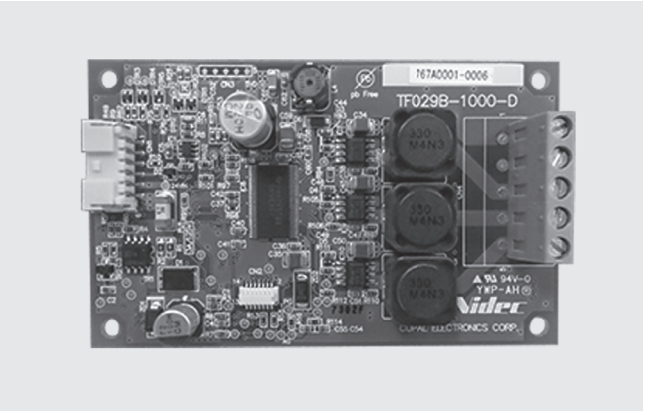
# DRIVERS

# TF029B-1001-D

Dedicated to the Micro Blower TF029 series.
The drivers enable users to vary the speed of the motor by adjusting the control voltage of the external input.
Contents of the kit are Driver board and Harness.
Wire Harness: for Driver-Power connection




## STANDARD SPECIFICATIONS

● Unless otherwise specified, the environmental conditions are 23°C±5°C,normal humidity, and atmospheric pressure range 90 to 106kPa.

| No. | Item | Specification | | |
|---|---|---|---|---|
| 1 | Configuration | Drivers(Dedicated to the Micro Blower TF029 series) | | |
| 2 | Rotational Speed | 36,000 r/min<br>(reference value) at 2.0kPa, 100L/min | | |
| 3 | Power Consumption | 14.9W max.at 2.0kPa, 100L/min | | |
| 4 | Rated Voltage | DC 24 V±10% | | |
| 5 | Max. Input Current | 2.0 A max.(DC)<br>(Excluding inrush current) | | |
| 6 | Readiness time | 5sec max.<br>From power on to motor start | | |
| 7 | Running Current | 0.62 A max.at 2.0kPa, 100L/min | | |
| 8 | Weight | 40 g max. | | |
| 9 | Operating Temperature | -10～ 50 °C | | |
| 10 | Operating Humidity Range | 10～ 90 %RH (No condensation) | | |
| 11 | Storage Temperature | -20～ 60 °C | | |
| 12 | Storage Humidity Range | 10～ 90 %RH (No condensation) | | |
| 13 | Resistance to Vibration | To meet the Spec after the following test | | Non-operating |
| | | Kind of Vibration | Sweep | |
| | | Frequency Range | 10 ～ 22Hz<br>amplitude 1mm | |
| | | | 22 ～ 50Hz<br>19.6m/s$^2$ (2G) (acceleration) | |
| | | Sweep | To-and-fro, approx. 5min. | |
| | | Test Time | X, Y, Z directions, 60min. each | |
| 14 | Resistance to Shock | To meet the Spec after the following test | | Non-operating |
| | | Acceleration | 294m/s$^2$(30G) | |
| | | Pulse Width | 6ms | |
| | | Shock Waven | Semi-sinusoidal wave | |
| | | Number of Shock | X, Y, Z, directions, once per each direction | |

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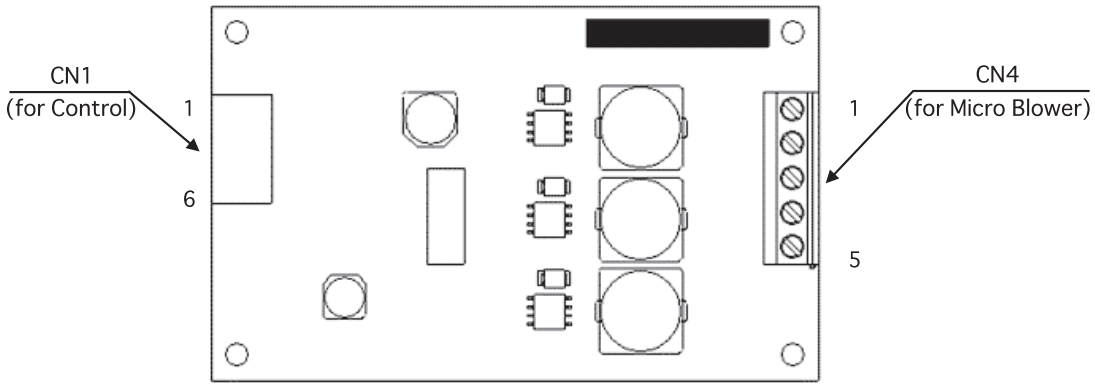
## MICRO BLOWER DRIVERS

## ■ INTERFACE

【Driver Board】




**【CN1：Connector for Control】**

| | |
|---|---|
| Manufacturer | J.S.T. Mfg. Co., Ltd. |
| Part No. | SM06B-PASS |

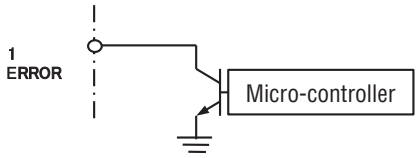
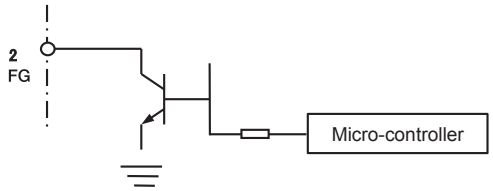
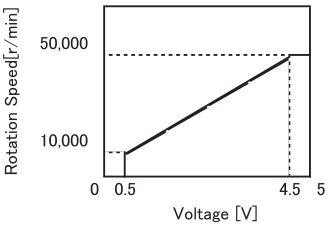
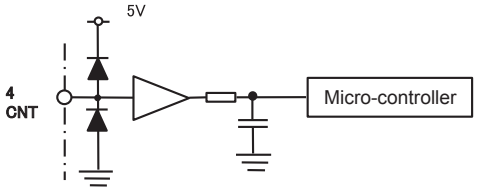
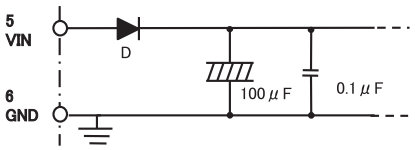
| Pin No. | Symbol | Signal |
|---|---|---|
| 1 | Error | Error Output |
| 2 | FG | Rotational Speed Signal Output (FG) |
| 3 | BR | Short brake Input |
| 4 | CNT | Control Voltage Input |
| 5 | Vcc | Power Supply Voltage Input |
| 6 | GND | GND |

**【CN4：Connector for Micro Blower】**

| | |
|---|---|
| Manufacturer | Phoenix contact |
| Part No. | 1729157 |

| Pin No. | Symbol | Wire Color | Signal |
|---|---|---|---|
| 1 | TH(+) | Green | Thermistor Output |
| 2 | TH(-) | Yellow | Thermistor Output |
| 3 | W | Orange | Motor Coil |
| 4 | V | Red | Motor Coil |
| 5 | U | Brown | Motor Coil |

## CN1(CONNECTOR FOR CONTROL) SPECIFICATIONS

| Pin No. | Input/output | Signal name | Specification | |
|---|---|---|---|---|
| 1 | Output | Error | Error Output<br>Low= Detection<br>High= Undetected<br>Open Collector Output<br>(Max. Voltage : 10V,Max.<br>Current : 10mA) |  |
| 2 | Output | FG | Rotational Speed Signal Output(FG)<br>Open Collector Output<br>(Max. Voltage :10V<br>Max Current : 10mA)<br>FG signal 1 pulse = 10rev |  |
| 3 | – | NC | Not Connected | |
| 4 | Input | CNT | Control Voltage Input<br>Input voltage range: -0.5 ～ 5.5V<br>Valid control voltage: 0.5 ～ 4.5V<br>For CNT signal vs motor speed,<br>refer to below<br>  <br>CNT signal vs motor speed |  |
| 5 | – | VIN | Power Supply |  |
| 6 | – | GND | GND | |

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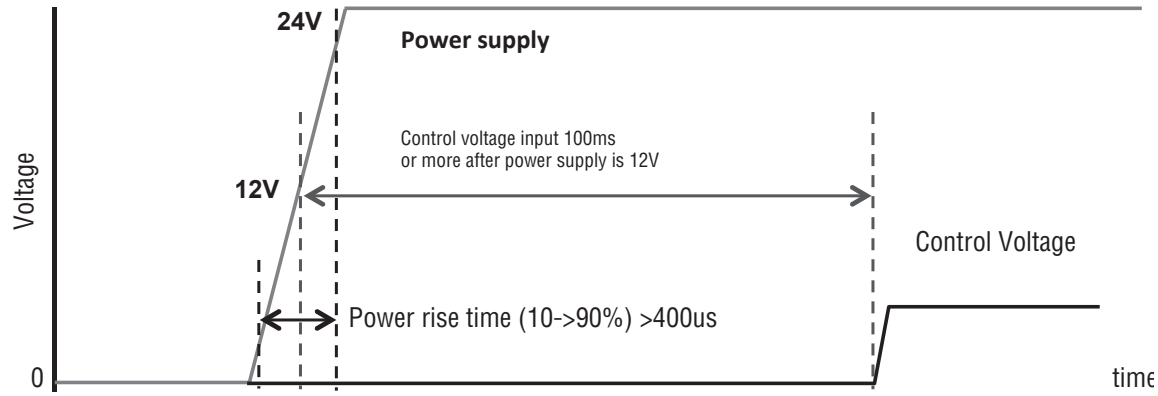
## MICRO BLOWER DRIVERS

## ■ POWER SUPPLY,CONTROLLER VOLTAGE INPUT

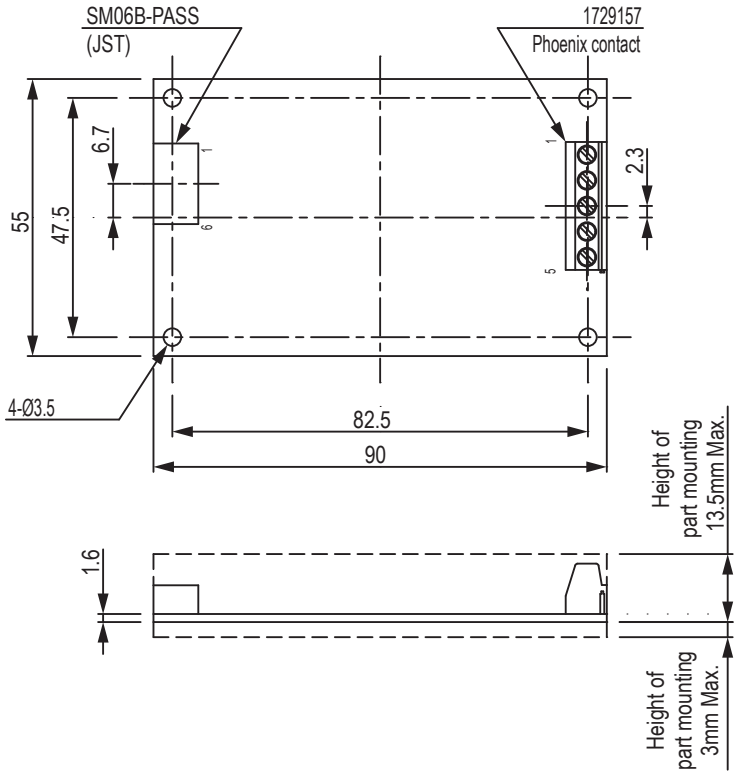
To avoid high in rush current and protect driver, follow below chart at power up and CNT signal input sequence




① Keep power rise time(10→90%) is more than 400us.
If high rate power is applied, in rush current will be so huge.
② Wait more than 100ms after power exceeds 12V to apply CNT signal.

## ■ OUTLINE DIMENSIONS

Unless otherwise specified, tolerance : ± 0.5(Unit: mm)



## PROTECTIVE FUNCTIONS

| Protective Functions | Description |
|---|---|
| Over voltage | If over voltage detected at power line, Blower will be stopped.<br>Recover: Check and correct supply voltage. |
| Over current | When power line current exceeds 3A, fuse will be opened and cut off power.<br>Recover: Contact with us. |
| High temperature | When high Turbo Fan internal temperature, outputs error signal and turn it off.<br>If error is detected, LED will blink at 1Hz<br>Recover: Wait until it's cooled down and try again. (If not solved, contact with us.) |
| Over speed | When motor speed exceeds limit, outputs error signal and turn it off.<br>If error is detected, LED will blink at 1Hz<br>Recover: Reduce CNT signal voltage and try again.(If not solved, contact with us.) |
| Over current at motor coil | When motor coil current exceeds limit, outputs error signal and turn it off.<br>Recover: Check motor operation condition. |
| Abnormal voltage of supplied power | When power supply voltage exceeds limit, outputs error signal and turn it off.<br>If error is detected, LED will blink at 1Hz<br>Recover: Check power supply voltage and try again |
| Abnormal operation | When any failure is detected on driver, outputs error signal and turn it off.<br>If error is detected, LED will blink at 4Hz<br>Recover: Check power supply voltage and try again.(If not solved, contact with us) |

Normal operation : Green LED is ON. (Red is OFF.)
Abnormal condition : Red LED is blinking. (Green is turned off.)

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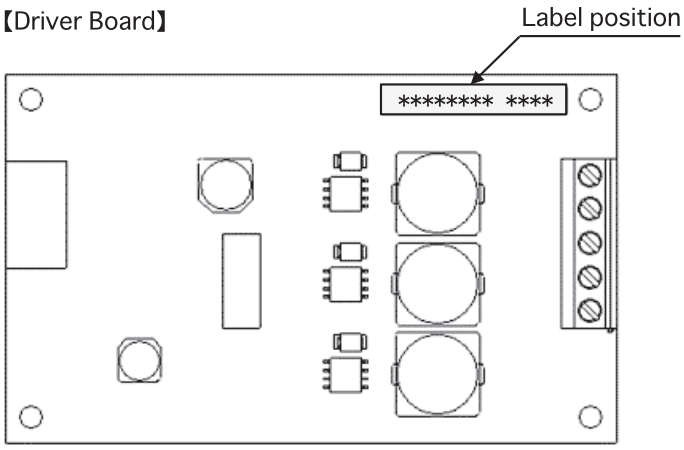
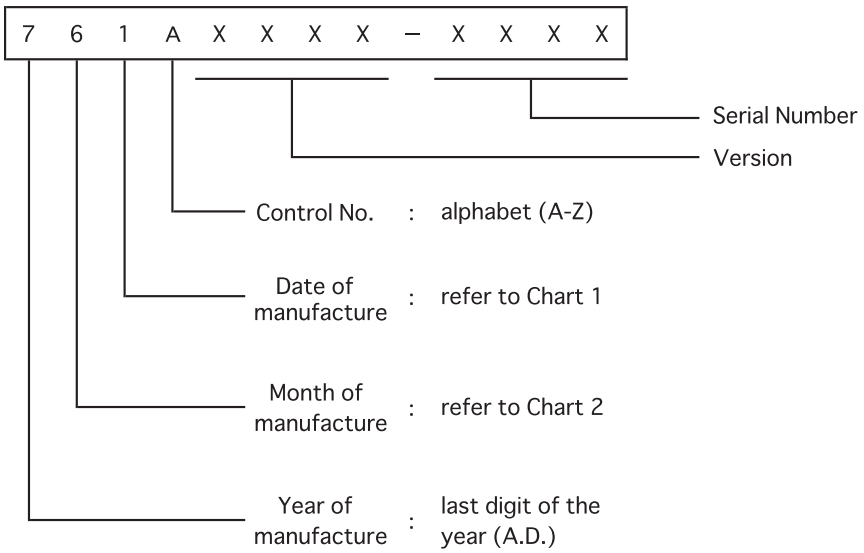
## MICRO BLOWER DRIVERS

## ■ MARKING

【Driver Board】




【Chart 1】

| Date | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F | G | H | J | K | L |

| Date | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | M | N | P | Q | R | T | U | V | W | X | Y |

【Chart 2】

| Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |