

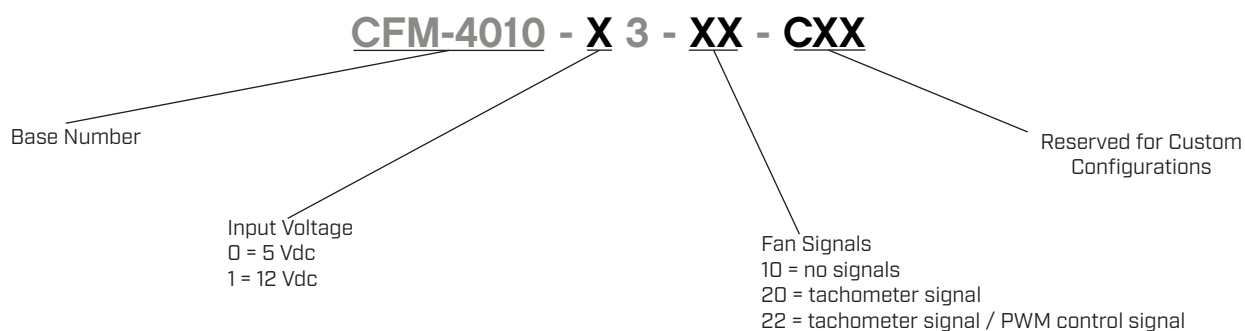
**SERIES:** CFM-40 | **DESCRIPTION:** DC AXIAL FAN**FEATURES**

- 40 x 40 mm frame
- high fan speed for greater air flow
- dual ball bearing construction
- auto restart protection standard on all models

**MODEL**

|             | input voltage |             | input current |         | input power | rated speed | air flow <sup>1</sup> | static pressure <sup>2</sup> | noise     |
|-------------|---------------|-------------|---------------|---------|-------------|-------------|-----------------------|------------------------------|-----------|
|             | rated [Vdc]   | range [Vdc] | typ [A]       | max [A] | max [W]     | typ [RPM]   | [CFM]                 | [inch H <sub>2</sub> O]      | max [dBA] |
| CFM-4010-03 | 5             | 4~5.75      | 0.16          | 0.24    | 1.2         | 8,300       | 10.0                  | 0.29                         | 37.0      |
| CFM-4010-13 | 12            | 6~13.8      | 0.10          | 0.13    | 1.56        | 8,300       | 10.0                  | 0.29                         | 37.0      |

Notes: 1. At 0 inch H<sub>2</sub>O static pressure.  
2. At 0 CFM airflow.

**PART NUMBER KEY**

## INPUT

| parameter               | conditions/description | min | typ  | max  | units |
|-------------------------|------------------------|-----|------|------|-------|
| operating input voltage | 5 Vdc input models     | 4   | 5    | 5.75 | Vdc   |
|                         | 12 Vdc input models    | 6   | 12   | 13.8 | Vdc   |
| current                 | 5 Vdc input models     |     | 0.16 | 0.24 | A     |
|                         | 12 Vdc input models    |     | 0.10 | 0.13 | A     |
| power                   | 5 Vdc input models     |     | 0.80 | 1.2  | W     |
|                         | 12 Vdc input models    |     | 1.20 | 1.56 | W     |
| starting voltage        | at 25°C                |     |      |      |       |
|                         | 5 Vdc input models     |     | 4    |      | Vdc   |
|                         | 12 Vdc input models    |     | 6    |      | Vdc   |

## PERFORMANCE

| parameter       | conditions/description                             | min   | typ   | max   | units                 |
|-----------------|----------------------------------------------------|-------|-------|-------|-----------------------|
| rated speed     | at 25°C, after 10 minutes                          | 7,470 | 8,300 | 9,130 | RPM                   |
| air flow        | at 0 inch H <sub>2</sub> O, see performance curves |       | 10.00 |       | CFM                   |
| static pressure | at 0 CFM, see performance curves                   |       | 0.29  |       | inch H <sub>2</sub> O |
| noise           | at 1 m                                             |       | 35.5  | 37.0  | dBA                   |

## PROTECTIONS / SIGNALS<sup>1</sup>

| parameter               | conditions/description            | min | typ | max | units |
|-------------------------|-----------------------------------|-----|-----|-----|-------|
| auto restart protection | available on all models           |     |     |     |       |
| tachometer signal       | available on "20" and "22" models |     |     |     |       |
| PWM control signal      | available on "22" models          |     |     |     |       |

Notes: 1. See application notes for details.

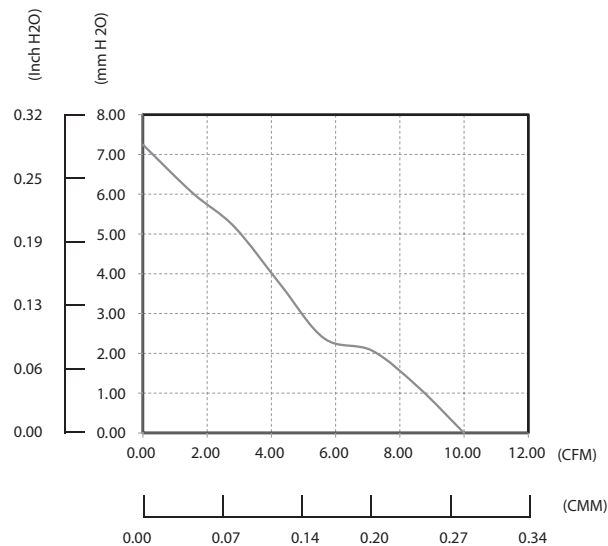
## SAFETY & COMPLIANCE

| parameter                      | conditions/description                                                             | min | typ    | max | units |
|--------------------------------|------------------------------------------------------------------------------------|-----|--------|-----|-------|
| insulation resistance of frame | at 500 Vdc between frame and positive terminal                                     | 10  |        |     | MΩ    |
| dielectric strength            | at 500 Vac, 60 Hz, 1 minute between frame and positive terminal                    |     |        | 5   | mA    |
| safety approvals               | UL/cUL 507, TUV [EN 62368-1]                                                       |     |        |     |       |
| EMI/EMC                        | EN 55022:2010+AC:2011 Class B, EN 61000-3-2:2014, EN 61000-3-3:2013, EN 55024:2010 |     |        |     |       |
| life expectancy                | at 45°C, 15~65% RH                                                                 |     | 70,000 |     | hours |
| RoHS                           | yes                                                                                |     |        |     |       |

## ENVIRONMENTAL

| parameter             | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature |                        | -10 |     | 70  | °C    |
| storage temperature   |                        | -40 |     | 70  | °C    |
| operating humidity    | non-condensing         | 5   |     | 90  | %     |
| storage humidity      | non-condensing         | 5   |     | 95  | %     |

## PERFORMANCE CURVES



## MECHANICAL

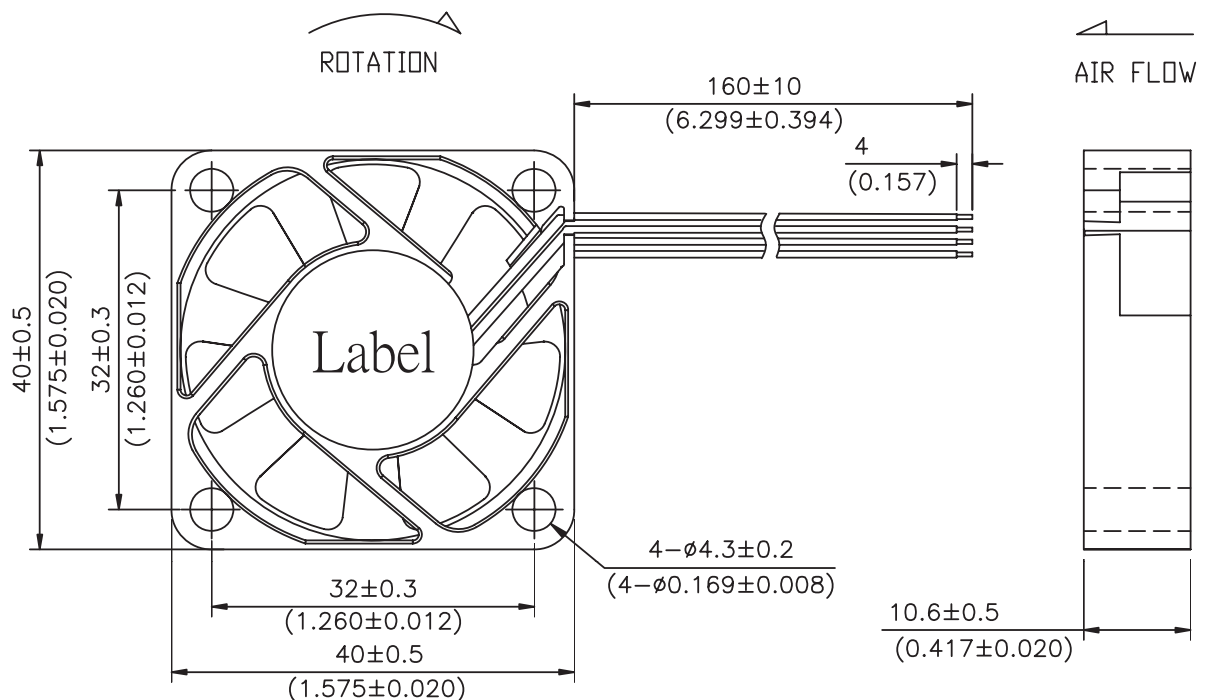
| parameter             | conditions/description                           | min | typ  | max | units |
|-----------------------|--------------------------------------------------|-----|------|-----|-------|
| motor                 | 4 pole DC brushless                              |     |      |     |       |
| bearing system        | ball bearing                                     |     |      |     |       |
| direction of rotation | counter-clockwise viewed from front of fan blade |     |      |     |       |
| dimensions            | 40 x 40 x 10.6                                   |     |      |     | mm    |
| material              | PBT [UL94V-0]                                    |     |      |     |       |
| weight                | 5 Vdc input models                               |     | 13.5 |     | g     |
|                       | 12 Vdc input models                              |     | 14.2 |     | g     |

## MECHANICAL DRAWING

units: mm [inch]

wire: UL 1061, 28 AWG

| WIRE CONNECTIONS    |           |
|---------------------|-----------|
| Wire Color          | Function  |
| Red                 | +Vin      |
| Black               | -Vin      |
| Yellow <sup>1</sup> | FG Signal |
| Blue <sup>1</sup>   | PWM       |



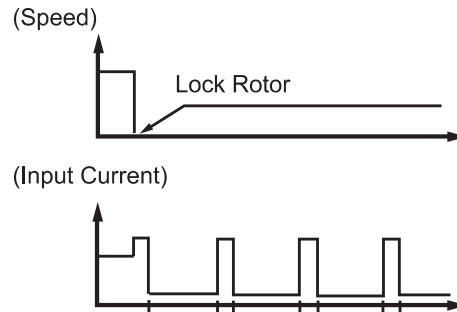
Note: 1. Wires only present on versions with output signals.

## APPLICATION NOTES

### Auto Restart Protection/Current Limit Protection

When the fan motor is locked, the device will cut off the drive current within two to six seconds and restart automatically after a few seconds. If the lock situation is continued, the device will work on a repeated cycle of cut-off and restart until the lock is released. [See Figure 1 below].

Figure 1 Current Limit Protection



### Pulse Sensor/Tachometer Signal/FG

Pulse Sensor is for detecting the rotational speed of the fan motor. At locked rotor condition, the signal stops cycling and the output is fixed at VoH or VoL [See Figures 2~3 below].

Figure 2 Output Waveform

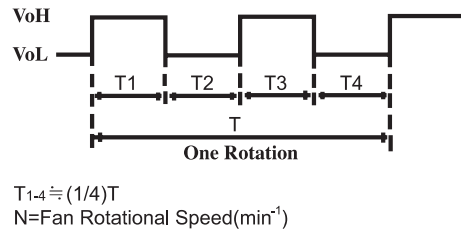
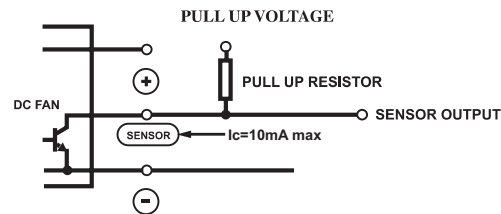


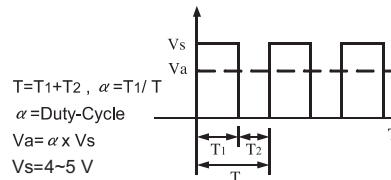
Figure 3 FG Signal Output Circuit: Open Collector



### PMW Control Signal

A speed control lead can be provided that will accept a PWM signal from the customer circuit to vary the speed of the fan. The change in speed is linear by changing the Duty-Cycle of the PWM. Open collector type and pull-up voltage is changed by maximum operating voltage and sink current by consuming current. [See Figure 4 below].

Figure 4 Duty Cycle



## REVISION HISTORY

| rev. | description                                           | date       |
|------|-------------------------------------------------------|------------|
| 1.0  | initial release                                       | 08/15/2016 |
| 1.01 | updated datasheet                                     | 07/27/2017 |
| 1.02 | updated to be certified to EN 62368-1 safety standard | 07/09/2019 |
| 1.03 | brand update                                          | 02/07/2020 |
| 1.04 | logo, datasheet style update                          | 08/12/2022 |

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



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