

SERIES: CFM-50 | **DESCRIPTION:** DC AXIAL FAN

FEATURES

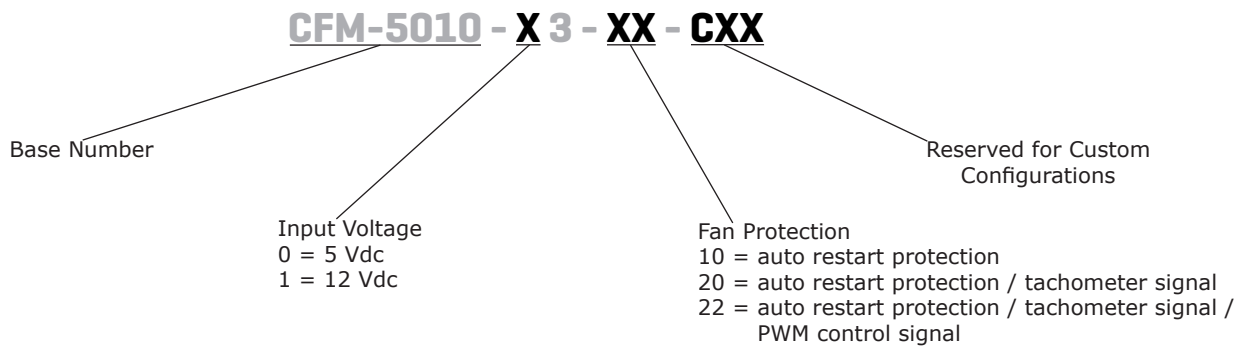
- 50 x 50 mm frame
- high fan speed for greater air flow
- two ball bearing construction
- auto restart protection standard on all models



| MODEL | input voltage | | input current | | input power | rated speed | airflow ¹ | static pressure ² | noise |
|-------------|---------------|-------------|---------------|---------|-------------|-------------|----------------------|------------------------------|-----------|
| | rated (Vdc) | range (Vdc) | typ (A) | max (A) | max (W) | typ (RPM) | (CFM) | (mm H ₂ O) | max (dBA) |
| CFM-5010-03 | 5 | 4~5.75 | 0.21 | 0.28 | 1.4 | 6,100 | 16.07 | 5.15 | 37.2 |
| CFM-5010-13 | 12 | 6~13.8 | 0.11 | 0.14 | 1.68 | 6,100 | 16.07 | 5.15 | 37.0 |

Notes: 1. At 0 mm H₂O 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 | | 0.21 | 0.28 | A |
| | 12 Vdc input models | | 0.11 | 0.14 | A |
| power | 5 Vdc input models | | 1.05 | 1.4 | W |
| | 12 Vdc input models | | 1.32 | 1.68 | 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 | 5,490 | 6,100 | 6,710 | RPM |
| air flow | at 0 mm H ₂ O, see performance curves | | 16.07 | | CFM |
| static pressure | at 0 CFM, see performance curves | | 5.15 | | mm H ₂ O |
| noise | at 1 m | | | | |
| | 5 Vdc input models | | 36.0 | 37.2 | dBA |
| | 12 Vdc input models | | 36.0 | 37.0 | dBA |

PROTECTIONS / SIGNALS¹

| 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.

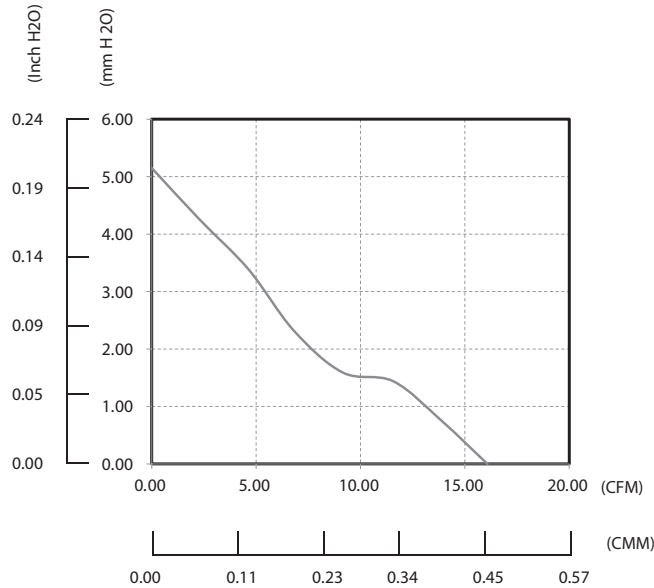
SAFETY & COMPLIANCE

| 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 60950-1) | | | | |
| 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 | 2011/65/EU | | | | |

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

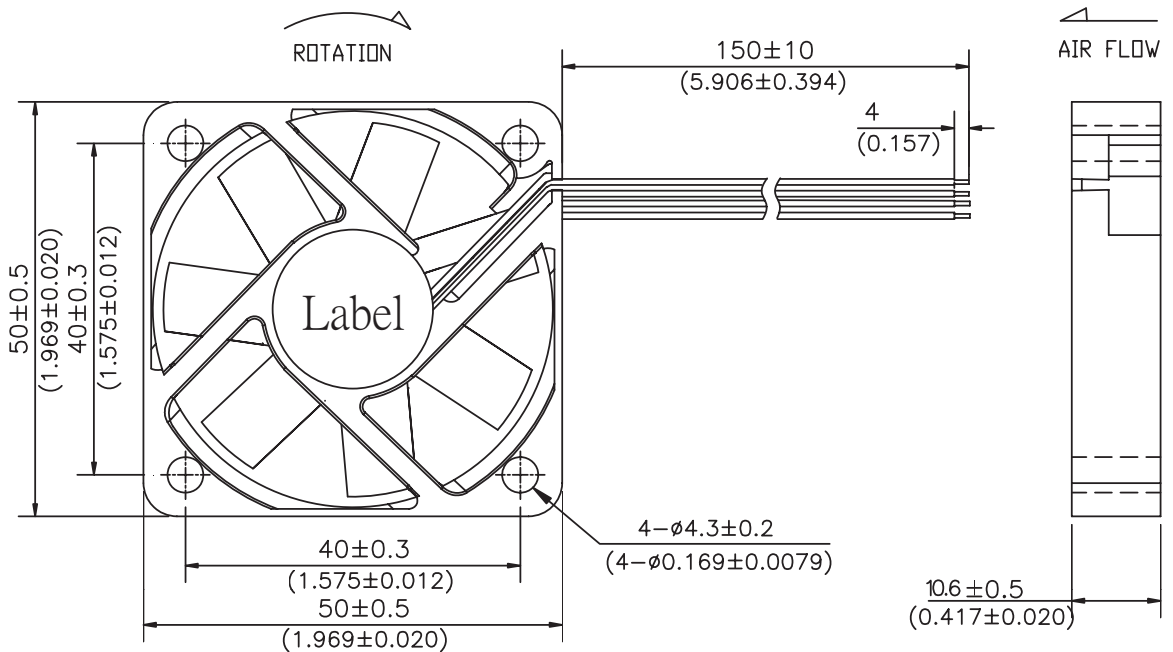
| parameter | conditions/description | min | typ | max | units |
|-----------------------|--|-----|------|-----|-------|
| motor | 4 pole DC brushless | | | | |
| bearing system | ball bearing | | | | |
| direction of rotation | counter-clockwise viewed from front of fan blade | | | | |
| dimensions | 50 x 50 x 10.6 | | | | mm |
| material | PBT (UL94V-0) | | | | |
| weight | 5 Vdc input models | | 20.7 | | g |
| | 12 Vdc input models | | 20.3 | | g |

MECHANICAL DRAWING

units: mm [inch]

wire: UL 1061, 28 AWG

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

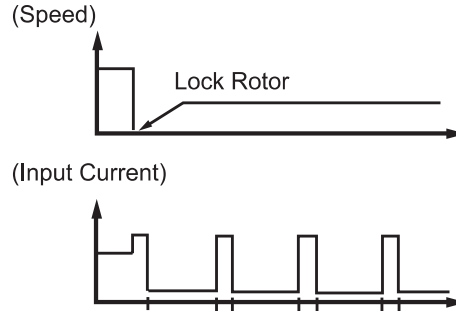


APPLICATION NOTES

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

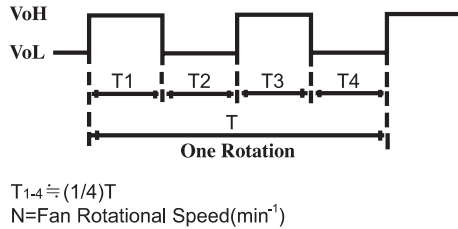
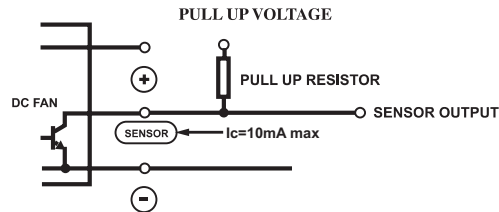


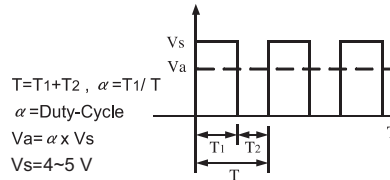
Figure 3 FG Signal Output Circuit: Open Collector



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 |

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



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