建準電機工業(股)公司
D.C.C.
2016.06.06
發 行 章

# SUNON

## SPECIFICATION FOR APPROVAL

| | | |
|---|---|---|
| **CUSTOMER** | : | |
| **DESCRIPTION** | : | **EC AXIAL Fan** |
| **DIMENSIONS** | : | **120 X 120 X 38 mm** |
| **M O D E L** | : | **CF4113MBL-000U-ABD** |
| **SUNON SPEC. NO.** | : | **A12010450G-00** |
| **CUSTOMER APPROVAL NO.** | : | |
| **APPROVED BY CUSTOMER** | : | |

**(AUTHORIZED)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DRAWN | Alice-chang 06/02 | CHECKED | Cindy Kiddy | APPROVED | Gavinlee | SPEC.NO | A12010450G-00 |
| | | | | | | ISSUE DATE | 04.20.2016 |
| | | | | | | EDITION | 1 |
| | | | | | | REVISION DATE | 06.02.2016 |
| | | | | | | E.SPEC | EA1600048 |

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# EC AXIAL Fan

## MODEL : CF4113MBL-000U-ABD

## CHARACTERISTICS

| | | |
|---|---|---|
| 1. Motor Design | : | Single phase, 4-poles Brushless DC motor. |
| 2. Insulation Resistance | : | 10 Megohms minimum at 500 VDC. |
| 3. Dielectric Strength | : | 1800 VAC for one second. |
| 4. Motor Protection | : | Impedance Protected. |
| 5. Noise Level | : | Measured in a semi-anechoic chamber with background noise level below 15 dB(A). The fan is running in free air with the microphone at a distance of one meter from the fan intake. |
| 6. Tolerance | : | ± 20% on rated power and current. |
| 7. Air Performance | : | Measured by a double chamber. The values are recorded when the fan speed has stabilized at rated voltage. |

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# SPECIFICATIONS

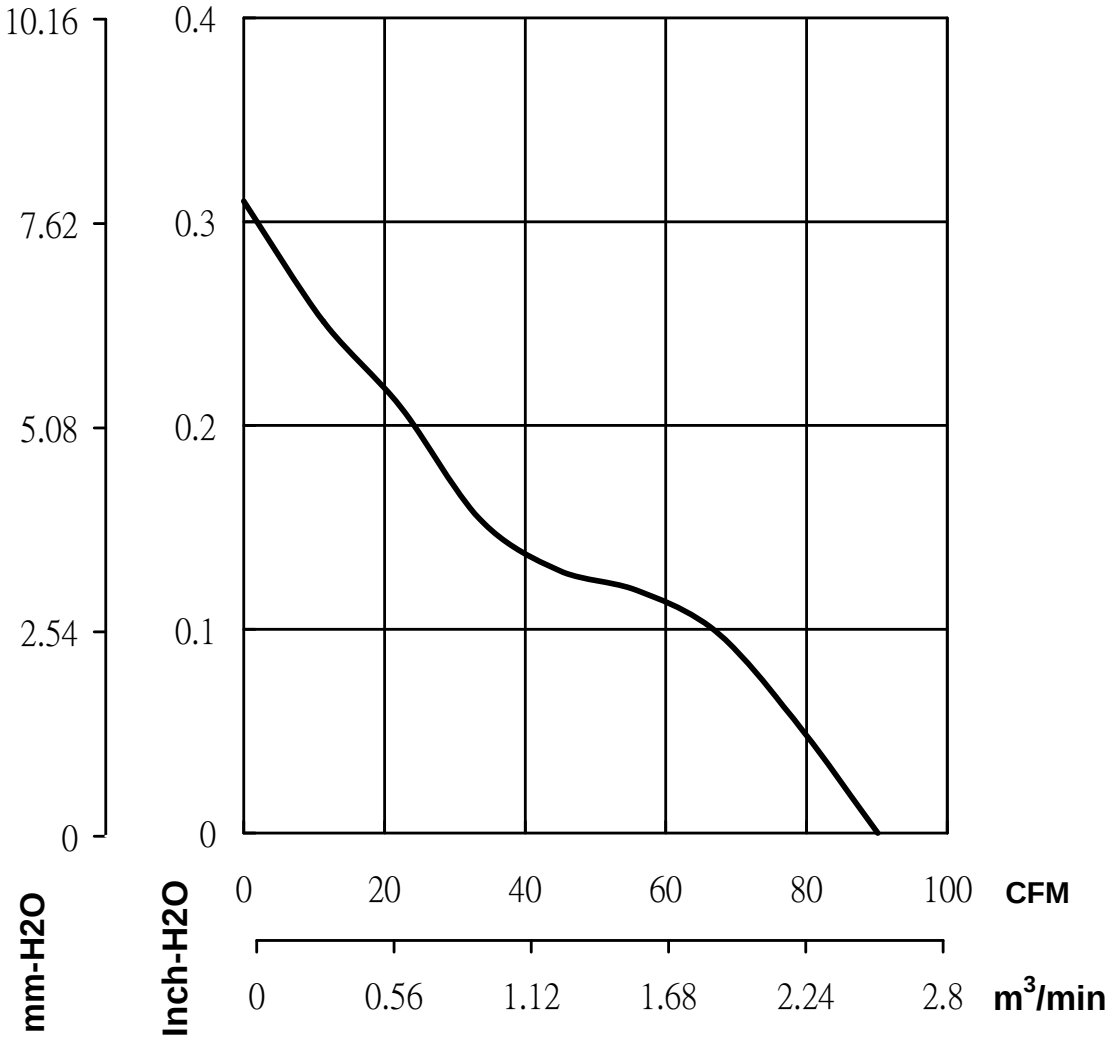
## MODEL : CF4113MBL-000U-ABD

| | | |
|---|---|---|
| 1-1. Rated Voltage | : | 100 VAC 50/60Hz 240 VAC 50/60Hz |
| 1-2. Operating Voltage Range | : | 90~265 VAC 50~60 Hz |
| 1-3. Safety Certification Voltang Range | : | 100~240 VAC 50~60 Hz |
| 1-4. Starting Voltage | : | 85 VAC (25 deg. C POWER ON/OFF) |
| 1-5. Rated Speed | : | 3000 RPM ± 10% |
| 1-6. Air Delivery | : | 90.1 CFM / Min. 77.9 CFM |
| 1-7. Static Pressure | : | 0.31 Inch-$H_2O$ / Min. 0.25 Inch-$H_2O$ |
| 1-8. Rated Current | : | 61 mA 37 mA |
| 1-9. Rated Power | : | 3.40 WATTS |
| 1-10. Noise Level | : | 40.2 dB(A) / Max. 44.0 dB(A) |
| 1-11. Direction of Rotation | : | Counter-clockwise viewed from front of fan blade |
| 1-12. Operating Temperature | : | -25 to +70 deg. C |
| 1-13. Storage Temperature | : | -40 to +80 deg. C |
| 1-14. Bearing System | : | Precision ball bearing system |
| 1-15. Weight | : | 317 g |
| 1-16. Safety | : | UL/CUR/TUV/CE/ATEX Approvals |
| 1-17. Protection | : | ☑Automatic Restart Capability<br>Note: In a situation where the fan is locked by an external force while the electricity is on, an increase in coil temperature will be prevented by temporarily turning off the electrical power to the motor. The fan will automatically restart when the locked rotor condition is released.<br>□Polarity Protection |
| 1-18. IP Class:IP55 | : | According to IEC 529 (or IEC 34-5) IP standard, the average temperature is 23~24°C and humidity is 67% RH for Dust Water Test. The fan needs to be test and Spray Put in dust box for 8 hours for Dust Test and be sprayed 10 minutes with water of 4 aspects for Spray Water Test. After these 2 tests, which executing by regular standard, the fan will be measured the performance is normal or not. PS. There are different applicative environments and systems by different customers, so please put the product in the most suitable environment to measure the performances.<br>(IP55 protection verification is focused on motor and PCB, not for power connector and pin housing.) |

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# MODEL : CF4113MBL-000U-ABD

# PERFORMANCE CURVES



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## MATERIAL

2-1. Frame : Thermoplastic PBT of UL 94V-0

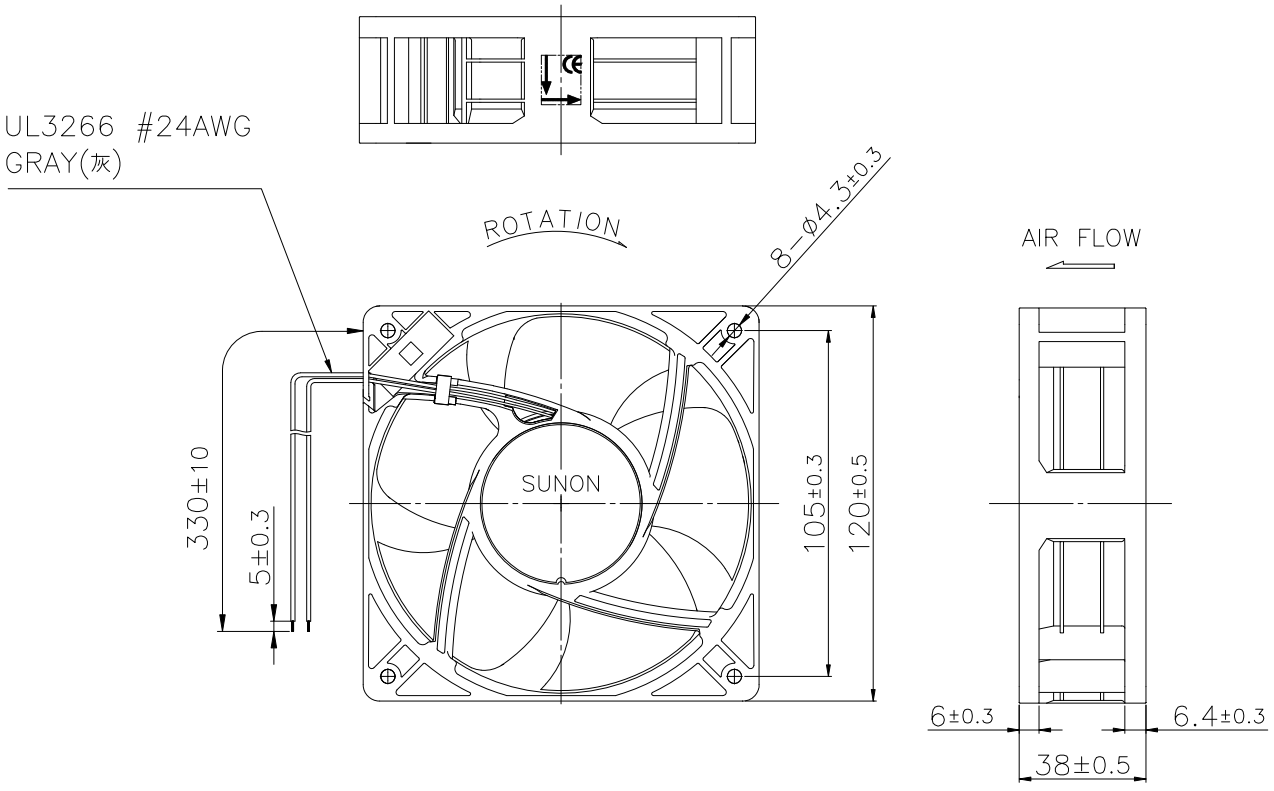
2-2. Impeller : Thermoplastic PBT of UL 94V-0

2-3. Lead Wire : UL3266 #24AWG, GRAY

## DIMENSIONS

Note: SUNON recommends the screw and torque as below. Please contact SUNON, if any new requirement is requested.

| Screw Type (Pan head) | Torque | Screw Spec | |
|---|---|---|---|
| | | Size | Standard |
| Machine screw | 3～4 Kgf-cm | M4.0 | JIS B1111-1974 |
| Self-tapping screw | 5～8 Kgf-cm | ϕ 5.0 | JIS B1122 Type 2 |

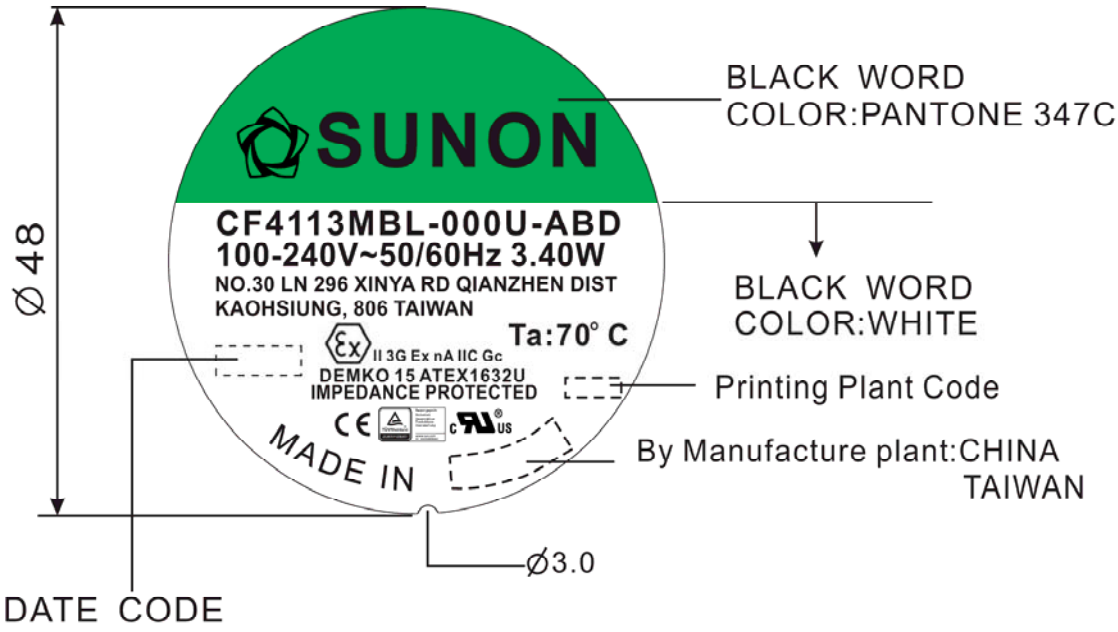



Best Mounting Direction: Any orientation.

UNIT：mm

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# LABEL




**ATEX (Directive 94/9/EC) and Certification Label Marking:**

| | |
|---|---|
| REFERENCE STANDARDS | EN 60079-0:2012 + A11:2013<br>EN 60079-15: 2010 |
| EQUIPMENT GROUP | II/Surface Industry |
| CATEGORY | 3 |
| ATMOSPHERE | G/Gas |
| EQUIPMENT PROTECTION MARKING | Ex nA (Non-Sparking, Suitable for Zone 2) |
| GAS GROUP | IIC |
| EQUIPMENT PROTECTION LEVEL (EPL) (For IEC system) | Gc |
| SCHEDULE OF LIMITAITONS | The devices shall be installed in an enclosure that provides a degree of protection not less than IP 54 in accordance with IEC/EN 60079-15 or the device must be evaluated as part of end –product evaluation.<br>The devices shall only be used in an area of not more than pollution degree 2, as defined in IEC/EN 60664-1.<br>Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminal to the devices.<br>The devices are for use in -40°C to 70°C. During temperature test, the highest measured temperature within device was 91.2°C at 70°C service temperature. |

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# Notes

## Ⅰ.SAFETY

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.

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.

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.

4. This fan must be installed and used in compliance with all applicable safety standards and regulations.

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.

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.

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.

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.

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# Notes

## II. SPECIFICATION MODIFICATION

1. SUNON offers engineering assistance on fan installation and cooling system design.

2. All changes, modifications and/or revisions to the specifications, if any, are incorporated in the attached specifications.

3. No changes, modifications and/or revisions to these specifications are effective absent agreement, by both SUNON and the customer, in writing.

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.

## III. OTHER

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.

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. DO NOT operate this fan in proximity to hazardous materials such as organic silicon, cyanogens, formalin, phenol, or corrosive gas environments including, but not limited to, $H_2S$, $SO_2$, $NO_2$, or $Cl_2$.

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.

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# Notes

5. This fan must be installed properly and securely. Improper mounting may cause harsh resonance, vibration, and noise.

6. Fan guards may prevent injury during handling or installation of the fan and are available for sale with this fan.

7. Unless otherwise noted, all testing of this fan is conducted at 25°C ambient temperature and sixty-five percent (65%) relative humidity.

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.

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.

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.

## VI. 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 handing, 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.

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# 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 with models 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 | Lead and its compounds | Plastic (Frame, Impeller, wire harness, etc.) | <100ppm |
| | | Solder | <1000ppm |
| | | Steel alloy | <3500ppm |
| | | Aluminium alloy | <4000ppm |
| | | Copper alloy | <4wt% |
| 4 | Cadmium and its compounds | 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 ≥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 |