

**SERIES:** CFM-40B | **DESCRIPTION:** DC AXIAL FAN**FEATURES**

- dual ball bearing
- 40 x 40 mm frame
- multiple speed options
- tachometer signal available

**MODEL**

| MODEL             | input voltage |             | input current <sup>1</sup> | input power <sup>1</sup> | rated speed <sup>1</sup> | airflow <sup>2</sup> | static pressure <sup>3</sup> | noise <sup>4</sup> |
|-------------------|---------------|-------------|----------------------------|--------------------------|--------------------------|----------------------|------------------------------|--------------------|
|                   | rated (Vdc)   | range (Vdc) | max (A)                    | max (W)                  | typ (RPM±15%)            | (CFM)                | (inch H <sub>2</sub> O)      | typ (dBA)          |
| CFM-4010B-050-195 | 5             | 4.5~5.5     | 0.08                       | 0.40                     | 5,000 <sup>5</sup>       | 4.22                 | 0.07                         | 19.5               |
| CFM-4010B-065-251 | 5             | 4.5~5.5     | 0.17                       | 0.85                     | 6,500                    | 5.49                 | 0.11                         | 25.1               |
| CFM-4010B-080-296 | 5             | 4.5~5.5     | 0.24                       | 1.20                     | 8,000                    | 6.76                 | 0.17                         | 29.6               |
| CFM-4010B-150-195 | 12            | 10.8~13.2   | 0.05                       | 0.60                     | 5,000 <sup>5</sup>       | 4.22                 | 0.07                         | 19.5               |
| CFM-4010B-165-251 | 12            | 10.8~13.2   | 0.06                       | 0.72                     | 6,500                    | 5.49                 | 0.11                         | 25.1               |
| CFM-4010B-180-296 | 12            | 10.8~13.2   | 0.09                       | 1.08                     | 8,000                    | 6.76                 | 0.17                         | 29.6               |
| CFM-4010B-250-195 | 24            | 21.6~26.4   | 0.05                       | 1.20                     | 5,000 <sup>5</sup>       | 4.22                 | 0.07                         | 19.5               |
| CFM-4010B-265-251 | 24            | 21.6~26.4   | 0.06                       | 1.44                     | 6,500                    | 5.49                 | 0.11                         | 25.1               |
| CFM-4010B-280-296 | 24            | 21.6~26.4   | 0.08                       | 1.92                     | 8,000                    | 6.76                 | 0.17                         | 29.6               |

Notes:

1. At rated voltage, after 3 minutes.
2. At rated voltage, room temperature, 65% humidity, 0 inch H<sub>2</sub>O static pressure.
3. At rated voltage, 0 CFM airflow.
4. Measured in an anechoic chamber as per ISO3745/GB4214-84 at rated voltage, with background noise 20±2 dBA at 1 m from the fan intake.
5. Typical rated speed is measured as RPM±18% at rated voltage.
6. All specifications are measured at 25°C, 65% relative humidity unless otherwise specified.

**PART NUMBER KEY**

**CFM-4010B-050-195 - XX - CXX**

Base Number

Fan Signals  
"blank" = no signals  
20 = tachometer signal

Reserved for Custom Configurations

## INPUT

| parameter                            | conditions/description | min  | typ  | max  | units |
|--------------------------------------|------------------------|------|------|------|-------|
| operating input voltage <sup>7</sup> | 5 Vdc input models     | 4.5  | 5    | 5.5  | Vdc   |
|                                      | 12 Vdc input models    | 10.8 | 12   | 13.2 | Vdc   |
|                                      | 24 Vdc input models    | 21.6 | 24   | 26.4 | Vdc   |
| starting voltage                     | 5 Vdc input models     |      | 3.5  |      | Vdc   |
|                                      | 12 Vdc input models    |      | 7.0  |      | Vdc   |
|                                      | 24 Vdc input models    |      | 14.0 |      | Vdc   |

Note: 7. See Model section on page 1 for specific input voltage ranges.

## PERFORMANCE<sup>8</sup>

| parameter       | conditions/description                             | min   | typ | max   | units                 |
|-----------------|----------------------------------------------------|-------|-----|-------|-----------------------|
| rated speed     | at rated voltage, 25°C, after 3 minutes            | 5,000 |     | 8,000 | RPM                   |
| air flow        | at 0 inch H <sub>2</sub> O, see performance curves | 4.22  |     | 6.76  | CFM                   |
| static pressure | at 0 CFM, see performance curves                   | 0.07  |     | 0.17  | inch H <sub>2</sub> O |
| noise           | at 1 m, rated speed                                | 19.5  |     | 29.6  | dBA                   |

Note: 8. See Model section on page 1 for specific values.

## PROTECTIONS / FEATURES<sup>9</sup>

| parameter           | conditions/description   | min | typ | max | units |
|---------------------|--------------------------|-----|-----|-----|-------|
| polarity protection | on all models            |     |     |     |       |
| tachometer signal   | available on "20" models |     |     |     |       |

Notes: 9. See Application Notes for details.

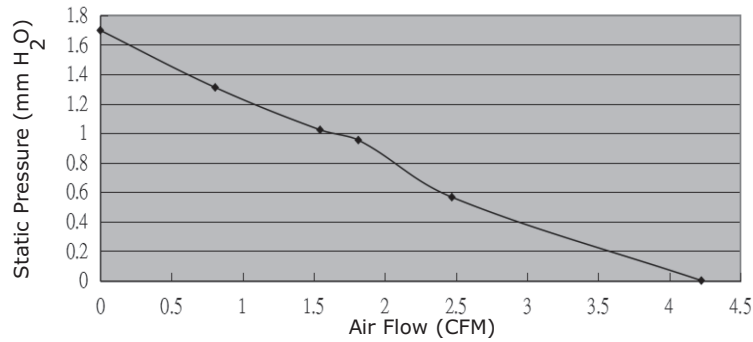
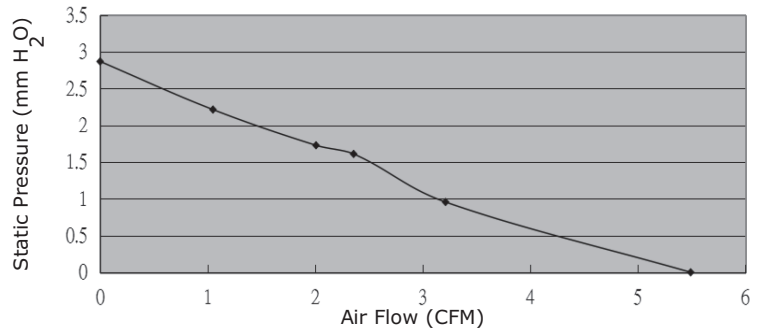
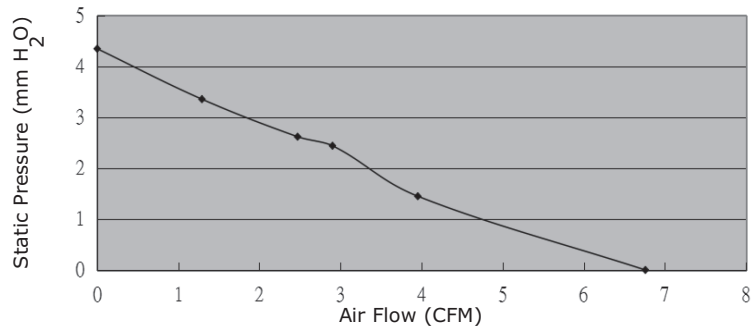
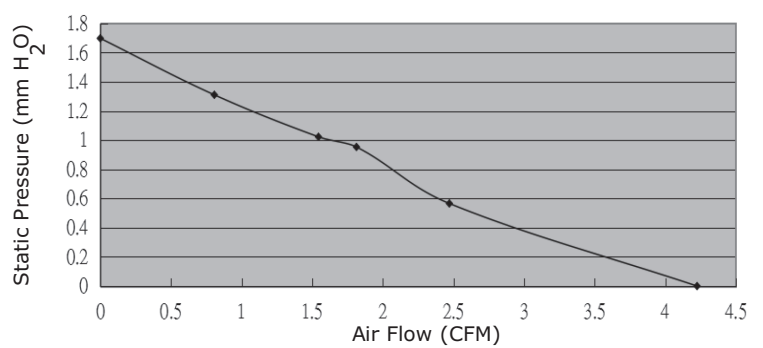
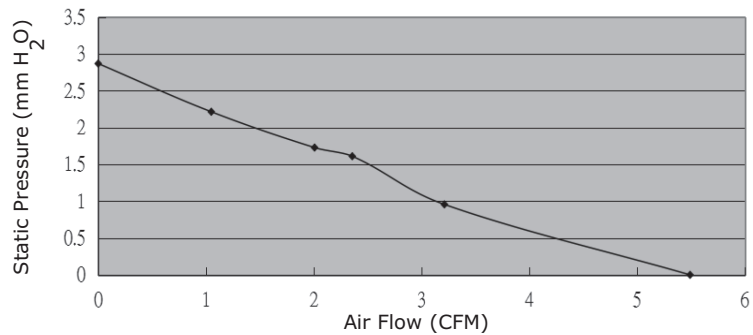
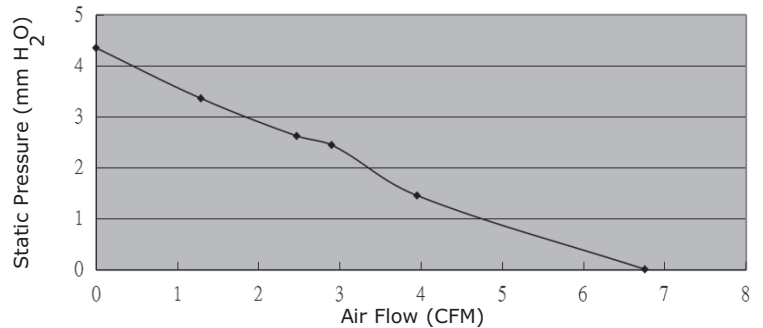
## SAFETY & COMPLIANCE

| parameter             | conditions/description                                            | min | typ    | max | units |
|-----------------------|-------------------------------------------------------------------|-----|--------|-----|-------|
| insulation resistance | at 500 Vdc between frame and positive terminal                    | 10  |        |     | MΩ    |
| dielectric strength   | at 500 Vac, 60 Hz, 1 minute between housing and positive terminal |     |        | 5   | mA    |
| safety approvals      | UL/cUL 507, TUV (EN/IEC 62368-1:2020+A11)                         |     |        |     |       |
| EMI/EMC               | EN 55032:2015, EN 55035:2017                                      |     |        |     |       |
| life expectancy       | at 40°C, 65% RH, 90% confidence level                             |     | 70,000 |     | hours |
| RoHS                  | yes                                                               |     |        |     |       |

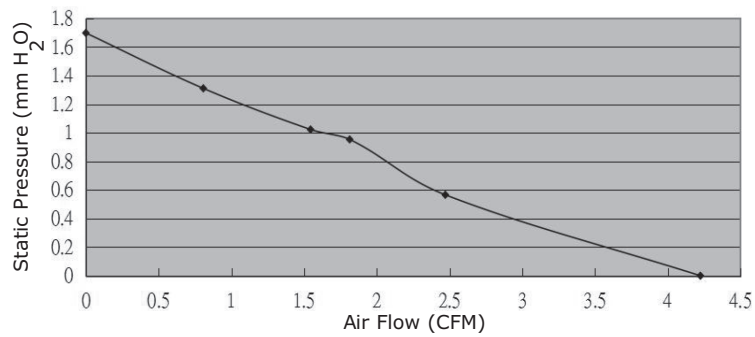
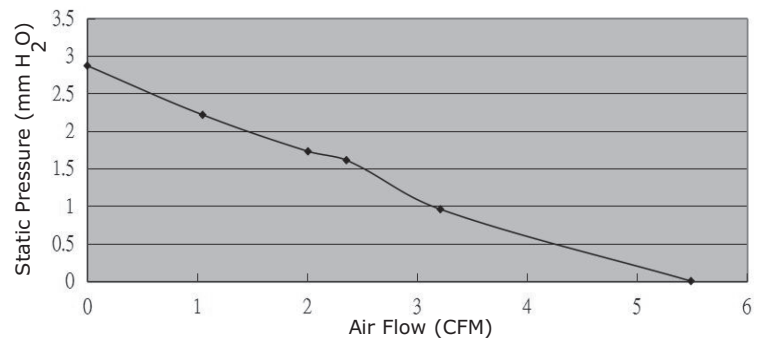
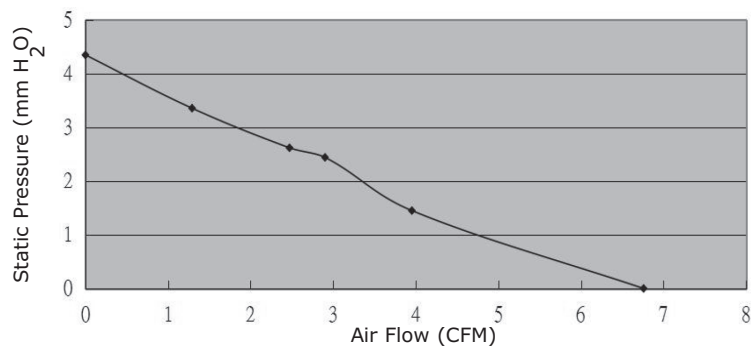
## ENVIRONMENTAL

| parameter             | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature |                        | -10 |     | 70  | °C    |
| storage temperature   |                        | -40 |     | 75  | °C    |
| operating humidity    | non-condensing         | 35  |     | 85  | %     |
| storage humidity      | non-condensing         | 35  |     | 85  | %     |

## PERFORMANCE CURVES

**CFM-4010B-050-195****CFM-4010B-065-251****CFM-4010B-080-296****CFM-4010B-150-195****CFM-4010B-165-251****CFM-4010B-180-296**

## PERFORMANCE CURVES (CONTINUED)

**CFM-4010B-250-195****CFM-4010B-265-251****CFM-4010B-280-296**

## MECHANICAL

| parameter             | conditions/description                           | min | typ  | max | units |
|-----------------------|--------------------------------------------------|-----|------|-----|-------|
| motor                 | 4 pole DC brushless                              |     |      |     |       |
| bearing system        | dual ball bearing                                |     |      |     |       |
| direction of rotation | counter-clockwise viewed from front of fan blade |     |      |     |       |
| dimensions            | 40 x 40 x 10.5                                   |     |      |     | mm    |
| material              | PBT (UL94V-0)                                    |     |      |     |       |
| weight                | CFM-4010B-250-195                                |     | 13.4 |     | g     |
|                       | CFM-4010B-265-251                                |     | 17.7 |     | g     |
|                       | CFM-4010B-280-296                                |     | 12.8 |     | g     |
|                       | all other models                                 |     | 13.8 |     | g     |

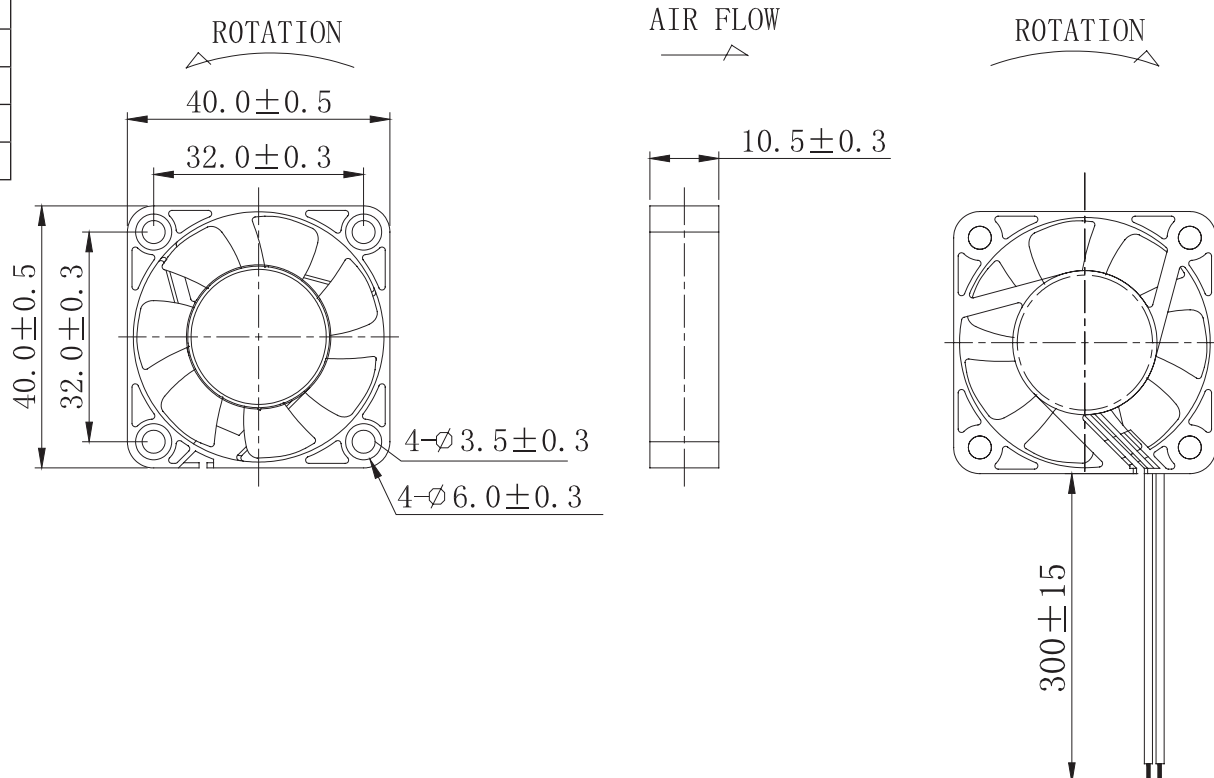
## MECHANICAL DRAWING

units: mm

wire: UL 1007, 26 AWG

| MOUNTING SCREW (Pan Head) |      |                |            |
|---------------------------|------|----------------|------------|
| Screw Type                | Size | Standard       | Torque     |
| Machine Screw             | M3   | JIS B1111-1974 | 7.5 kgf-cm |

| WIRE CONNECTIONS     |             |
|----------------------|-------------|
| Wire Color           | Function    |
| Red                  | +Vin        |
| Black                | -Vin        |
| Yellow <sup>10</sup> | Tach Signal |



Notes: 10. Wires only present on versions with output signals.

## APPLICATION NOTES

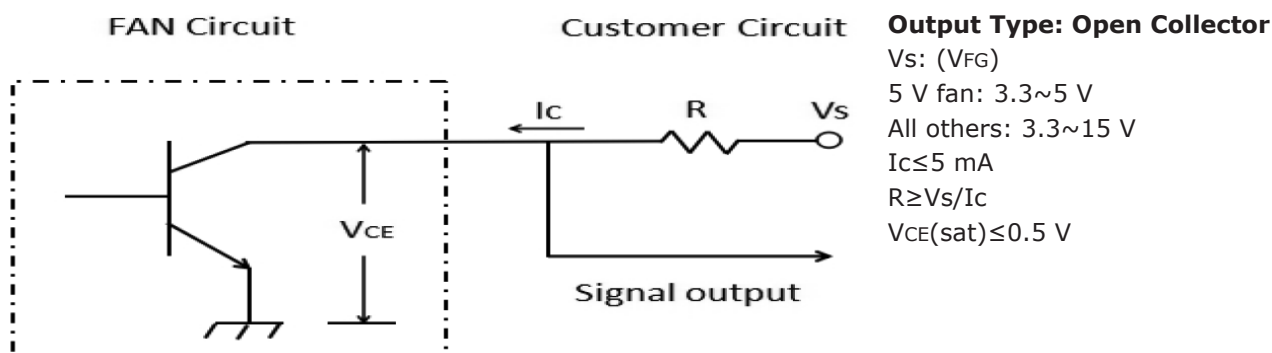
### Polarity Protection

Able to withstand 10 minutes of reverse polarity connection between the positive and negative wires without causing damage.

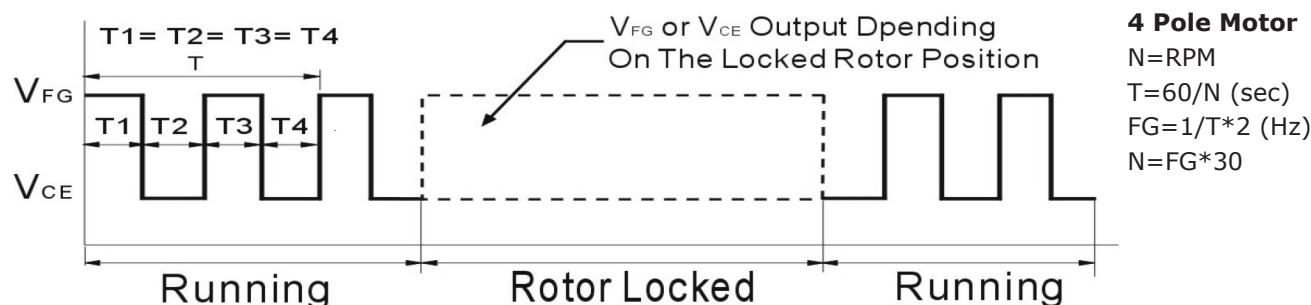
### Tachometer Signal (Yellow Wire)

The tachometer signal is for detecting the rotational speed of the fan motor. The output will be a square wave when fan is operating and  $V_{FG}$  or  $V_{CE}$  depending on the locked rotor position when fan motor is locked (See Figures 1~2 below).

**Figure 1: Tachometer Output Circuit**



**Figure 2: Tachometer Output Waveform**



## REVISION HISTORY

| rev. | description                                                             | date       |
|------|-------------------------------------------------------------------------|------------|
| 1.0  | initial release                                                         | 05/12/2021 |
| 1.01 | added models CFM-4010B-250-195, CFM-4010B-265-251 and CFM-4010B-280-296 | 10/05/2021 |

The revision history provided is for informational purposes only and is believed to be accurate.

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