SPECIFICATION FOR APPROVAL

Customer : STD
Description : DC FAN
Customer Part No. _____ REV. : _____
Delta Model No. : PFR0912SE-00 REV. : 02
Sample Issue No. : _____
Sample Issue Date : NOV.8 2022

PLEASE SEND ONE COPY OF THIS SPECIFICAITON BACK AFTER YOU SIGNED APPROVAL FOR PRODUCTION PRE-ARRANGMENT.

APPROVED BY:

DATE :

Delta Electronics, Inc.
HeTianXia High-Tech Industrial Park.
Shi Jie Town, Dong Guan City.
Guangdong Province, China. P. R. C.
TEL : 86-769-86329008
FAX : 86-769-86631589

Delta Electronics, Inc.
HeTianXia High-Tech Industrial Park.
Shi Jie Town, Dong Guan City.
Guangdong Province, China. P. R. C.

TEL : 86-769-86329008
FAX : 86-769-86631589

STATEMENT OF DEVIATION

■ NONE

□ DESCRIPTION:

Delta Electronics, Inc.
HeTianXia High-Tech Industrial Park.
Shi Jie Town, Dong Guan City.
Guangdong Province, China. P. R. C.
TEL : 86-769-86329008
FAX : 86-769-86631589

Specification For Approval

Customer : STD

Description : DC FAN

Customer P/N : rev. :

Delta model no. : PFR0912SE-00 Delta Safety Model No.: PFR0912SE-00

Sample revision. : 02 Issue no.:

Sample issue date : NOV.8 2022 Quantity :

1. SCOPE:
THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN.

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12V
OPERATION VOLTAGE	10.8 - 13.2 VDC
INPUT CURRENT(AVG.) #	2.90 (MAX. 3.40) A SAFETY CURRENT ON LABEL: 5.80A
INPUT POWER(AVG.)	34.8 (MAX. 40.8) W
SPEED	13000±10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	4.057 (MIN. 3.617) M^3 /MIN. 143.25 (MIN. 127.71) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	94.59 (MIN. 76.62) mmH_2O 3.724 (MIN.3.016) inchH_2O
ACOUSTICAL NOISE (AVG.)	72.5 (MAX. 76.5)dB-A
INSULATION TYPE	UL: CLASS A

: THE MAX VALUE OF CONSUMING CURRENT DOES NOT REPRESENT THE PEAK VALUE, THE PEAK VALUE NEED MEASURE BY OSCILLOSCOPE.

(continued)

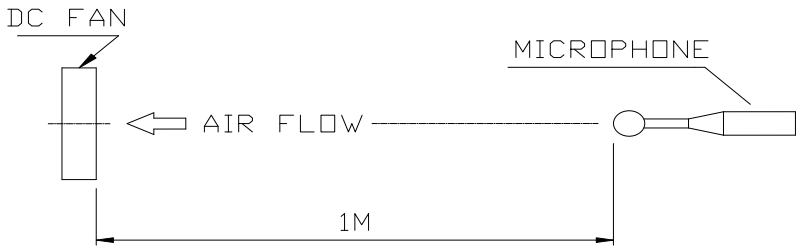
PART NO:

DELTA MODEL: PFR0912SE-00

INSULATION STRENGT	10 MEG OHM MIN. AT 500 VDC(BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL)
LIFE EXPECTANCE (L10) (AT LABEL VOLTAGE)	70,000 HOURS CONTINUOUS OPERATION AT 40 ° C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE

NOTES:

1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.
2. STANDARD AIR PROPERTY IS AIR AT (Td) 25°C TEMPERATURE, (RH) 65% RELATIVE HUMIDITY , AND (Pb) 760 mmHg BAROMETRIC PRESSURE.
3. THE VALUES WRITTEN IN PARENS , ( ), ARE LIMITED SPEC.
4. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN SEMI-ANECHOIC CHAMBER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

3.MECHANICAL:

3-1. DIMENSIONS---------- SEE DIMENSIONS DRAWING
3-2. FRAME---------- PLASTIC UL: 94V-0
3-3. IMPELLER---------- PLASTIC UL: 94V-0
3-4. BEARING SYSTEM---------- TWO BALL BEARINGS
3-5. WEIGHT----------255 GRAMS（REF.)

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE---------- -10 TO +70 DEGREE C
4-2. STORAGE TEMPERATURE---------- -40 TO +75 DEGREE C
4-3. OPERATING HUMIDITY---------- 5 TO 90 % RH
4-4. STORAGE HUMIDITY---------- 5 TO 95 % RH

5. PROTECTION:

5-1. LOCKED ROTOR PROTECTION
IMPEDANCE OF MOTOR WINDING PROTECTS MOTOR FROM FIRE IN 96 HOURS OF LOCKED ROTOR CONDITION AT THE RATED VOLTAGE.

5-2. POLARITY PROTECTION
BE CAPABLE OF WITHSTANDING IF REVERSE CONNECTION FOR POSITIVE AND NEGATIVE LEADS.

6. RE OZONE DEPLETING SUBSTANCES:

6-1. NO CONTAINING PBBs, PBBOs, CFCs, PBBEs, PBDPEs AND HCFCs.

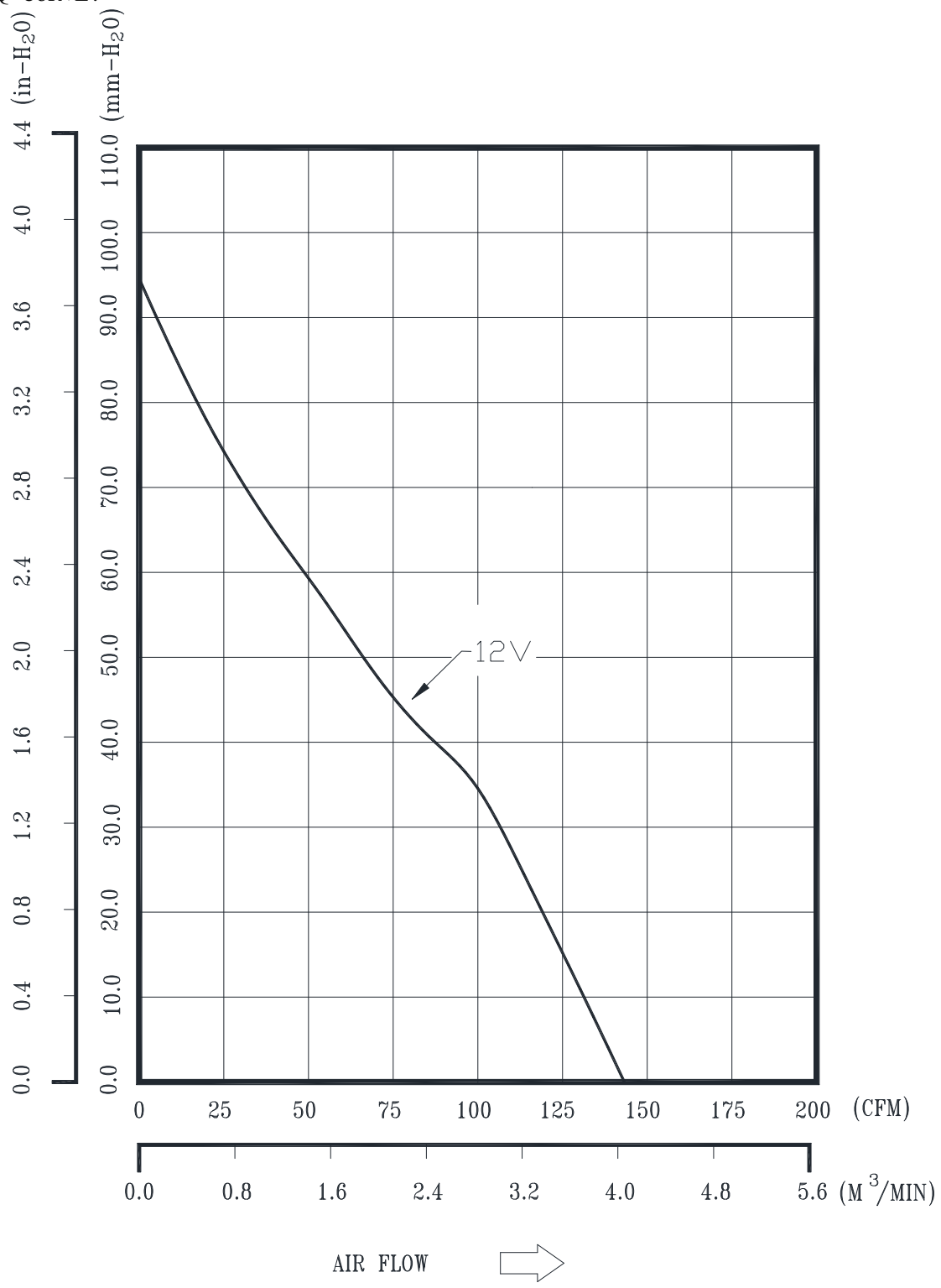
7. PRODUCTION LOCATION

7-1. PRODUCTS WILL BE PRODUCED IN CHINA OR THAILAND.

PART NO:

DELTA MODEL: PFR0912SE-00

8. P & Q CURVE:



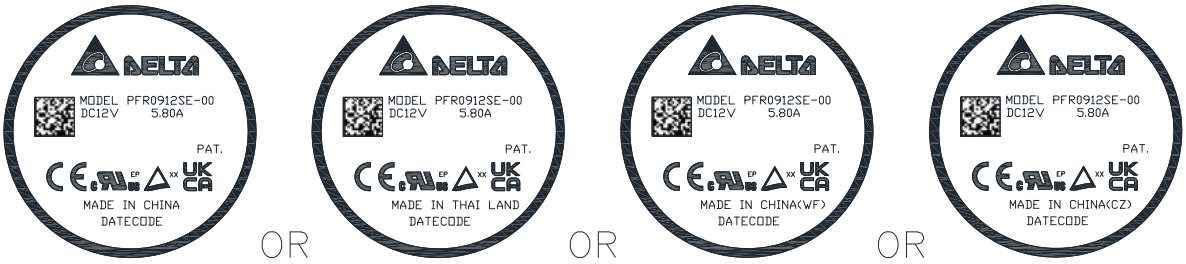
*TEST CONDITION: INPUT VOLTAGE-----OPERATION VOLTAGE
TEMPERATURE-----ROOM TEMPERATURE
HUMIDITY-----65%RH

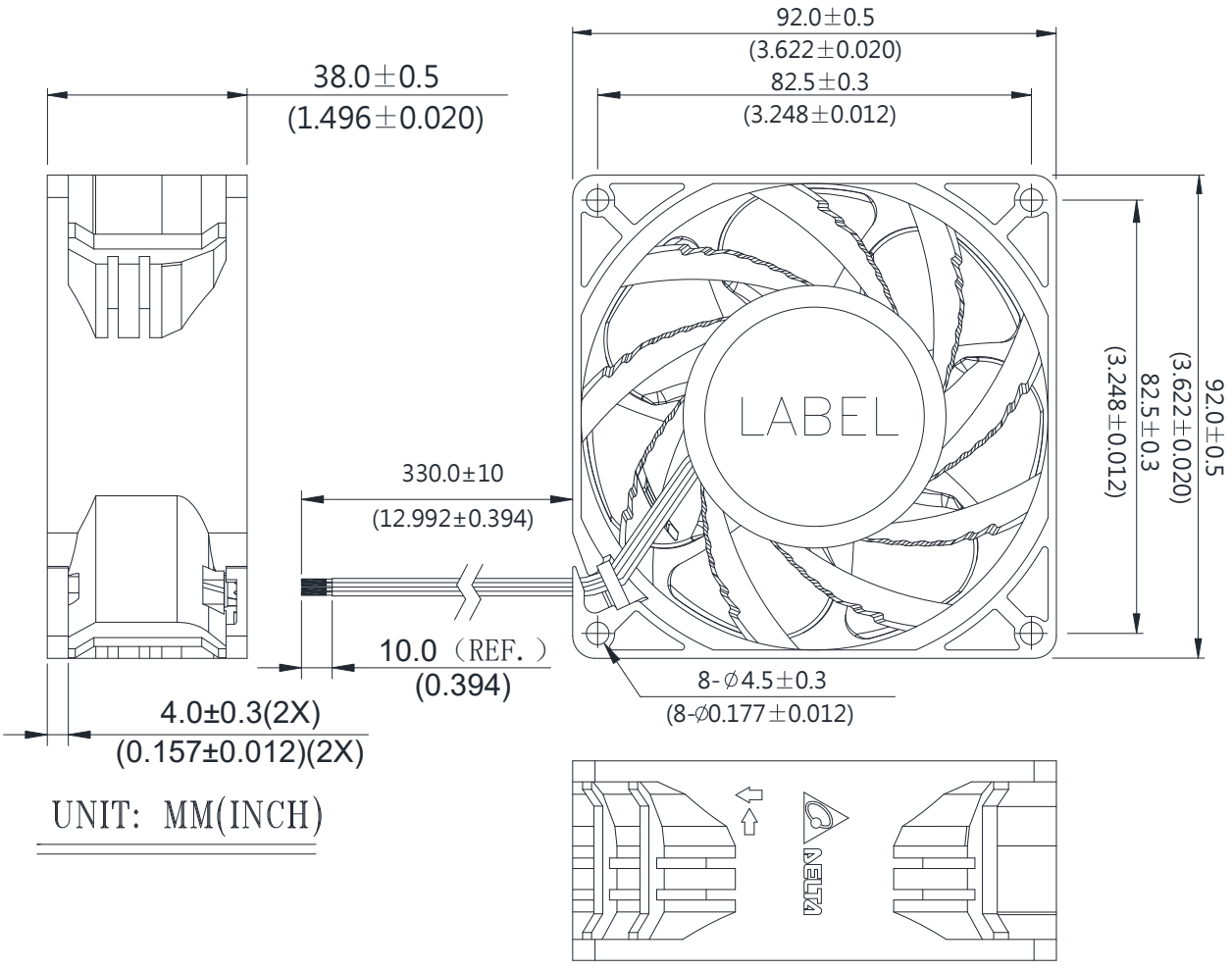
PART NO:

DELTA MODEL: PFR0912SE-00

9. DIMENSION DRAWING:

LABEL:





NOTES:

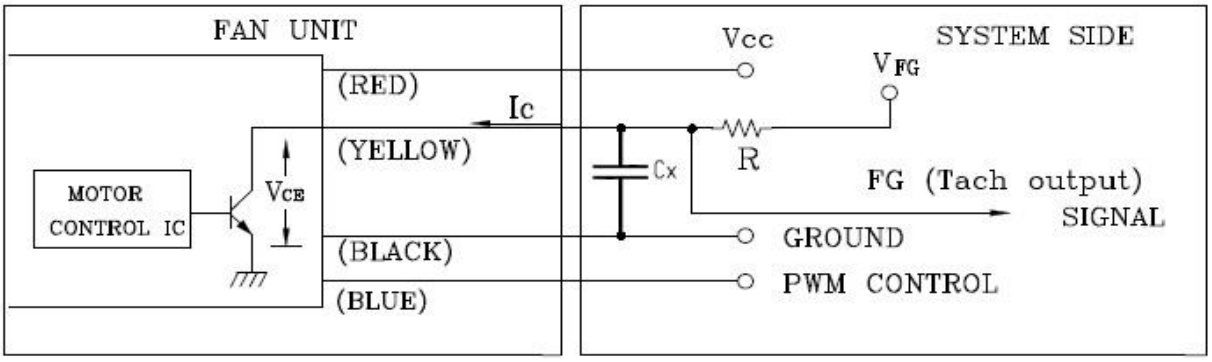
1. LEAD WIRE: UL1061 AWG#24 AND UL1061 AWG#22
   RED WIRE ---- UL1061 AWG#22 ----- (+)
   YELLOW WIRE ---- UL1061 AWG#24 ----- (FG)
   BLACK WIRE ---- UL1061 AWG#22 ----- (-)
   BLUE WIRE ---- UL1061 AWG#24 ----- (PWM)
2. THE PRODUCT IS RoHS COMPLIANT.

PART NO:

DELTA MODEL: PFR0912SE-00

10. FREQUENCY GENERATOR (FG) SIGNAL:

1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



GENERAL CONDITION: VFG is 3.3V, R is 8.2Kohm, and Cx is 4nF.

CAUTION:

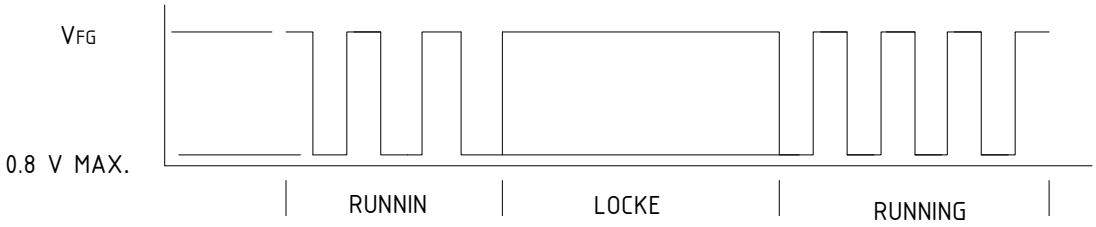
THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

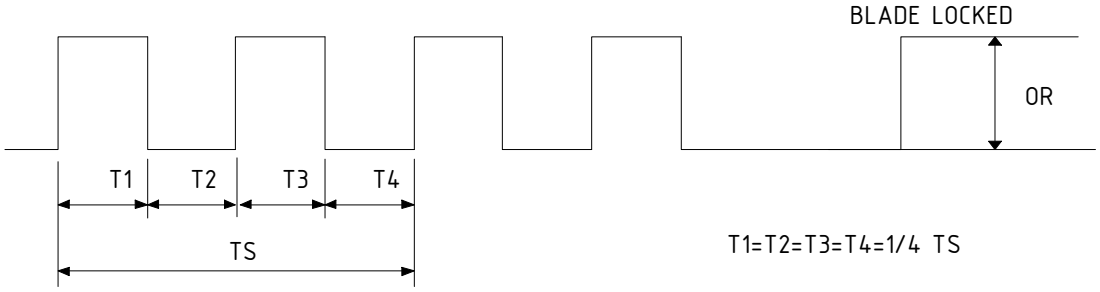
2. SPECIFICATION:

V_{FG}= 13.2V MAX Ic = 5mA MAX.

V_{CE}(sat)= 0.8V MAX. $R \geqq V_{FG}/Ic$

3. FREQUENCY GENERATOR WAVEFORM:





N=R.P.M

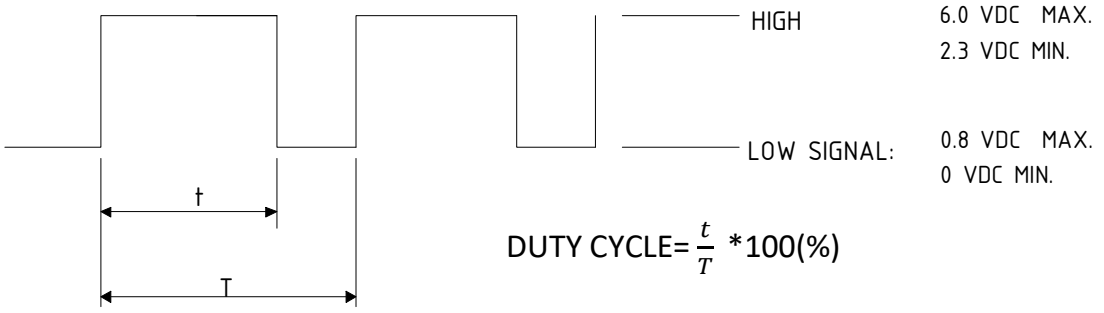
TS=60/N(SEC)

*VOLTAGE LEVEL AFTER BLADE LOCKED

*4 POLES

11.PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~6.0 VDC



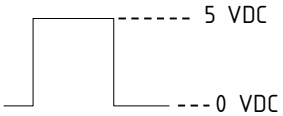
*THE PREFERRED OPERATING POINT FOR THE FAN IS 62.5K HZ.
*AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
*AT 0% DUTY CYCLE,THE ROTOR WILL SPIN AT MINIMUM SPEED.
*WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.

12. SPEED VS PWM CONTROL SIGNAL:
(AT RATED VOLTAGE & PWM FREQUENCY=62.5K HZ)

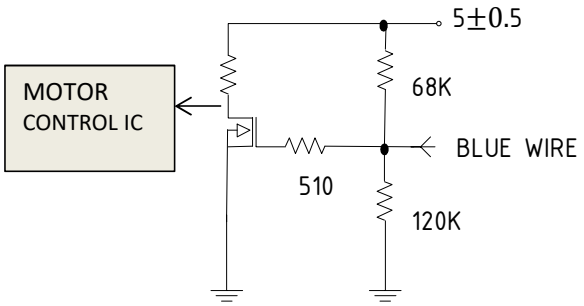
DUTY CYCLE (%)	SPEED R.P.M.	CURRENT (A) TYP.
100	13000 ± 10%	2.9(MAX.3.4)
0	1300 ± 400	0.06(MAX.0.08)

*PWM SIGNAL

PWM FREQUENCY=62.5KHZ



13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:

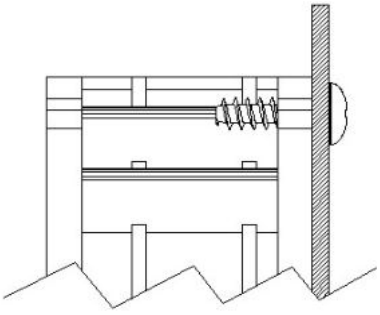


13-1. THE FAN SPEED WILL DEFAULT TO MAXIMUM WHEN THE SPEED CONTROL INPUT IS LEFT UNCONNECTED.

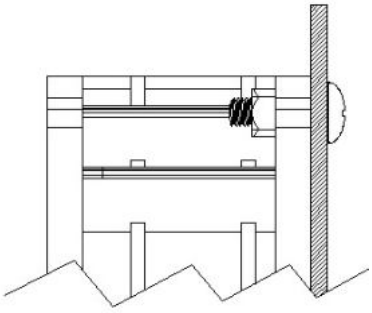
PART NO:

DELTA MODEL: PFR0912SE-00

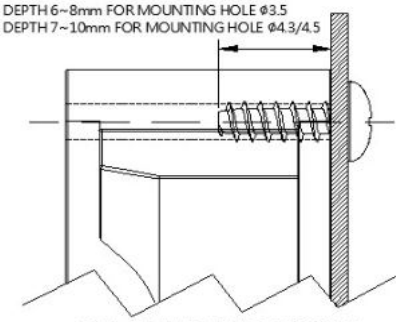
14. SCREW SPECIFICATION:



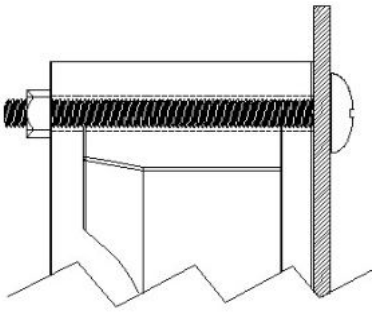
SELF-TAPPING SCREW
FLANGE MOUNTING DRAWING



MECHANICAL SCREW
FLANGE MOUNTING DRAWING



SELF-TAPPING SCREW
RIB MOUNTING DRAWING



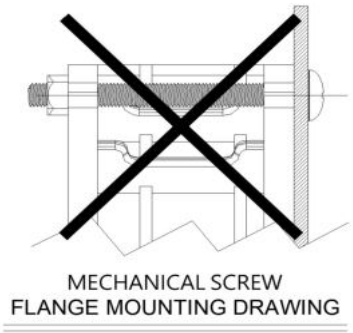
MECHANICAL SCREW
RIB MOUNTING DRAWING

NOTE:

1.SELF-TAPPING SCREW ACCORDING TO JIS B 1122 TYPE 2

2.EACH SCREW HOLE CAN ONLY TIGHTENED ONCE WHEN USING SELF-TAPPING SCREW .

3.IF IT WAS SLIPPAGE OR BREAK WHEN TIGHTENED SELF-TAPPING SCREW,
THEN CAN USING LOWER TORQUE THAN WE RECOMMENDED IN TABLE A .



MECHANICAL SCREW
FLANGE MOUNTING DRAWING

TABLE A: MOUNTING HOLE WITH RECOMMENDED SCREW * FOLLOW JIS B 1007

FAN TYPE		MOUNTING HOLE DIAMETER	SCREW TYPE	SCREW SPEC.	SCREW OUTER DIMENSION. (mm)		RECOMMENDED MAX. TORQUE (kgf-cm)	
					MAXIMUM	MINIMUM	FLANGE TYPE	RIB TYPE
☐	FLANGE	Φ3.2	SELF-TAPPING	ST3.5*1.3	3.53	3.35	4.5	5.5
☐	RIB		MECHANICAL	M3.0x0.5	2.98	2.88	4.5	7.5
☐	FLANGE	Φ3.5	SELF-TAPPING	ST4.0x1.41	4	3.85	5.5	
☐	RIB		MECHANICAL	M3.0x0.5	2.98	2.88	4.5	
☐	FLANGE	Φ4.3	SELF-TAPPING	*ST4.8x1.6	4.8	4.62	5.5	
☐	RIB		MECHANICAL	M4x0.7	3.97	3.84	4.5	
☑	FLANGE	Φ4.5	SELF-TAPPING	*ST5.0x1.59	5	4.85	5.5	
			SELF-TAPPING	*ST4.8x1.6	4.8	4.62	5.5	
☐	RIB		MECHANICAL	M4x0.7	3.97	3.84	4.5	

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.