

SERIES: CFM-120 | **DESCRIPTION:** DC AXIAL FAN

FEATURES

- 120 x 120 mm frame
- high fan speed for greater air flow
- dual ball bearing construction
- auto restart protection standard on all models

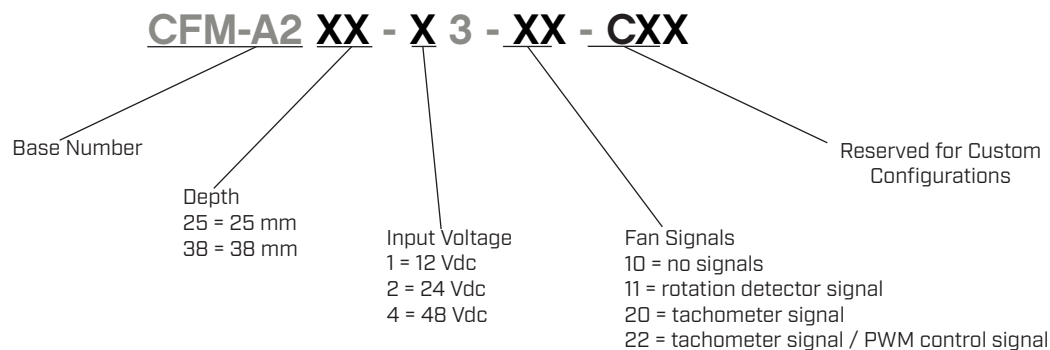


MODEL

| 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 ₂ O] | max [dBA] |
| CFM-A225-13* | 12 | 6~13.8 | 0.59 | 0.79 | 9.48 | 4,100 | 126.89 | 0.49 | 53.5 |
| CFM-A225-23* | 24 | 16~27.6 | 0.31 | 0.39 | 9.36 | 4,100 | 126.89 | 0.49 | 53.5 |
| CFM-A225-43* | 48 | 30~55.2 | 0.17 | 0.23 | 11.04 | 4,100 | 126.89 | 0.49 | 53.5 |
| CFM-A238-13* | 12 | 6~13.8 | 1.40 | 1.75 | 21 | 4,600 | 200.9 | 0.78 | 61.5 |
| CFM-A238-23* | 24 | 16~27.6 | 0.77 | 0.88 | 21.12 | 4,600 | 200.9 | 0.78 | 61.5 |
| CFM-A238-43* | 48 | 30~55.2 | 0.36 | 0.48 | 23.04 | 4,600 | 200.9 | 0.78 | 61.5 |

Notes: 1. At 0 inch H₂O static pressure.
 2. At 0 CFM airflow.
 *. Discontinued CFM-A225-13-10, CFM-A225-13-11, CFM-A225-13-20, CFM-A225-23-11, CFM-A225-23-22, CFM-A225-43-11, CFM-A225-43-20, CFM-A225-43-22, CFM-A238-13-11, CFM-A238-23-11, CFM-A238-23-20, CFM-A238-23-22, and CFM-A238-43-20 models.

PART NUMBER KEY



INPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|------------------------|-----|-------|-------|-------|
| operating input voltage | 12 Vdc input models | 6 | 12 | 13.8 | Vdc |
| | 24 Vdc input models | 16 | 24 | 27.6 | Vdc |
| | 48 Vdc input models | 30 | 48 | 55.2 | Vdc |
| current | CFM-A225-13 | | 0.59 | 0.79 | A |
| | CFM-A225-23 | | 0.31 | 0.39 | A |
| | CFM-A225-43 | | 0.17 | 0.23 | A |
| | CFM-A238-13 | | 1.40 | 1.75 | A |
| | CFM-A238-23 | | 0.77 | 0.88 | A |
| power | CFM-A238-43 | | 0.36 | 0.48 | A |
| | CFM-A225-13 | | 7.08 | 9.48 | W |
| | CFM-A225-23 | | 7.44 | 9.36 | W |
| | CFM-A225-43 | | 8.16 | 11.04 | W |
| | CFM-A238-13 | | 16.80 | 21 | W |
| starting voltage | CFM-A238-23 | | 18.48 | 21.12 | W |
| | CFM-A238-43 | | 17.28 | 23.04 | W |
| | at 25°C | | | | |
| | 12 Vdc input models | | 6 | | Vdc |
| | 24 Vdc input models | | 12 | | Vdc |
| | 48 Vdc input models | | 24 | | Vdc |

PERFORMANCE

| parameter | conditions/description | min | typ | max | units |
|-----------------|--|-------|--------|-------|-----------------------|
| rated speed | at 25°C, after 10 minutes | | | | |
| | CFM-A225 models | 3,690 | 4,100 | 4,510 | RPM |
| | CFM-A238 models | 4,140 | 4,600 | 5,060 | RPM |
| air flow | at 0 inch H ₂ O, see performance curves | | | | |
| | CFM-A225 models | | 126.89 | | CFM |
| | CFM-A238 models | | 200.9 | | CFM |
| static pressure | at 0 CFM, see performance curves | | | | |
| | CFM-A225 models | | 0.49 | | inch H ₂ O |
| | CFM-A238 models | | 0.78 | | inch H ₂ O |
| noise | at 1 m | | | | |
| | CFM-A225 models | | 51.5 | 53.5 | dBA |
| | CFM-A238 models | | 59.5 | 61.5 | dBA |

PROTECTIONS / SIGNALS¹

| 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

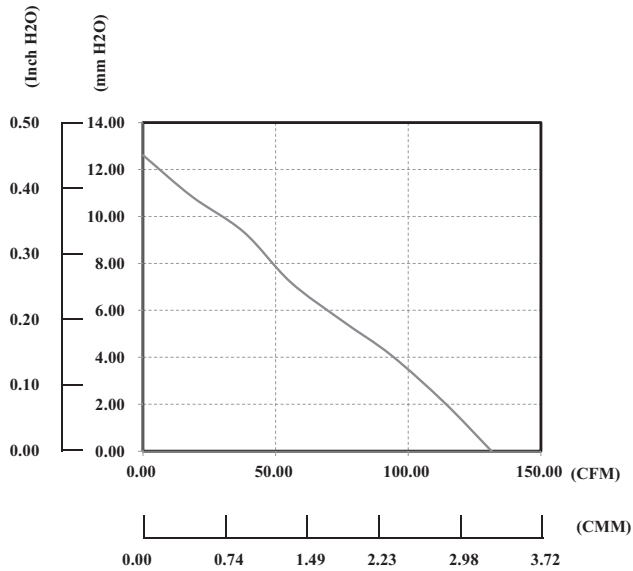
| parameter | conditions/description | min | typ | max | units |
|--------------------------------|--|-----|--------|-----|-------|
| insulation resistance of frame | at 500 Vdc between frame and positive terminal | 10 | | | MΩ |
| dielectric strength | at 500 Vac, 60 Hz, 1 minute between frame and positive 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, 15-85% RH | | 70,000 | | hours |
| RoHS | yes | | | | |

ENVIRONMENTAL

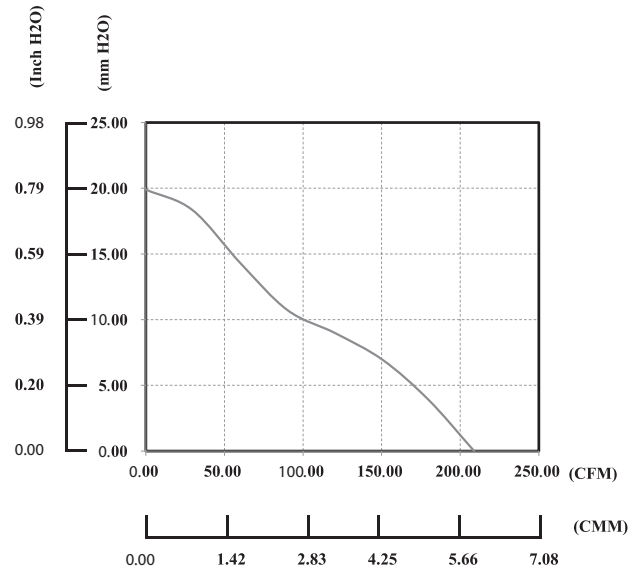
| parameter | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature | | -10 | | 70 | °C |
| storage temperature | | -40 | | 70 | °C |
| operating humidity | non-condensing | 5 | | 90 | % |
| storage humidity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

PERFORMANCE CURVES

CFM-A225



CFM-A238



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-A225 models 120 x 120 x 25.4 CFM-A238 models 120 x 120 x 38 | | | | mm mm |
| material | PBT (UL94V-0) | | | | |
| weight | CFM-A225-13 | | 190.0 | | g |
| | CFM-A225-23 | | 189.8 | | g |
| | CFM-A225-43 | | 190.6 | | g |
| | CFM-A238-13 | | 297.0 | | g |
| | CFM-A238-23 | | 283.7 | | g |
| | CFM-A238-43 | | 283.2 | | g |

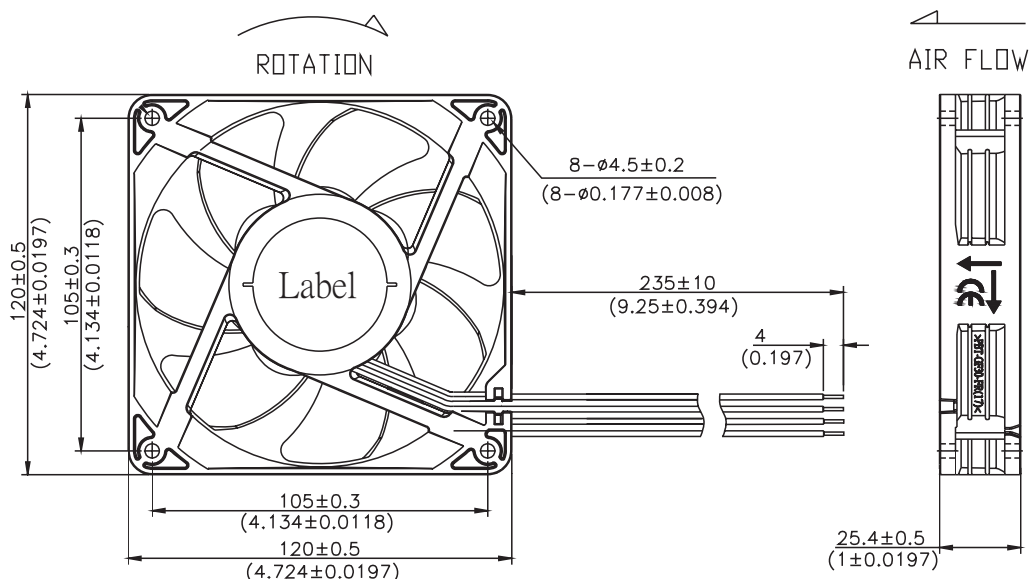
MECHANICAL DRAWING

units: mm [inch]

CFM-A225

wire: UL 1007, 24 AWG

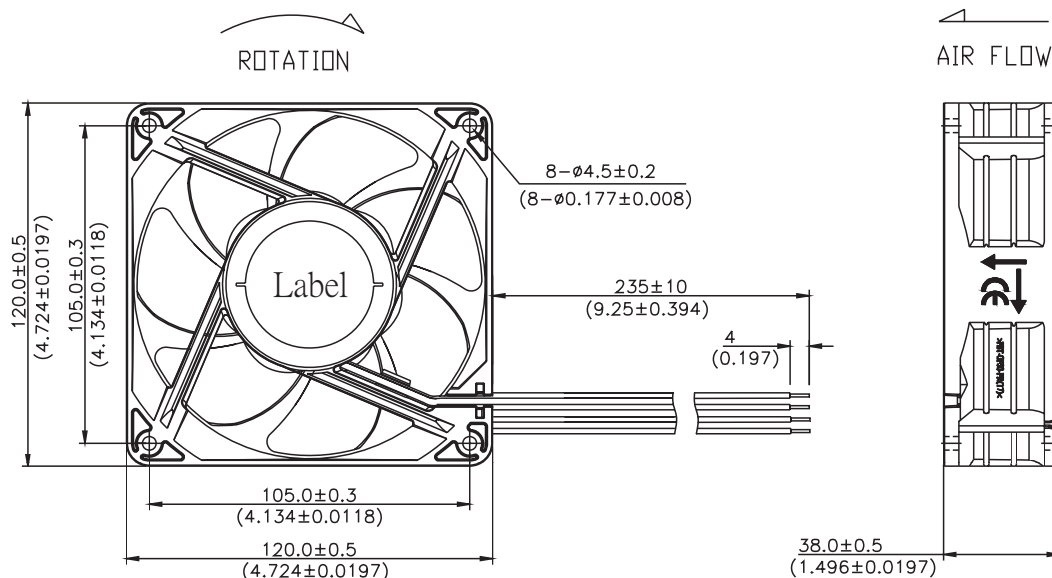
| WIRE CONNECTIONS | |
|---------------------|-----------|
| Wire Color | Function |
| Red | +Vin |
| Black | -Vin |
| Yellow ¹ | FG Signal |
| White ¹ | RD Signal |
| Blue ¹ | PWM |



CFM-A238

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 |

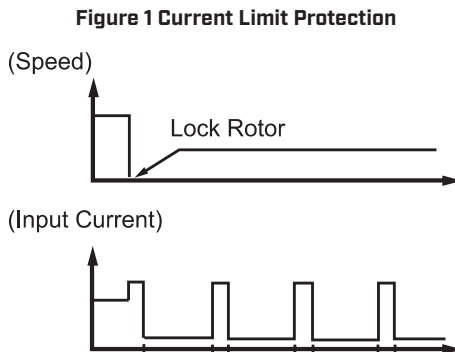


Note: 1. Wires only present on versions with output signals.

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].



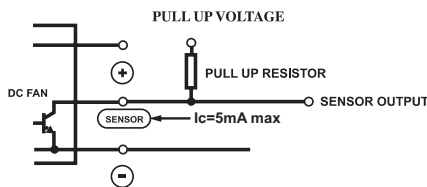
Lock Sensor/Rotation Detector

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

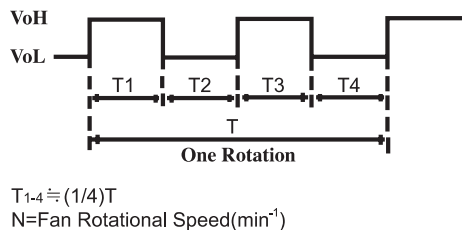
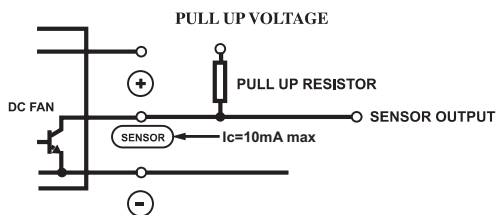


Figure 5 FG Signal Output Circuit: Open Collector



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

