SUNON

SPECIFICATION FOR APPROVAL

FOR REFERENCE

CUSTOMER	:	
DESCRIPTION	:	EC 25489 AXIAL FAN
DIMENSION	:	Ø254 X 89 mm
SUNON MODEL	:	CFSP2228D-1000C-XRA
SUNON SEQ NO	:	
REV	:	0
ISSUE DATE	:	2025.09.24
APPROVED BY CUSTOMER	:	

APPROVED BY	KENAN	CHECKED BY	TOM	DESIGNED BY	NANCY

SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO., LTD.
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STATEMENT OF DEVIATION

REV	DESCRIPTION	DATE	APPROVED
0	DRAFT	2025.09.24	

1. SCOPE

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

2. CHARACTERISTICS

ITEM	DESCRIPTION
NOMINAL VOLTAGE	1~230 VAC 50/60HZ
RATED VOLTAGE	1~200-277 VAC
RATED CURRENT	1.43 A @ 230 VAC , FREE AIR
RATED POWER	176 W @ FREE AIR
MAX. LOAD POWER	200 W
TOLERANCE	± 20% ON RATED POWER AND CURRENT
SPEED CONTROL	PWM / 0-10VDC RS485
RATED SPEED	2850 RPM ± 10% IN FREE AIR AT RATED VOLTAGE
MAX. AIRFLOW	NOMINAL 1262 CFM NOMINAL 2144 m^3/h
MAX. STATIC PRESSURE	NOMINAL 1.13 inch-H_2O NOMINAL 283.41 PA
ACOUSTIC NOISE	NOMINAL 72.7 dB(A)
	NOTED: 1. FOLLOW ISO 3745:2003. 2. MICROPHONE DISTANCE: 1 METER.
INSULATION CLASS	F
INGRESS PROTECTION	IP68
LIFE EXPECTANCY	70,000 HOURS AT 40 °C WITH 15~65% RH
DIRECTION OF ROTATION	COUNTER-CLOCKWISE FROM BLADE SIDE
SAFETY	UL / TUV / CE / CCC (IN PROCESS)

3. MECHANICAL

3.1	BEARING SYSTEM	:	BALL BEARING SYSTEM
3.2	FRAME	:	Aluminum
3.3	BLADE	:	PA66+25%GF
3.4	ELECTRONIC ENCLOSURE	:	Aluminum
3.5	IMPELLER BALANCE GRADE	:	G6.3 PER ISO 1940-1:2003(E)
3.3	WEIGHT		3000GRAMS

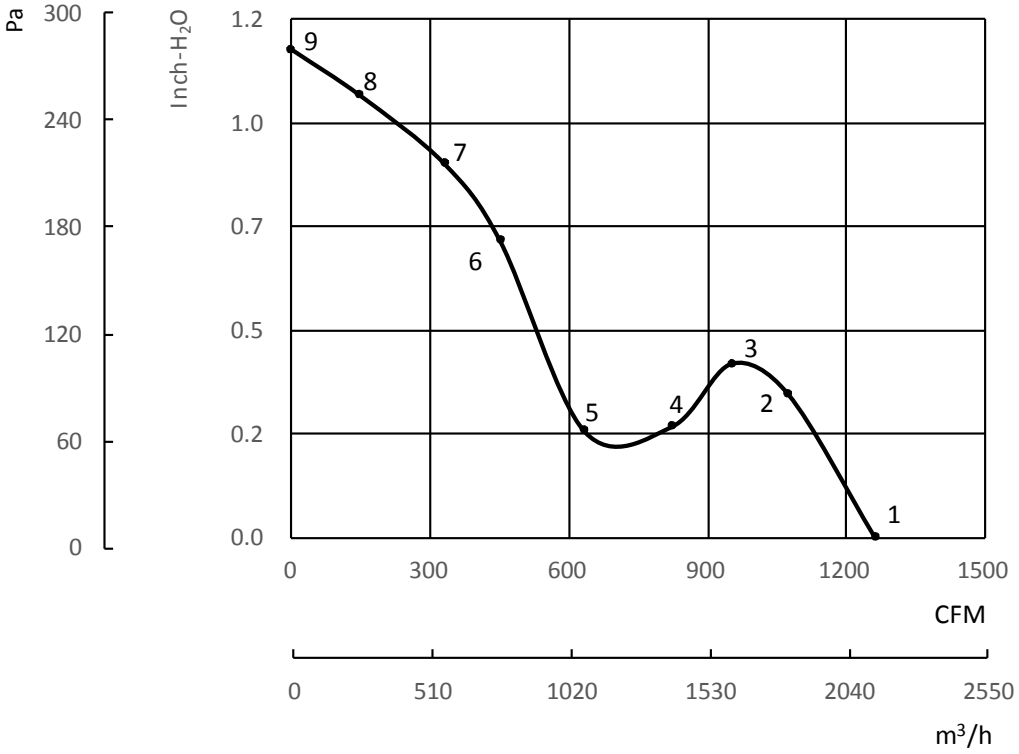
4. ENVIRONMENTAL

4.1	OPERATING TEMPERATURE RANGE	:	-30 TO + 70 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



MEASURE DATA:

Index	Static pressure	Air volume		Speed	Power	Current
	Pa	m³/h	CFM	R.P.M.	W	A
1	0	2145.06	1262.54	2864	175.9	1.43
2	92.18	1827.22	1075.46	2863	190.9	1.53
3	124.54	1618.66	952.707	2862	195.4	1.56
4	148.08	1398.75	823.27	2863	197.5	1.58
5	99.05	1077.68	634.29	2862	150.0	1.23
6	159.85	767.19	451.50	2863	177.9	1.44
7	217.71	559.64	329.39	2779	198.2	1.58
8	269.68	250.87	147.65	2601	195.4	1.56
9	283.41	0	0	2425	185.3	1.5

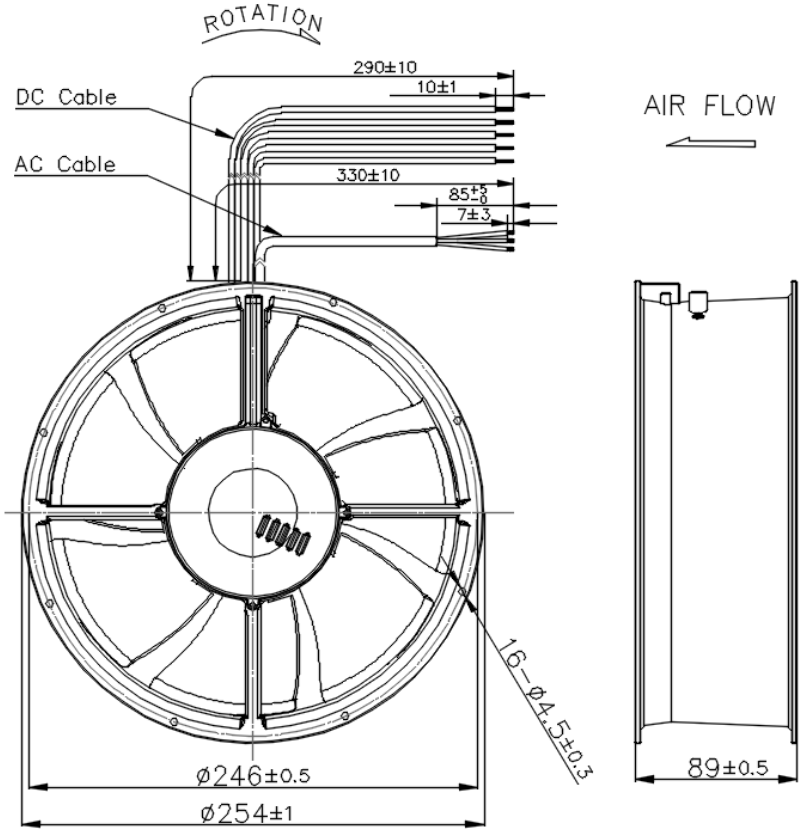
TEST CONDITION:
INPUT VOLTAGE: NOMINAL VOLTAGE.
TEMPERATURE: ROOM TEMPERATURE.
HUMIDITY: 65%RH
MEASURED WITHOUT FAN GUARD .

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
SELF-TAPPING SCREW	6～8 Kgf-cm	ϕ 5.0	JIS B1122 TYPE 2

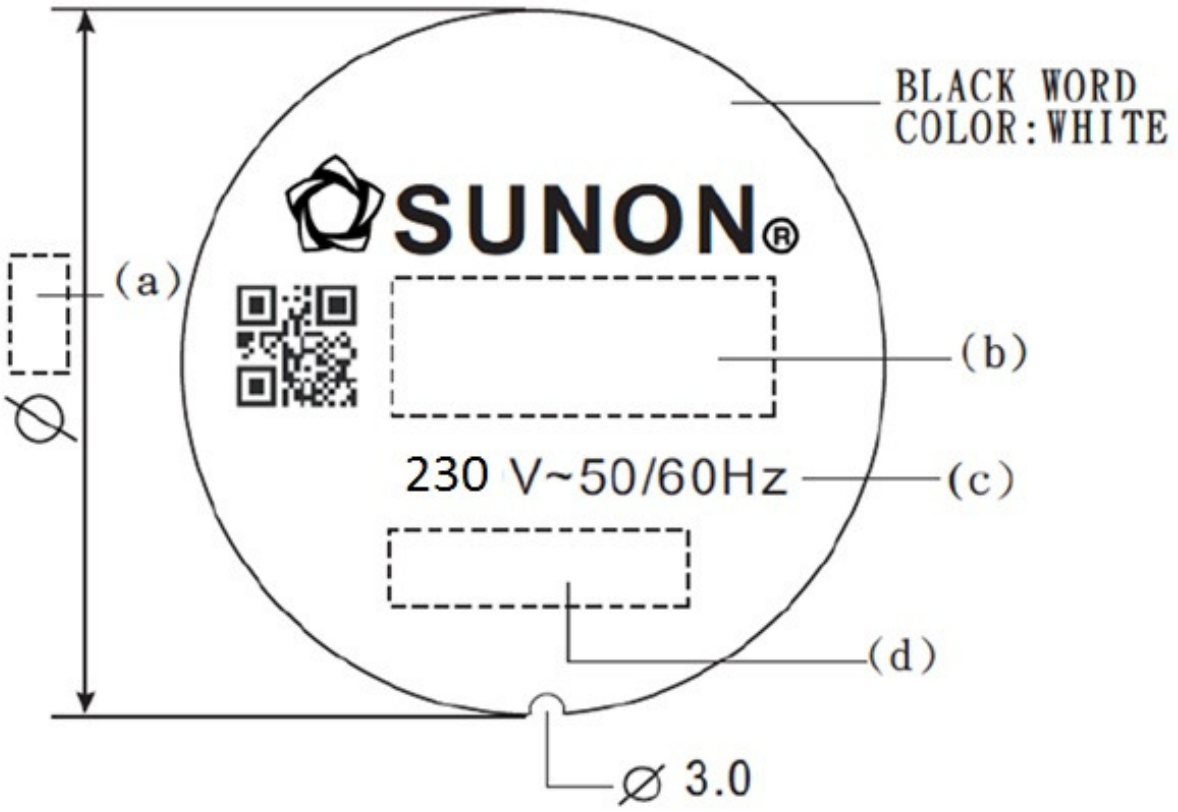
NOTE: SUNON RECOMMENDS THE SCREW AND TORQUE AS ABOVE. PLEASE CONTACT SUNON, IF ANY NEW REQUIREMENT IS REQUESTED.



UNIT:mm

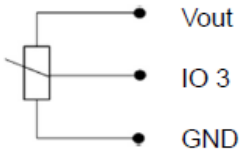
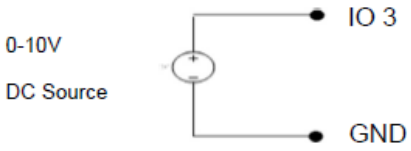
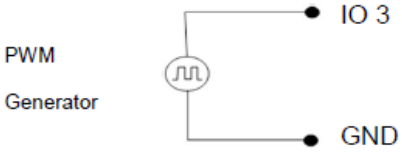
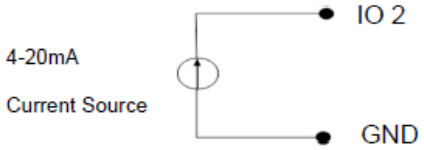
ITEM	FUNCTIONS	WIRE TYPE	COLOR
AC CABLE	L	UL2517#20AWG	BLUE
	N	UL2517#20AWG	BROWN
	PE	UL2517#20AWG	YELLOW/GREEN
DC CABLE	ISO+10 V	UL1015#22AWG	RED
	PWM/VSP	UL1015#22AWG	BLUE/WHITE
	RD	UL1015#22AWG	WHITE
	FG	UL1015#22AWG	YELLOW
	GND	UL1015#22AWG	BLACK

8. LABEL



(a) Dimension	(b)Model Name	(c) Property NO.	(d)Voltage
	CFSP2228D-1000C-XRA		1~200-277V，50/60Hz

9. LEAD WIRE CONNECTION

Speed setting	
Full Speed  	**Short Vout & IO3** Fan will run at full speed.
 	**Connector 1-10kΩ variable resistor** Between **Vout** with **GND** and IO 3 (**0-10V/PWM**) Vary the variable resistance，to change the 'IO3' voltage (0...10V), then change FAN speed。
Voltage Control B  	**Use voltage source supply 0~10V_{DC} voltage** DC+ : connect to IO 3 (+) DC - : connect to GND (-)
PWM Control  	**PWM duty control** PWM amplitude is 3.3~24V_{DC} Frequency Range is 100Hz...10kHz -PWM duty higher than 15%, fan start up。 -PWM duty lower than 5%, fan stop。
Current Control  	**4~20mA Current Control** Open 0-10V/PWM PIN - 4.0 mA → Fan Stop - 6.0 mA → Fan Start up - 19.5 mA → Maximum Speed

10. SPEED CONTROL

<table>
<tr><th colspan="2">Signal function</th></tr>
<tr><td>RS485 control function</td><td>RS485 control function
-Select the control mode of speed, fixed speed or fixed PWM duty
-Speed and power consumption feedback.
-Allow multiple FANs control and status patrol.
Cable: A MODBUS over Serial Line Cable must be shielded. At one end of each cable its shield must be connected to protective ground.</td></tr>
<tr><td>Control O/P</td><td>The analog signal level is the derivative of current control level.
<table>
<tr><th>Current (mA)</th><th>Control O/P (VDC) (REF)</th></tr>
<tr><td>4.0</td><td>0</td></tr>
<tr><td>5.6</td><td>1.0</td></tr>
<tr><td>11.9</td><td>5.0</td></tr>
<tr><td>19.5</td><td>9.45</td></tr>
</table></td></tr>
<tr><td>Voltage/PWM control</td><td>The speed comparison will control level
<table>
<tr><th>Voltage (V)</th><th>PWM (%)</th><th>Speed (RPM) (REF)</th></tr>
<tr><td>0</td><td>0</td><td>0</td></tr>
<tr><td>1.0</td><td>10</td><td>100 ± 50 RPM</td></tr>
<tr><td>5.0</td><td>50</td><td>1475 ± 10%</td></tr>
<tr><td>9.5</td><td>95</td><td>2850± 5%</td></tr>
</table></td></tr>
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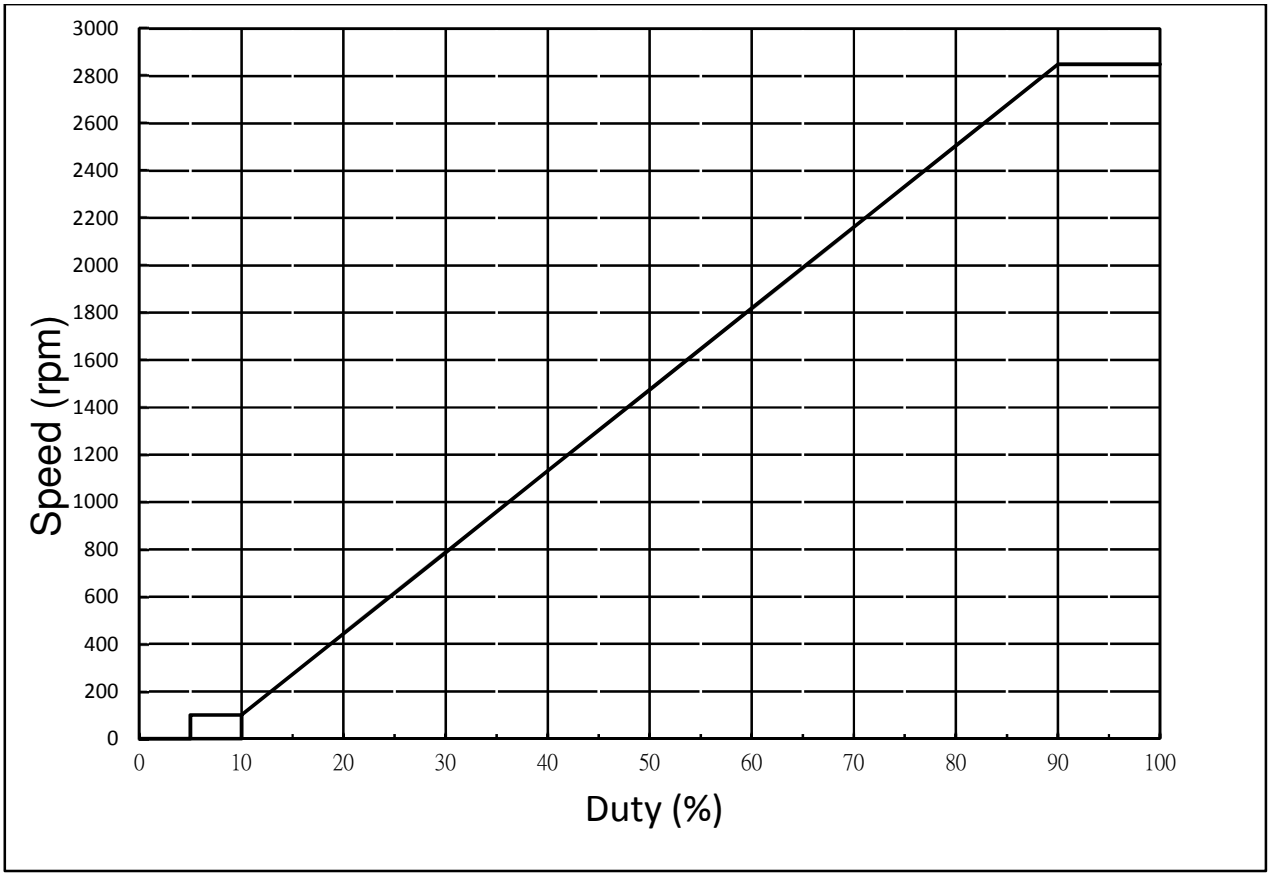
<tr><td>11.9</td><td>1475 ± 10%</td></tr>
<tr><td>18.6</td><td>2850± 5%</td></tr>
</table></td></tr>
<tr><td>Alarm state</td><td>1. NC and COM will OPEN
2. NO and COM will CLOSE.</td></tr>
<tr><td>FG</td><td>Enable function.
1. FG is H or Blank, the fan is enable
2. FG is L, the fan is disable
※ H : 9.5 ~ 10V
L : 0 ~ 0.7V</td></tr>
</table>

11. VOLTAGE、PWM、CURRENT CONTROL VS SPEED CURVE

VOLTAGE	0	0.5	1	2	3	4	5	6	7	8	9	10
PWM DUTY(%)	0	5	10	20	30	40	50	60	70	80	90	100
Current Control	4	5	5.6	6.9	8.4	10	11.9	13.5	15.1	16.7	18.6	20
Speed(rpm)	0	100	100	444	788	1131	1475	1819	2163	2506	2850	2850



NOTE:It is tested under free air condition. The same spec is not able to apply in static pressure condition