

SUNON

SPECIFICATION FOR APPROVAL FOR REFERENCE

CUSTOMER :
DESCRIPTION : EC 400 CENTRIFUGAL FAN
DIMENSION : 500x500X449MM
SUNON MODEL : CBAP540QG-1000U-IJ9
SUNON SEQ NO :
REV : 0
ISSUE DATE : 2025.05.15
APPROVED BY CUSTOMER :

Preliminary Data Sheet is for reference only, final specification might be changed according to design verification (or mass production) data.

APPROVED BY	Kenan	CHECKED BY	C_Tang	DESIGNED BY	Nancy
-------------	-------	------------	--------	-------------	-------

SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO., LTD
NO.30, LN. 296, XINYA RD., QIANZHEN DIST., KAOHSIUNG CITY 806, TAIWAN
TEL: 886-7-8135888 FAX: 886-7-8230505

TABLE OF CONTENTS

1. SCOPE	3
2. CHARACTERISTICS	3
3. MECHANICAL	4
3.1 BEARING SYSTEM	4
3.2 MATERIALS OF ELECTRONIC ENCLOSURE	4
3.3 MATERIALS OF FAN BLADE	4
3.4 IMPELLER BALANCE GRADE	4
3.5 WEIGHT	4
4. ENVIRONMENTAL	4
4.1 OPERATING TEMPERATURE RANGE	4
4.2 STORAGE TEMPERATURE RANGE	4
4.3 OPERATING HUMIDITY RANGE	4
4.4 STORAGE HUMIDITY RANGE	4
5. PROTECTION	4
6. AIR FLOW & STATIC PRESSURE CURVE	5
7. DIMENSIONS	6-7
8. LEAD WIRE CONNECTION	8
9. SPEED CONTROL	9
I. NOTE	10-11
1 SAFETY	10
2 SPECIFICATION MODIFICATION	10
3 OTHER	10-11
II. WARRANTY	11
I. DECLARATION OF ROHS	12

1. SCOPE

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE EC CENTRIFUGAL FAN.

2. CHARACTERISTICS

ITEM	DESCRIPTION
NOMINAL VOLTAGE	400 VAC
RATED VOLTAGE	380-480 VAC
RATED CURRENT	3250 mA.
RATED POWER	2130 W.
SPEED CONTROL	0-10 VDC / PWM
RATED SPEED	3550 RPM \pm 10% IN FREE AIR AT RATED VOLTAGE
MAX. AIRFLOW AT ZERO STATIC PRESSURE	NOMINAL 4998 CFM NOMINAL 8492 m ³ /h
MAX. STATIC PRESSURE AT ZERO AIRFLOW	NOMINAL 7.62 inch-H ₂ O NOMINAL 1868 Pa
ACOUSTIC NOISE	NOMINAL 101 dB(A) NOTED: 1. FOLLOW ISO 3745:2003. 2. MICROPHONE DISTANCE: 1 METER.
INSULATION CLASS	F
INGRESS PROTECTION	IP55
ERP DIRECTIVE	2026
LIFE EXPECTANCY	60,000 HOURS AT 40 °C WITH 15~65% RH
DIRECTION OF ROTATION	CLOCKWISE VIEWED FROM FAN IMPELLER
SAFETY	UL / TUV / CE ONGOING

3. MECHANICAL

- 3.1 BEARING SYSTEM : BALL BEARING SYSTEM
- 3.2 MATERIALS OF ELECTRONIC ENCLOSURE : ALUMINUM
- 3.3 MATERIALS OF FAN BLADE : THERMOPLASTIC PA66+25%GF OF UL 94V-0
- 3.4 IMPELLER BALANCE GRADE : G6.3 PER ISO 1940-1:2003(E)
- 3.5 WEIGHT : 19.1K.G.(REF.)

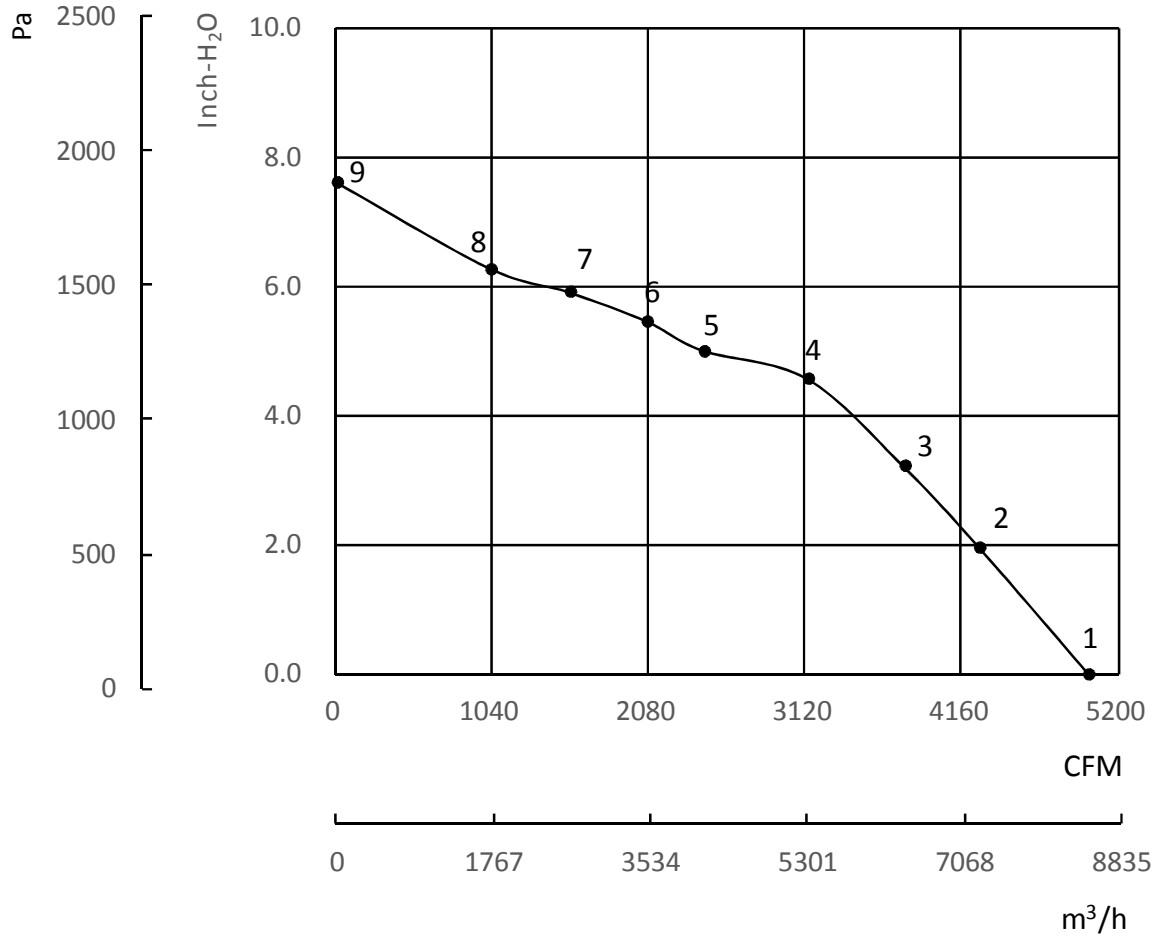
4. ENVIRONMENTAL

- 4.1 OPERATING TEMPERATURE RANGE : -25 TO + 60 DEGREE C
- 4.2 STORAGE TEMPERATURE RANGE : -40 TO + 80 DEGREE C
- 4.3 OPERATING HUMIDITY RANGE : 5 TO 90% RH
- 4.4 STORAGE HUMIDITY RANGE : 5 TO 95% RH

5. PROTECTION

- AUTOMATIC RESTART
- SOFT START
- OVER TEMPERATURE PROTECTION
- OVER LOAD PROTECTION
- OVER VOLTAGE PROTECTION
- LOCKED ROTOR PROTECTION

6. AIR FLOW & STATIC PRESSURE CURVE

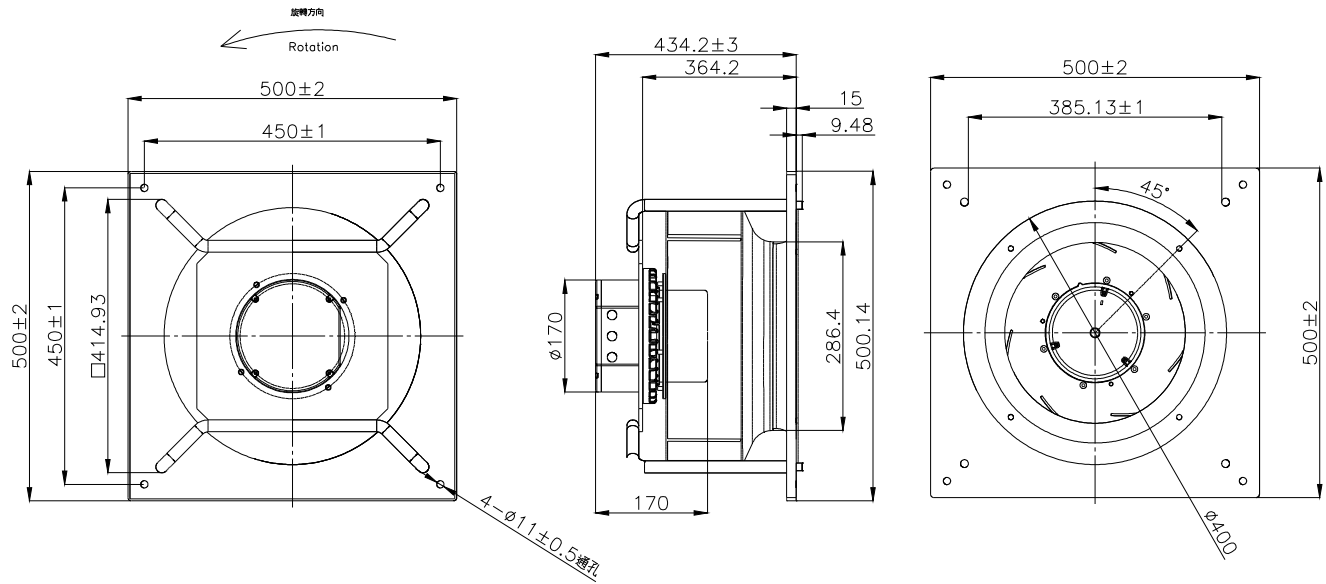


NOTE: The airflow and static press are measured with SUNON' s specific fixture.

7. DIMENSIONS

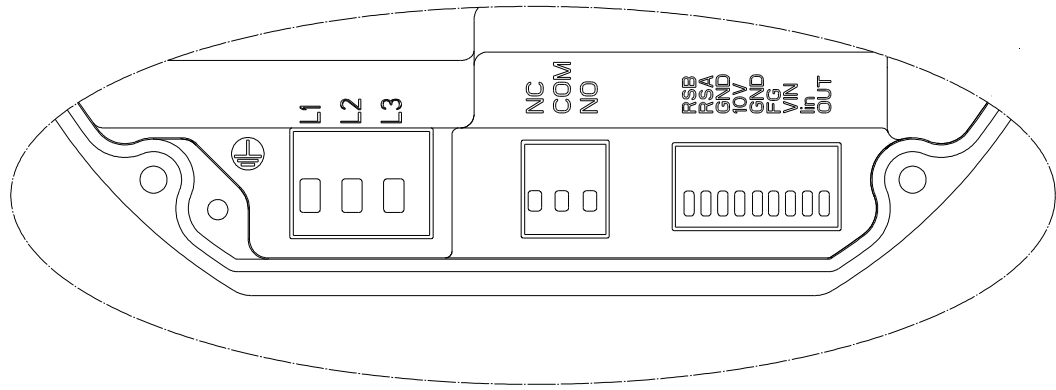
SCREW TYPE (PAN HEAD)	TORQUE	SCREW SPEC	
		SIZE	STANDARD
MACHINE SCREW	3~4 KGF-CM	M4.0	JIS B1111-1974

NOTE: Above spec is available for customization.



UNIT:mm

DEFINITION OF TERMINAL BLOCK:

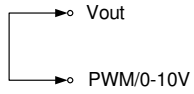


	Text	Functions
Power	L1	AC main(3~300-480VAC)
	L2	AC main(3~300-480VAC)
	L3	AC main(3~300-480VAC)
Status	NO	Alarm relay, close by failure
	COM	Alarm relay, common(2A/250VAC)
	NC	Alarm relay, open by failure
Signal	OUT	Control voltage output 0-10VDC
	Iin	Speed control, input 4-20mA
	Vin	Speed control, input 0-10VDC
	FG	Frequency generator(FG) signal
	GND	Ground
	10V	+10V output, MAX 10mA
	GND	Ground
	RSA	RS485-A
	RSB	RS485-B

8. LEAD WIRE CONNECTION

CUSTOMER CIRCUIT

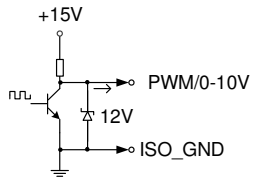
(a)Max. Speed



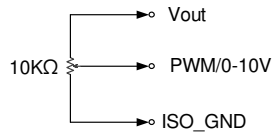
(b)Speed Control



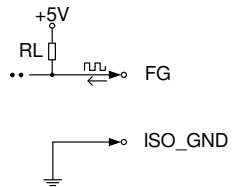
(c)Speed Control



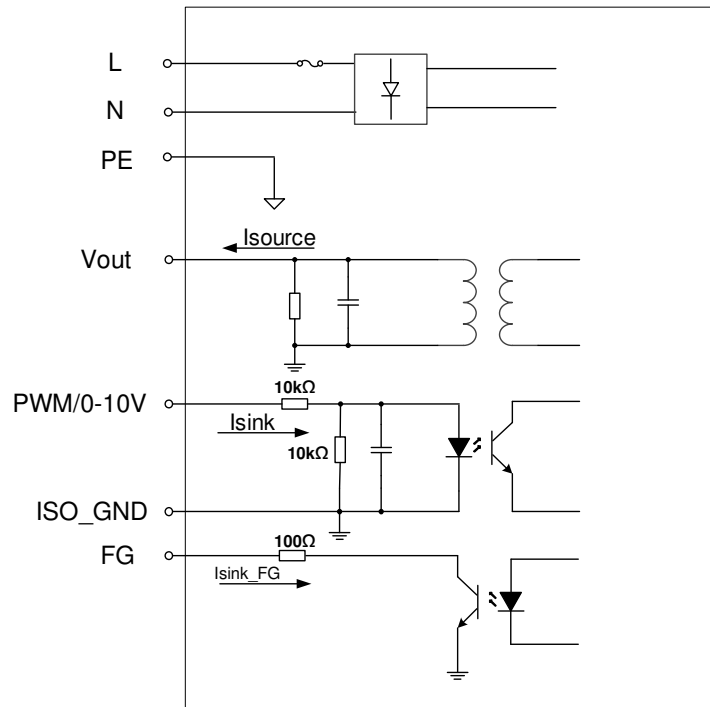
(d)Speed Control



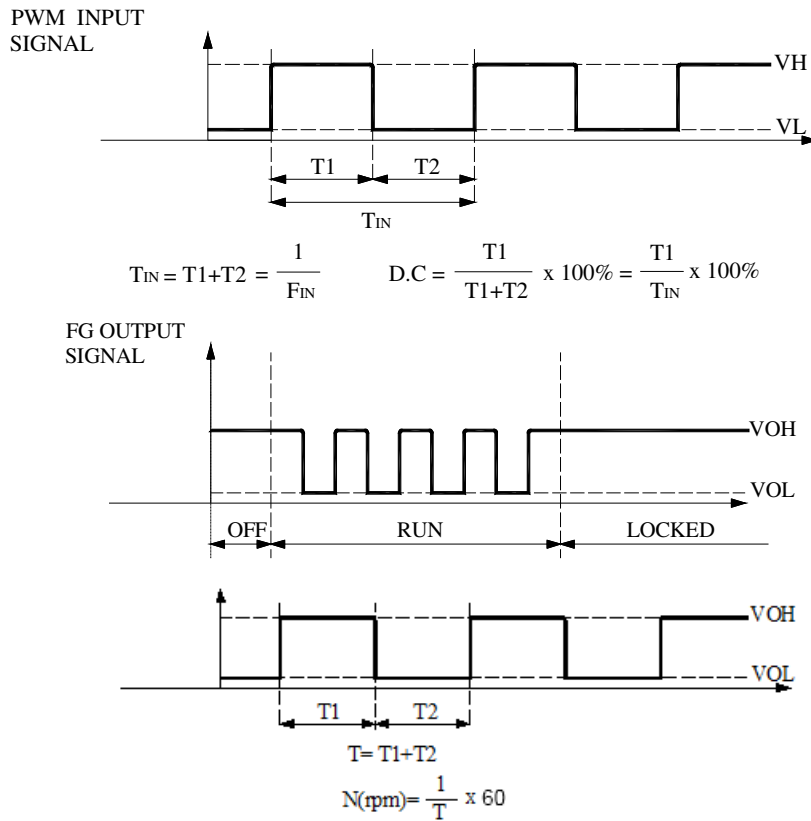
(e)Frequency Generator



FAN



9. SPEED CONTROL



PWM INPUT SIGNAL FOR SPEED CONTROL				
PARAMETER	MIN.	TYP.	MAX.	UNIT
HIGH LEVEL INPUT VOLTAGE(V _H)	9	-	10	V
LOW LEVEL INPUT VOLTAGE(V _L)	0	-	1	V
INPUT FREQUENCY(F _{IN})	0.5	-	25	kHz
INPUT PERIOD	2	-	0.05	mS
START DUTY	-	10	-	%
SINK CURRENT(I _{SINK})	-	-	0.5	mA
VOLTAGE INPUT SIGNAL FOR SPEED CONTROL				
AD INPUT VOLTAGE	0	-	10	V
START VOLTAGE	-	1	-	V
MAX VOLTAGE AT FULL SPEED	-	9	-	V
DC OUTPUT VOLTAGE				
OUTPUT VOLTAGE(V _{OUT})	9.5	10	10.5	V
SOURCE CURRENT	-	-	10	mA
FREQUENCY GENERATOR				
FG SINK CURRENT	0.1	-	10	mA
OUTPUT PULL HIGH VOLTAGE	3.3	5	15	V
PULL HIGH RESISTOR(R _L)	1	-	10	kΩ
OUTPUT LOW LEVEL VOLTAGE	0.01	-	1	V

I. NOTE

1. SAFETY

- 1.1. DO NOT use or operate this fan in excess of the limitations set forth in this specification. SUNON is not responsible for the non-performance of this fan and/or any damages resulting from its use, if it is not used or operated in accordance with the specifications.
- 1.2. SUNON recommends adding a protection circuit to the product or application in which this fan is installed, such as a thermo-fuse, or current-fuse or thermo-protector. The failure to use such a device may result in smoke, fire, electric shock by insulation degradation in cases of motor lead short circuit, overload, or over voltage, and/or other failure.
- 1.3. SUNON recommends installing a protection device to the product or application in which this fan is installed if there is a possibility of reverse-connection between VDC (+) and GND (-). The failure to install such a device may result in smoke, fire, and/or destruction, although these conditions may not manifest immediately.
- 1.4. This fan must be installed and used in compliance with all applicable safety standards and regulations.
- 1.5. Use proper care when handling and/or installing this fan. Improper handling or installation of this fan may cause damage that could result in unsafe conditions.
- 1.6. Use proper care during installation and/or wiring. Failure to use proper care may cause damage to certain components of the fan including, but not limited to, the coil and lead wires, which could result in smoke and/or fire.
- 1.7. DO NOT use power or ground PWM to control the fan speed. If the fan speed needs to be adjusted, please contact SUNON to customize the product design for your application.
- 1.8. For critical or extreme environments, including non stop operation, please contact SUNON and we will gladly provide assistance with your product selection to ensure an appropriate cooling product for your application.

2. SPECIFICATION MODIFICATION

- 2.1. SUNON offers engineering assistance on fan installation and cooling system design.
- 2.2. All changes, modifications and/or revisions to the specifications, if any are incorporated in the attached specifications.
- 2.3. No changes, modifications and/or revisions to these specifications are effective absent agreement, by both SUNON and the customer, in writing.
- 2.4. This fan will be shipped in accordance with the attached specification unless SUNON and the customer have agreed otherwise, in writing, as specified in Paragraph 3, above.

3. OTHER

- 3.1. When building your device, please examine thoroughly any variation of EMC, temperature rise, life data, quality, etc. of this product by shock/drop/vibration testing, etc. If there are any problems or accidents in connection with this product, it should be mutually discussed and examined.
- 3.2. Use proper care when handling this fan. Components such as fan holders or bearings may be damaged, if touched with fingers or other objects. Additionally, static electricity (ESD) may damage the internal circuits of the fan.

- 3.3. DO NOT operate this fan in proximity to hazardous materials such as organic silicon, cyanogen, formalin, phenol, or corrosive gas environments including, but not limited to, H₂S, SO₂, NO₂, or Cl₂.
- 3.4. SUNON recommends that you protect this fan from exposure to outside elements such as dust, condensation, humidity or insects. Exposure of this fan to outside elements such as dust, condensation, humidity or insects may affect its performance and may cause safety hazards. SUNON does not warrant against damage to the product caused by outside elements.
Re: The term can be excluded, if the fan has been with IP55 design and meets customer's IP requirement.
- 3.5. This fan must be installed properly and securely. Improper mounting may cause harsh resonance, vibration, and noise.
- 3.6. Fan guards may prevent injury during handling or installation of the fan and are available for sale with this fan.
- 3.7. Unless otherwise noted, all testing of this fan is conducted at 25°C ambient temperature and sixty-five percent (65%) relative humidity.
- 3.8. DO NOT store this fan in an environment with high humidity. This fan must be stored in accordance with the attached specifications regarding storage temperature. If this fan is stored for more than 6 months, SUNON recommends functional testing before using.
- 3.9. SUNON reserves the right to use components from multiple sources at its discretion. The use of components from other sources will not affect the specifications as described herein.
- 3.10. The "Life Expectancy" of this fan has not been evaluated for use in combination with any end application. Therefore, the Life Expectancy Test Reports (L10 and MTTF Report) that relate to this fan are only for reference.

II. WARRANTY

This fan is warranted against all defects which are proved to be fault in our workmanship and material for one year from the date of our delivery. The sole responsibility under the warranty shall be limited to the repair of the fan or the replacement thereof, at SUNON's sole discretion. SUNON will not be responsible for the failures of its fans due to improper handling, misuse or the failure to follow specifications or instructions for use. In the event of warranty claim, the customer shall immediately notify SUNON for verification. SUNON will not be responsible for any consequential damage to the customer's equipment as a result of any fans proven to be defective.

Declaration of RoHS

Control declaration of environment- related substances/ materials

1. In accordance with the Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU, SUNON product have complied with law and discipline not to employ the forbidden substances, and restrict the allowable concentration of some limited substances deliberately in our components.

No	Substance	Criteria
1	CFCs & HCFCs (ozone depleting substances)	Forbidden
2	Chlorinated Organic Solvent	Forbidden
3	Plastic (Frame, Impeller, wire harness, etc.)	<100ppm
	Solder	<1000ppm
	Steel alloy	<3500ppm
	Aluminium alloy	<4000ppm
	Copper alloy	<4wt%
4	Solder	<20ppm
	Parts composed of metals containing zinc (e.g. brass, zinc for die casting)	<100ppm
	Plastic	<5ppm
5	PBBs and PBDEs	Forbidden
6	PCB and PCT	Forbidden
7	CP, Short-chain Chlorinated paraffins C10-13, Cl \geq 48 wt%	Forbidden
8	Mirex	Forbidden
9	PCN	Forbidden
10	Hexavalent Chromium compounds	<100ppm
11	Mercury and its compounds	Forbidden
12	Asbestos	Forbidden
13	Organic Tin compounds	Forbidden
14	Azo compounds	Forbidden
15	TBBP-A in external case plastic parts of products (PCB is exempted)	<1000ppm
16	Nickel in external case parts, which are likely to result in prolonged skin exposure	<1000ppm
17	Hexabromocyclododecane (HBCDD)	<1000ppm
18	Di-butyl Phthalate (DBP)	<1000ppm
19	Benzyl butyl Phthalate (BBP)	<1000ppm
20	Di-ethylhexyl Phthalate (DEHP)	<1000ppm
21	Di-isobutyl Phthalate (DIBP)	<1000ppm