

date 08/12/2022

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# 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

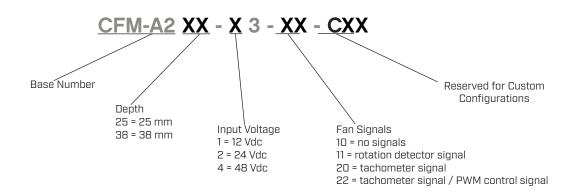




MODEL		put Itage		put rent	input power	rated speed	air flow¹	static pres- sure²	noise
	<b>rated</b> (Vdc)	<b>range</b> (Vdc)	<b>typ</b> [A]	max (A)	max [W]	<b>typ</b> (RPM)	(CFM)	(inch H <sub>2</sub> O)	<b>max</b> (dBA)
CFM-A225-13*	12	6~13.8	0.59	0.79	9.48	4,100	126.89	0.49	53.5
CFM-A225-23*	24	16~27.6	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:

### PART NUMBER KEY



<sup>1.</sup> At O inch H<sub>2</sub>O static pressure.

<sup>2.</sup> At 0 CFM airflow.

<sup>\*.</sup> 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.

## **INPUT**

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

## **PERFORMANCE**

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

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

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**

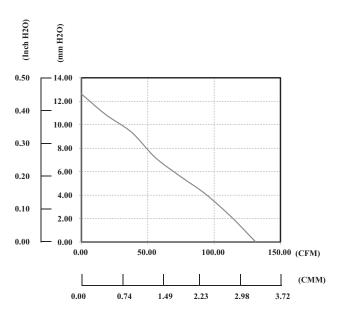
parameter	conditions/description	min	typ	max	units
insulation resistance of frame	at 500 Vdc between frame and positive terminal	10			ΜΩ
dielectric strength	at 500 Vac, 60 Hz, 1 minute between frame and positive terminal			5	mA
safety approvals	UL/cUL 507, TUV (EN 62368-1)				
EMI/EMC	EN 55022:2010+AC:2011 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**

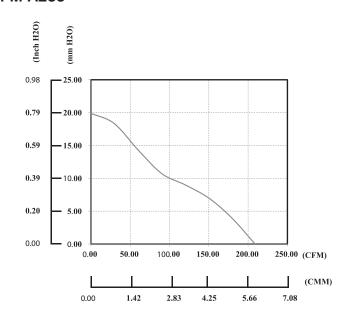
parameter	conditions/description	min	typ	max	units
operating temperature		-10		70	°C
storage temperature		-40		70	°C
operating humidity	non-condensing	5		90	%
storage humidity	non-condensing	5		95	%

## **PERFORMANCE CURVES**

### **CFM-A225**



### **CFM-A238**

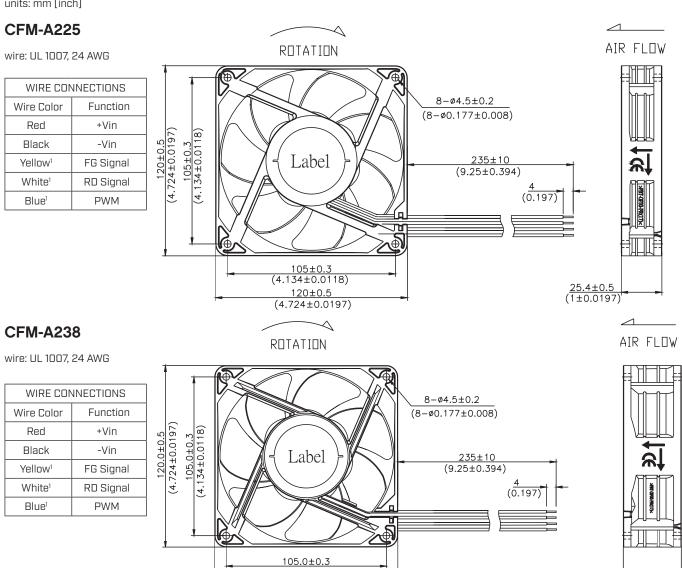


### **MECHANICAL**

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 CFM-A225-23 CFM-A225-43 CFM-A238-13 CFM-A238-23 CFM-A238-43		190.0 189.8 190.6 297.0 283.7 283.2		9 9 9

#### **MECHANICAL DRAWING**

units: mm [inch]



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

38.0±0.5 (1.496±0.0197)

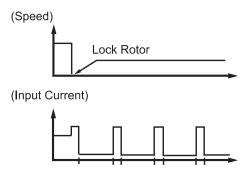
(4.134±0.0118) 120.0±0.5 (4.724±0.0197)

#### **APPLICATION NOTES**

#### **Auto Restart Protection/Current Limit Protection**

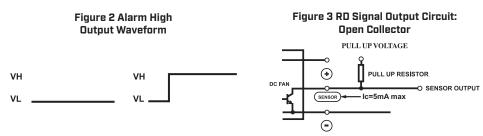
When the fan motor is locked, the device will cut off the drive current within two to six seconds and restart automatically after a few seconds. If the lock situation is continued, the device will work on a repeated cycle of cut-off and restart until the lock is released. (See Figure 1 below).

Figure 1 Current Limit Protection



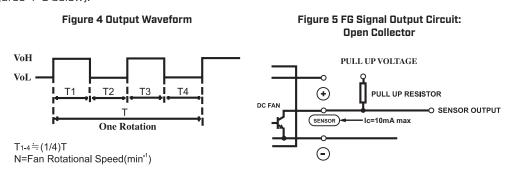
#### Lock Sensor/Rotation Detector

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).



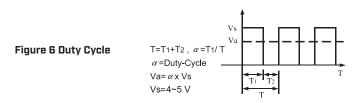
#### Pulse Sensor/Tachometer Signal/FG

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).



#### **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).



### **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	discontinued CFM-A225-23-22 and CFM-A238-23-22 models	03/31/2022
1.05	discontinued CFM-A225-13-10, CFM-A225-13-11, CFM-A225-13-20, CFM-A225-23-11, CFM-A225-43-11, CFM-A225-43-20, CFM-A225-43-22, CFM-A238-13-11, CFM-A238-23-11, CFM-A238-23-20, and CFM-A238-43-20 models	04/26/2022
1.06	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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