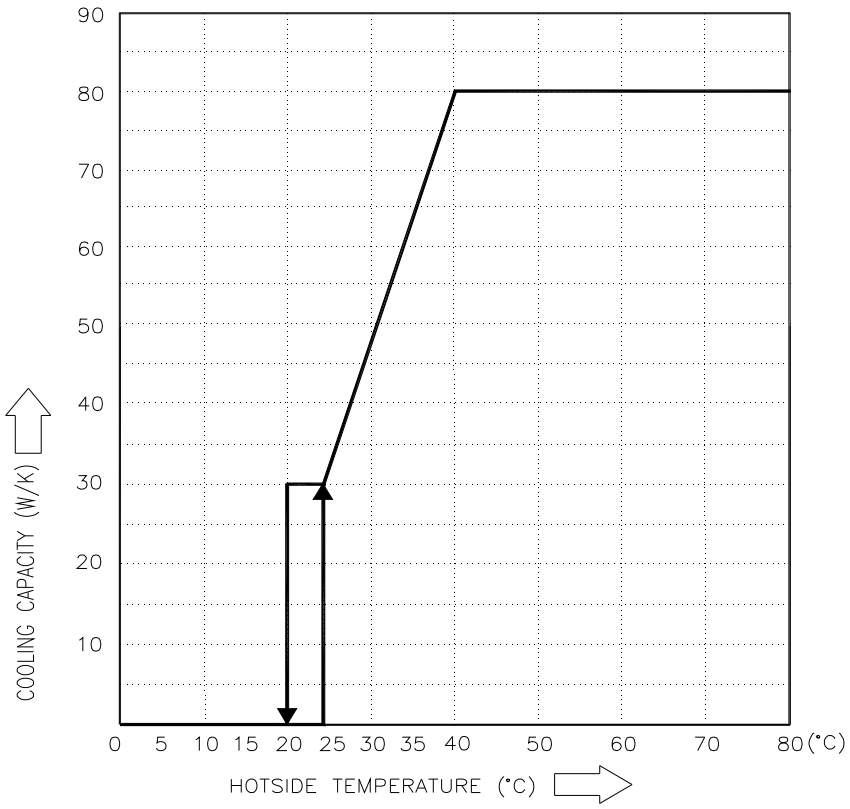
SW1 switch for control board sensor location.
IN-NTC is setting as on board NTC sensor,
EX-NTC is setting as COMM port for connecting outer Temp sensor on function cable.



2-2. Standalone mode

HEX can detect the ambient temperature to control cooling capacity using internal or externally mounted temperature sensor. User can choose the internal-sensor on the panel or the external-sensor on the cable by changing SW1 switching position (inside of control board)

Cooling capacity (W/℃) V.S. Temperature



3. Environmental condition

3-1. Operating temperature

-10℃ ~ +65℃ (14℉ ~ 149℉)

3-2. Storage temperature

-40℃ ~ +70℃ (-40℉ ~ 158℉)

3-3. Humidity

External air loop : 0 ~ 100% RH

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

3-4. Ingress Protection rating

IP55 (IEC60529) at external side

3-5. MTBF

The L10 Fan life is expected to be at least 80,000 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 (External side)	**IEC 60529 IP55**
Package bump	**IEC 60068-2-29**

5. Safety Certification

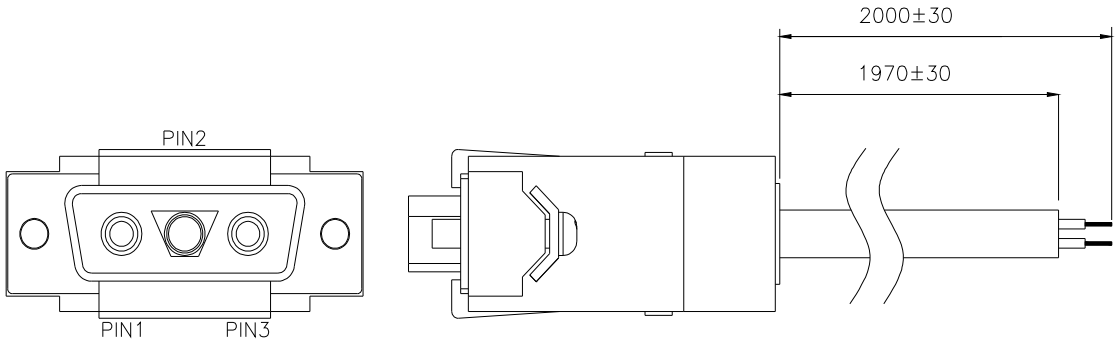
5-1. UL , CUL, TUV, CE

Part no. :

Delta model no. : HEX080QA

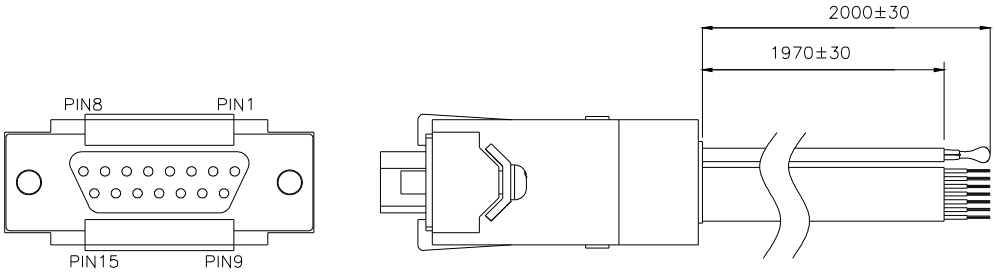
6. Accessory

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	NA	ORANGE
6	NA		14	NA	YELLOW
7	EXTERNAL NTC GND	BLACK	15	NA	GREY
8	EXTERNAL NTC	WHITE			

Application Notice

1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.
2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.
3. Please exercise caution when handling fans. Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires, or if the fan was hard-dropped to the production floor.
4. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder, droplets of water or encroachment of insect into the hub.
5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.
6. lt is very important to establish the correct polarity before connecting the fan to the power source. Positive (+) and Negative (-). Damage may be caused to the fans if connection is with reverse polarity, if there is no foolproof method to protect against such error specifically mentioned in this spec.
7. Delta fans without special protection are not suitable where any corrosive fluids are introduced to their environment.
8. Please ensure all fans are stored according to the storage temperature limits specified. Do not store fans in a high humidity environment. We highly recommend performance testing is conducted before shipping, if the fans have been stored over 6 months.
9. Not all fans are provided with the Lock Rotor Protection feature. If you impair the rotation of the impeller for the fans that do not have this function, the performance of those fans will lead to failure.
10. Please be cautious when mounting the fan. Incorrect mounting of fans may cause excess resonance, vibration and subsequent noise.
11. It is important to consider safety when testing the fans. A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.
12. Except where specifically stated, all tests are carried out at room (ambient) temperature and relative humidity conditions of 25°C, 65% RH. The test value is only for fan performance itself.
13. Be certain to connect an " 4.7μF or greater" capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.

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