

Air-Dynamic-Bearing Turbo Fans TF050A

NEW

COPAL ELECTRONICS has remarkable technologies in both “Air-Dynamic-bearings” and “Ironless-Brushless Motors” used in their Polygon Laser Scanners for Laser Beam Printers, Copy Machines, etc. COPAL ELECTRONICS has adopted those technologies for their construction of a new type of turbo fan. The “floating” bearing mechanism allows for a longer than normal life and the faster speeds (10,000 rpm) permitted by the “floating” bearing permit operation at higher static pressures. The “ironless-brushless” also enhances the efficiency of the motor. The fan can be used in various applications requiring longer life, smaller packaging, higher pressure and greater efficiencies.

FEATURES

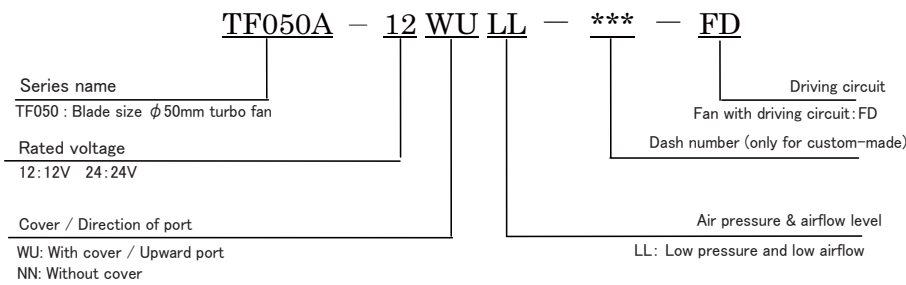
- Higher Static Air Pressure due to the high rotational speed of the air-dynamic bearing
- Longest life by the air-floatation effect of the non-contact air-dynamic bearing
- Compact Size made possible by the ironless-brushless for the motor
- Power-Saving by the ironless-brushless motor technology (no iron loss)
- Low Vibration by using the newly developed turbo blade



APPLICATIONS

- Domestic Fuel-Cell
- Medical Equipment for Respiratory Systems
- Industrial Equipment

PART NUMBER DESIGNATION



Specifications

| Item | Specification | Remarks |
|-----------------------------|---|--|
| Bearing type | Air-Dynamic-Bearing | |
| Motor type | DC ironless-brushless motors | Excitation : 3 phase bipolar |
| Rated voltage | DC24V \pm 10%, DC12V \pm 10% | |
| Rated airflow | 100 l/min | at 2.0 kPa |
| Rated static pressure | 2.0 kPa | at 100 l/min |
| Maximum pressure | 3.5 kPa | at 10 l/min |
| Maximum consumption current | 30W maximum | 15W maximum (Rated steady operation) |
| Steady current | 1.4A maximum (at DC12V) 0.7A maximum (at DC24V) | Rated operation |
| Maximum input current | 5.0A maximum (at DC12V) 2.5A maximum (at DC24V) | Excluding condensor charge at the point of incomming |
| Rotation speed | Approx 24,000rpm | Rated time (2kPa, at 100 l/min) |
| Weight | Approx. 170g (with cover) Approx. 130g (without cover) | |
| Noise | 55dB maximum | 1m from inlet |
| Life | ON-OFF : 100,000 times minimum Continuous : 50,000 hours minimum | |
| Mounting position | Axi-vertical direction is recommended | Mounting face on the bottom |
| Insulation class | JIS C 4003 type B (130 °C) | |
| Insulation resistance | 10M Ω minimum | |
| Dielectric strength | AC600V 1 sec. | |
| Operating temp. range | 0~50°C (No condensation) | Humidity : 10~80%RH |
| Storage temp. | -20~50°C (No condensation) | Humidity : 10~90%RH |
| Main components | Cover, Case, Blade : PBT + ABS resin with glass (UL94V-0) | |

Interface specification

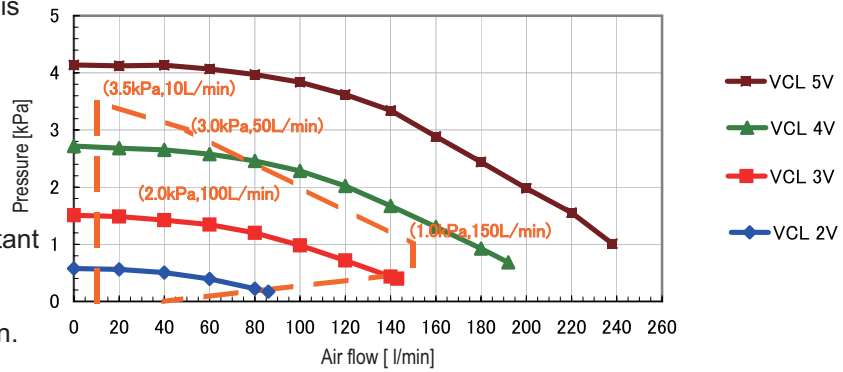
| Color | Symbol | Specifications |
|--------|--------|---|
| Blown | GND | 0V ground power input |
| Red | VCC | +12V (or +24V) at power input \pm 10% |
| Orange | CNT | Control voltage input : 1~5V |
| Yellow | FG | 24 pulses / rotation (Output circuit : open collector) |

Flow - Pressure characteristics

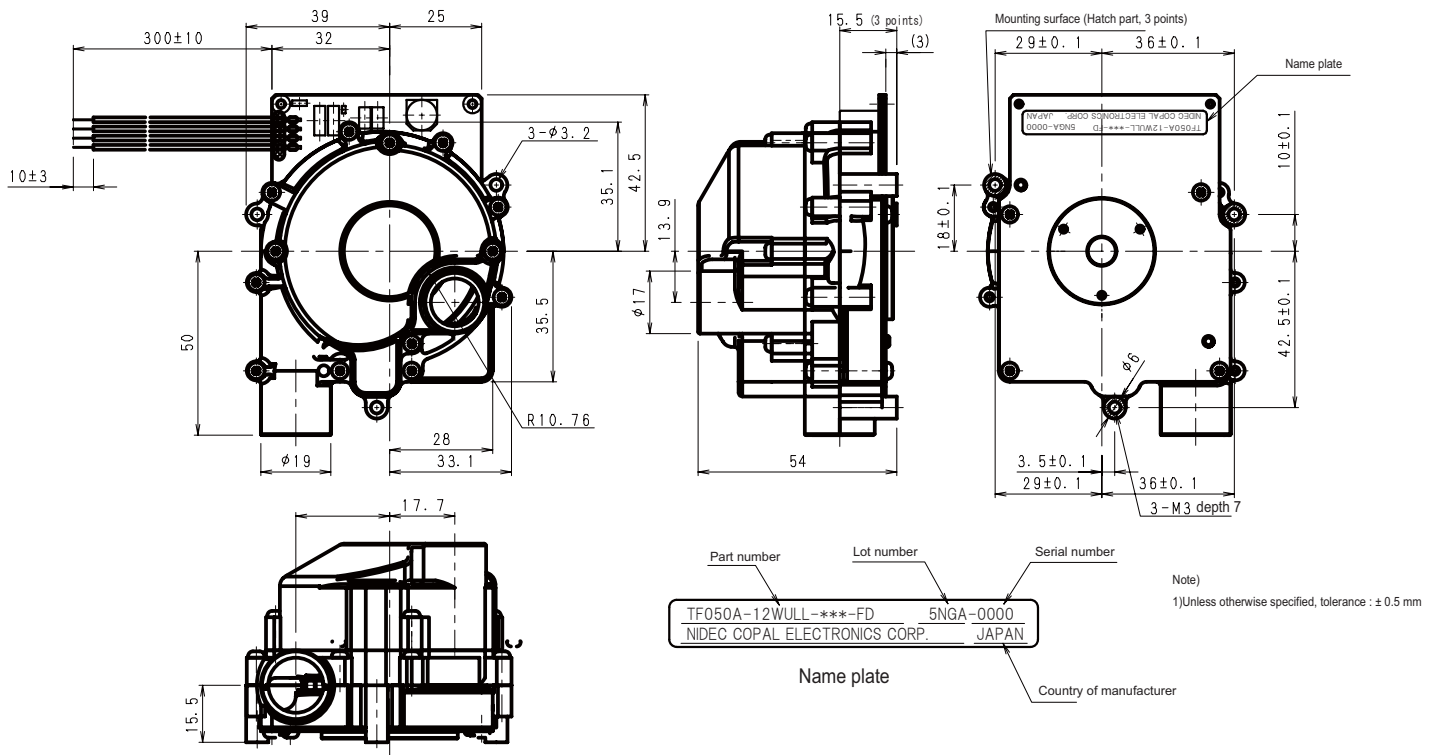
① The inside area of orange broken lines on the right is the area for use. Upper limit is on the line passing for the following points. (3.5kPa, 10 l/min), (3.0kPa, 50 l/min), (2.0kPa, 100 l/min), (1.0kPa, 150 l/min).

② Reference value of Control voltage (CNT) (at constant flow and at constant air pressure characteristic).

Please take some margin for the individual fluctuation.



OUTLINE DIMENSIONS (With cover)



HANDLING NOTES

- ① Vibration : Vibration during rotation of motor may damage the bearing. Please prevent a motion such as going against gyro moment.
- ② Control voltage (control input) : Control input 1 ~ 5V. Please do not set at 0 ~ approx. 1V due to the unstable area.
- ③ Please do not block the air at intake and outlet. Setting airflow at 10 l/min minimum is recommended.
- ④ No fall, no disassemble should be requested.
- ⑤ Concerning mounting of blower, the mounting face is recommended to be set on the bottom.
- ⑥ Depending on the value of load, a surge can be occurred in the characteristics of turbo blade. Please prevent a use of the product in the surge area.
- ⑦ All values are measured by our standard instruments. (Supply voltage :at12VDC or at24VDC)
- ⑧ Overcurrent protection circuit at the point of rotor constraint is not built in. Please prepare it according to need.

*Specifications are subject to change without notice. Please inquire us when ordering.

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