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## **SERIES:** CFM-80 | **DESCRIPTION:** DC AXIAL FAN

### FEATURES

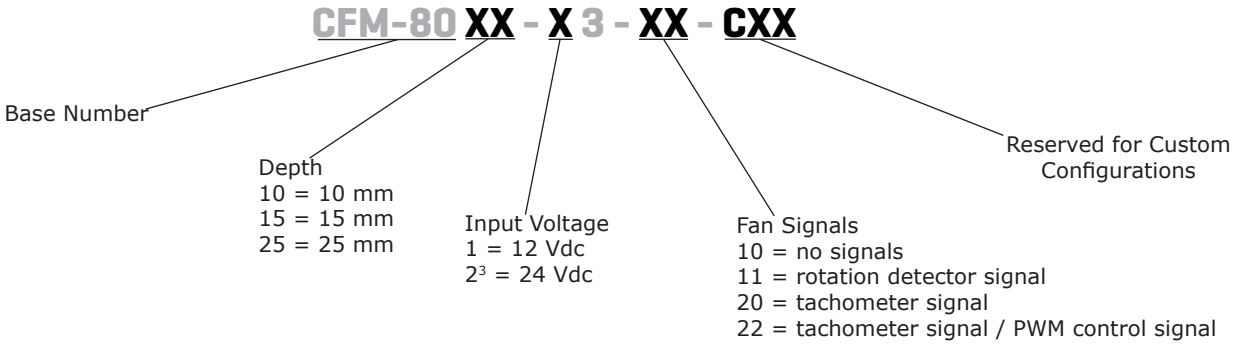
- 80 x 80 mm frame
- high fan speed for greater air flow
- dual ball bearing construction
- auto restart protection standard on all models




| MODEL | input voltage | | input current | | input power | rated speed | air flow[1] | static pressure[2] | noise |
|---|---|---|---|---|---|---|---|---|---|
| | rated (Vdc) | range (Vdc) | typ (A) | max (A) | max (W) | typ (RPM) | (CFM) | (inch $H_2O$) | max (dBA) |
| CFM-8010-13* | 12 | 6~13.8 | 0.16 | 0.24 | 2.88 | 3,300 | 33.61 | 0.11 | 38.2 |
| CFM-8015-13* | 12 | 6~13.8 | 0.18 | 0.24 | 2.88 | 3,500 | 43.96 | 0.16 | 39.8 |
| CFM-8025-13* | 12 | 6~13.8 | 0.33 | 0.43 | 5.16 | 5,100 | 69.20 | 0.42 | 47.0 |
| CFM-8025-23* | 24 | 16~27.6 | 0.16 | 0.25 | 4.8 | 5,100 | 69.20 | 0.42 | 47.0 |

Notes: 1. At 0 inch $H_20$ static pressure.
2. At 0 CFM airflow.
*. Discontinued all models of the CFM-8010-13, CFM-8015-13, & CFM-8025-13; and individual models CFM-8025-23-11, CFM-8025-23-20, and CFM-8025-23-22.

## PART NUMBER KEY




Notes: 3. 24 Vdc input voltage option only available with 25 mm depth

## INPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| operating input voltage | 12 Vdc input models<br>24 Vdc input models | 6<br>16 | 12<br>24 | 13.8<br>27.6 | Vdc<br>Vdc |
| current | CFM-8010 models<br>CFM-8015 models<br>CFM-8025 models<br>CFM-8025 models | | 0.16<br>0.18<br>0.33<br>0.16 | 0.24<br>0.24<br>0.43<br>0.25 | A<br>A<br>A<br>A |
| power | CFM-8010 models<br>CFM-8015 models<br>CFM-8025 models<br>CFM-8025 models | | 1.92<br>2.16<br>3.96<br>3.84 | 2.88<br>2.88<br>5.16<br>4.8 | W<br>W<br>W<br>W |
| starting voltage | at 25°C<br>12 Vdc input models<br>24 Vdc input models | | <br>6<br>16 | | <br>Vdc<br>Vdc |

## PERFORMANCE

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| rated speed | at 25°C, after 10 minutes<br>CFM-8010 models<br>CFM-8015 models<br>CFM-8025 models | <br>2,970<br>3,150<br>4,590 | <br>3,300<br>3,500<br>5,100 | <br>3,630<br>3,850<br>5,610 | <br>RPM<br>RPM<br>RPM |
| air flow | at 0 inch $H_2O$, see performance curves<br>CFM-8010 models<br>CFM-8015 models<br>CFM-8025 models | | <br>33.61<br>43.96<br>69.20 | | <br>CFM<br>CFM<br>CFM |
| static pressure | at 0 CFM, see performance curves<br>CFM-8010 models<br>CFM-8015 models<br>CFM-8025 models | | <br>0.11<br>0.16<br>0.42 | | <br>inch $H_2O$<br>inch $H_2O$<br>inch $H_2O$ |
| noise | at 1 m<br>CFM-8010 models<br>CFM-8015 models<br>CFM-8025 models | | <br>36.0<br>38.0<br>45.5 | <br>38.2<br>39.8<br>47.0 | <br>dBA<br>dBA<br>dBA |

## PROTECTIONS / SIGNALS[1]

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| auto restart protection | available on all models | | | | |
| rotation detector | available on "11" 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

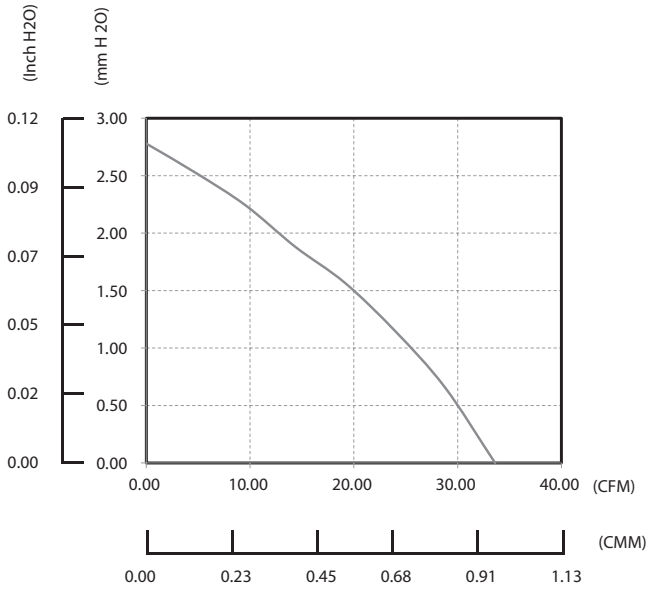
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| insulation resistance of frame | at 500 Vdc between frame and positive terminal | 10 | | | MΩ |
| dielectric strength | at 500 Vac, 60 Hz, 1 minute between frame and positive terminal | | | 5 | mA |
| safety 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

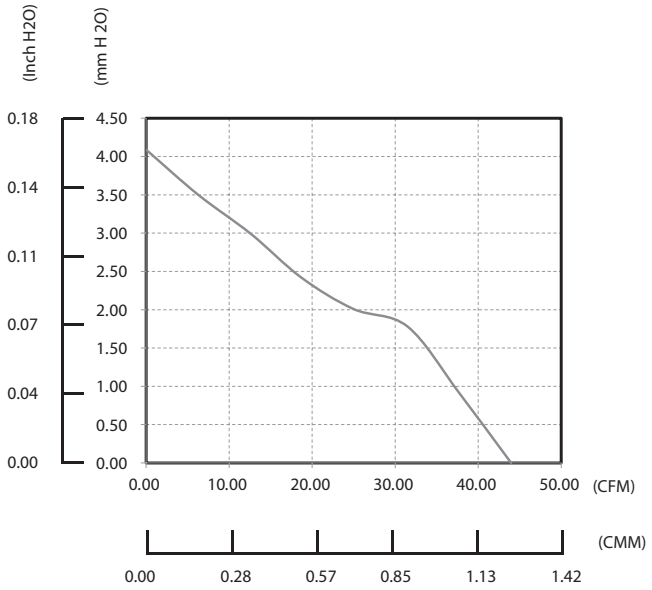
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| operating temperature | | -10 | | 70 | °C |
| storage temperature | | -40 | | 70 | °C |
| operating humidity | non-condensing | 5 | | 90 | % |
| storage humidity | non-condensing | 5 | | 95 | % |

## PERFORMANCE CURVES

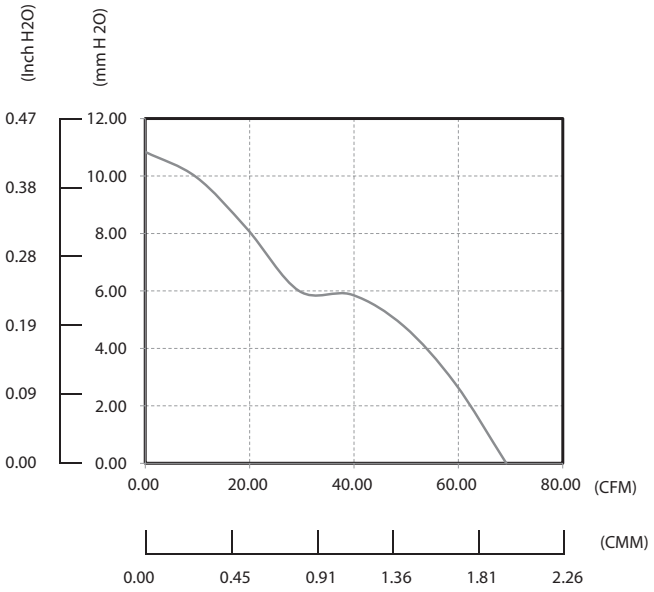
### CFM-8010




### CFM-8015




### CFM-8025



## 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 | CFM-8010 models: 80 x 80 x 10.6<br>CFM-8015 models: 80 x 80 x 15.4<br>CFM-8025 models: 80 x 80 x 25.4 | | | | mm<br>mm<br>mm |
| material | PBT (UL94V-0) | | | | |
| weight | CFM-8010-13 models<br>CFM-8015-13 models<br>CFM-8025-13 models<br>CFM-8025-23 models | | 42.6<br>59.2<br>87.7<br>91.6 | | g<br>g<br>g<br>g |

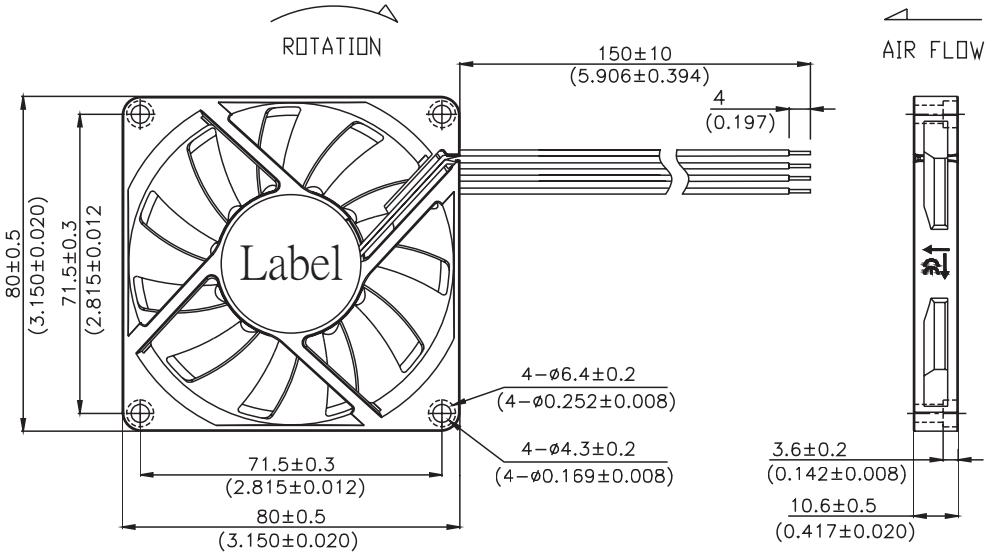
## MECHANICAL DRAWING

units: mm [inch]

### CFM-8010

wire: UL 1061, 26 AWG

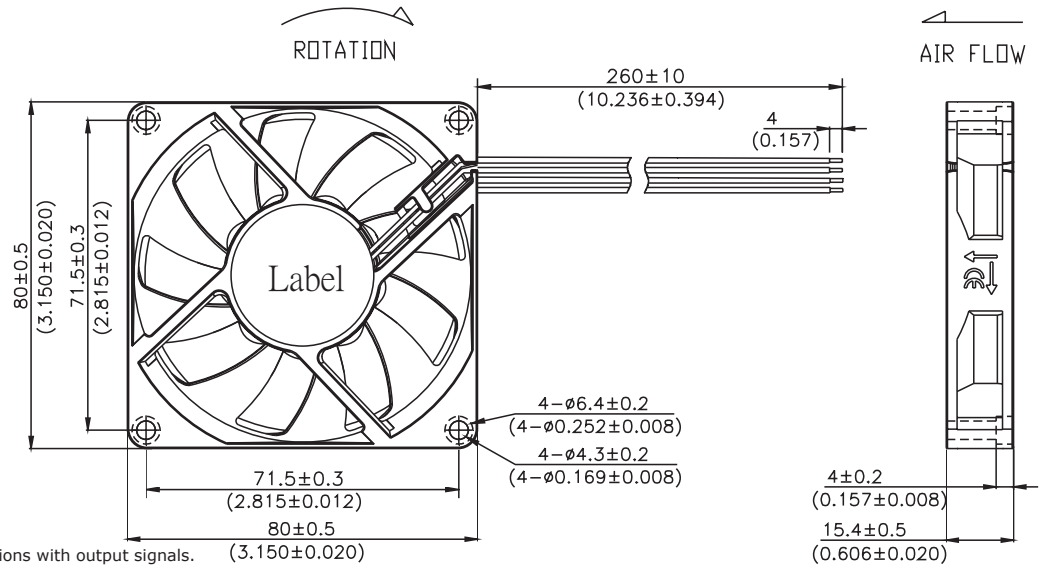
| WIRE CONNECTIONS | |
|---|---|
| Wire Color | Function |
| Red | +Vin |
| Black | -Vin |
| Yellow[1] | FG Signal |
| White[1] | RD Signal |
| Blue[1] | PWM |




### CFM-8015

wire: UL 1061, 26 AWG

| WIRE CONNECTIONS | |
|---|---|
| Wire Color | Function |
| Red | +Vin |
| Black | -Vin |
| Yellow[1] | FG Signal |
| White[1] | RD Signal |
| Blue[1] | PWM |




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

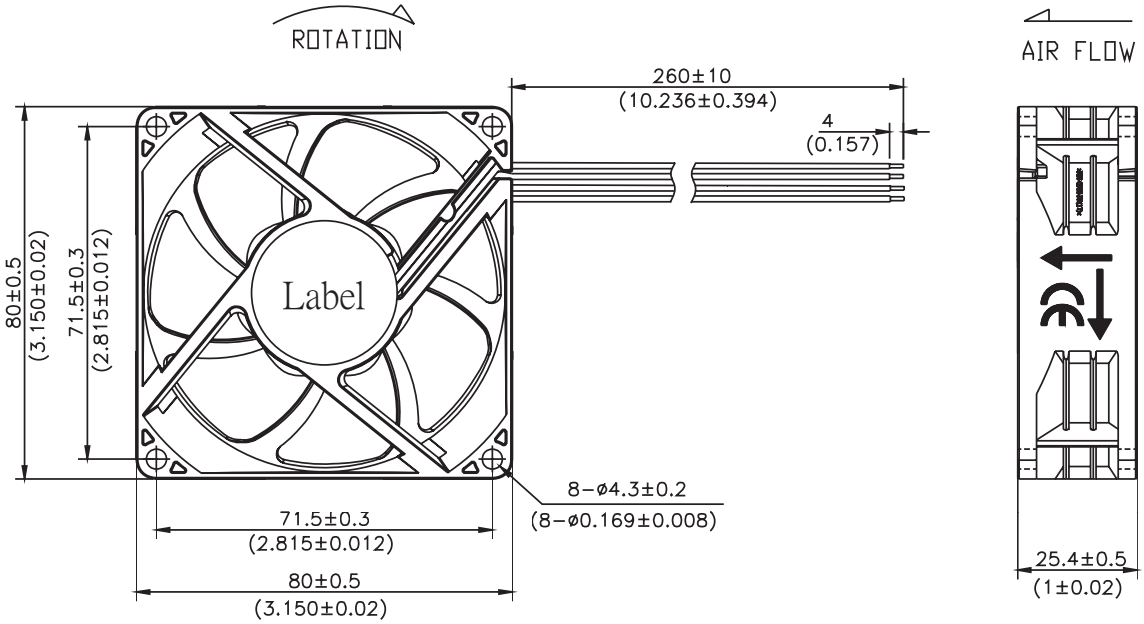
## MECHANICAL DRAWING (CONTINUED)

units: mm [inch]

### CFM-8025

wire: UL 1007, 24 AWG

| WIRE CONNECTIONS | |
|---|---|
| Wire Color | Function |
| Red | +Vin |
| Black | -Vin |
| Yellow[1] | FG Signal |
| White[1] | RD Signal |
| Blue[1] | PWM |



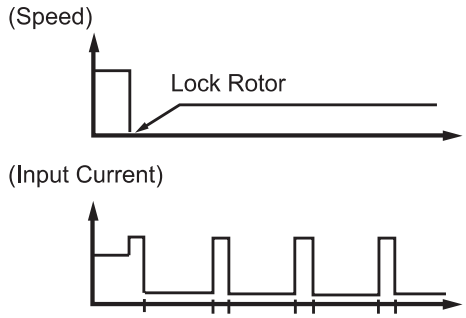

Note: 1. Wires only present on versions with output signals.

## 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**



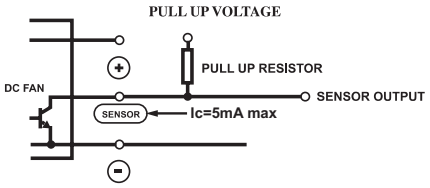

### Lock Sensor/Rotation Detector

Lock Sensor is used to detect if the fan motor is operating or stopped. Alarm High: the output will be logical low when fan is operating and be logical high when fan motor is locked. (See Figures 2~3 below).

**Figure 2 Alarm High Output Waveform**



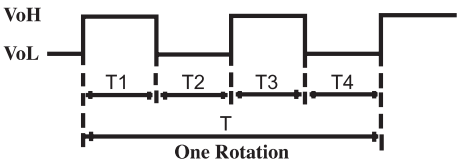

**Figure 3 RD Signal Output Circuit: Open Collector**




### 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 4~5 below).

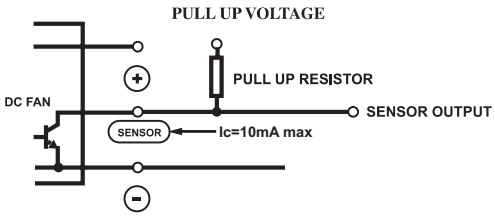
**Figure 4 Output Waveform**




$T_{1\text{-}4} \fallingdotseq (1/4)T$

N=Fan Rotational Speed($min^{-1}$)

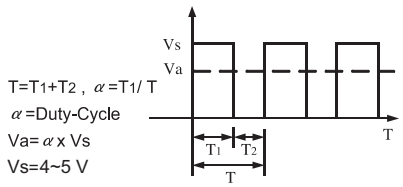
**Figure 5 FG Signal Output Circuit: Open Collector**




### 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 6 below).

**Figure 6 Duty Cycle**



## REVISION HISTORY

| rev. | description | date |
|---|---|---|
| 1.0 | initial release | 08/15/2016 |
| 1.01 | updated datasheet | 07/27/2017 |
| 1.02 | discontinued model CFM-8025-13-22 | 11/10/2017 |
| 1.03 | discontinued CFM-8025-13-11, CFM-8025-23-11, CFM-8025-23-20, and CFM-8025-23-22 models | 01/29/2018 |
| 1.04 | updated to be certified to EN 62368-1 safety standard | 07/09/2019 |
| 1.05 | brand update | 02/10/2020 |
| 1.06 | discontinued CFM-8015-13-10 and CFM-8015-13-20 models | 04/28/2021 |
| 1.07 | discontinued model CFM-8010-13-22 | 09/24/2021 |
| 1.08 | discontinued CFM-8010-13-10, CFM-8010-13-11, CFM-8010-13-20, CFM-8015-13-11, CFM-8015-13-22, CFM-8025-13-10, & CFM-8025-13-20 models | 10/18/2021 |

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

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