



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

**FEATURES**

- omniCOOL™ bearing system
- 50 x 50 mm frame
- multiple speed options
- PWM/tachometer wires available

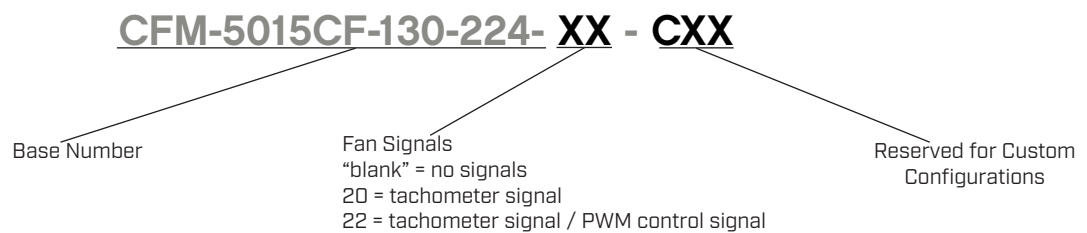


**MODEL**

	input voltage		input current <sup>1</sup>		input power <sup>1</sup>		rated speed <sup>1</sup>	airflow <sup>2</sup>	static pressure <sup>3</sup>	noise <sup>4</sup>
	rated [Vdc]	range [Vdc]	typ [A]	max [A]	typ [W]	max [W]	typ (RPM±10%)	[CFM]	[inch H <sub>2</sub> O]	typ [dBA]
CFM-5015CF-130-224	12	10.8~13.2	0.04	0.06	0.48	0.72	3,000 <sup>5</sup>	7.78	0.05	22.4
CFM-5015CF-145-312	12	10.8~13.2	0.06	0.09	0.72	1.08	4,500 <sup>5</sup>	11.68	0.11	31.3
CFM-5015CF-160-374	12	10.8~13.2	0.10	0.15	1.20	1.80	6,000	15.57	0.20	37.4

- Notes:
1. At rated voltage, after 3 minutes.
  2. At rated voltage, room temperature, 65% humidity, 0 inch H<sub>2</sub>O static pressure.
  3. At rated voltage, 0 CFM airflow.
  4. Measured in an anechoic chamber as per ISO3745/GB4214-84 at rated voltage, with background noise 20±2 dBA at 1 m from the fan intake.
  5. Typical rated speed is measured as RPM±600 at rated voltage.
  6. All specifications are measured at 25°C, 65% relative humidity unless otherwise specified.

**PART NUMBER KEY**



## INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage		10.8	12	13.2	Vdc
starting voltage			7.0		Vdc

## PERFORMANCE<sup>7</sup>

parameter	conditions/description	min	typ	max	units
rated speed	at rated voltage, 25°C, after 3 minutes	3,000		6,000	RPM
air flow	at 0 inch H <sub>2</sub> O, see performance curves	7.78		15.57	CFM
static pressure	at 0 CFM, see performance curves	0.05		0.20	inch H <sub>2</sub> O
noise	at 1 m, rated speed	22.4		37.4	dBA

Note: 7. See Model section on page 1 for specific values.

## PROTECTIONS / FEATURES<sup>8</sup>

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

Notes: 8. See Application Notes for details.

## SAFETY & COMPLIANCE

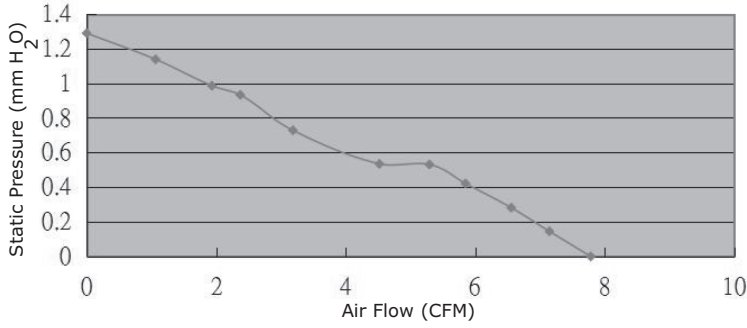
parameter	conditions/description	min	typ	max	units
insulation resistance	at 500 Vdc between frame and positive terminal	10			MΩ
dielectric strength	at 500 Vac, 60 Hz, 1 minute between housing and positive terminal			5	mA
safety approvals	UL/cUL 507, TUV [EN/IEC 62368-1:2020+A11]				
EMI/EMC	EN 55032:2015, EN 55035:2017				
life expectancy	at 40°C, 65% RH, 90% confidence level		40,000		hours
RoHS	yes				

## ENVIRONMENTAL

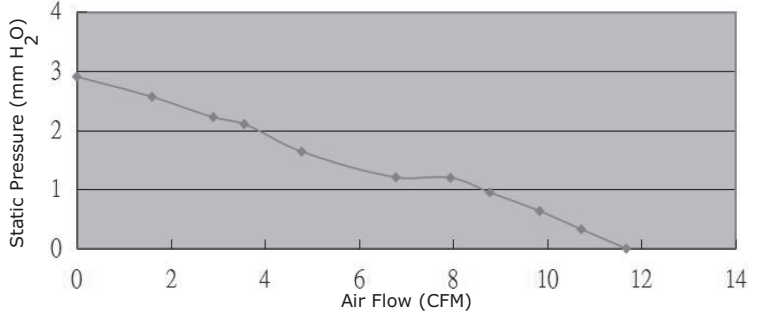
parameter	conditions/description	min	typ	max	units
operating temperature		-10		70	°C
storage temperature		-40		75	°C
operating humidity	non-condensing	35		85	%
storage humidity	non-condensing	35		85	%

## PERFORMANCE CURVES

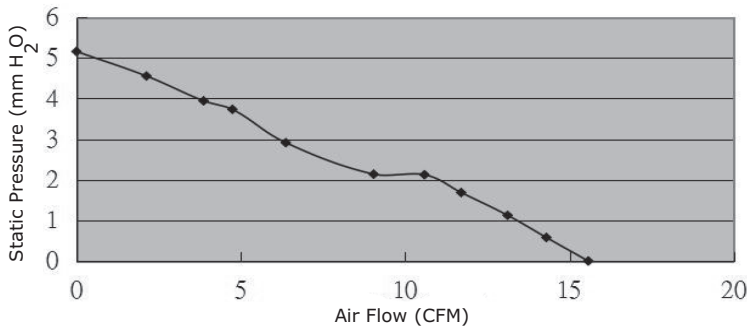
### CFM-5015CF-130-224



### CFM-5015CF-145-312



### CFM-5015CF-160-374



## MECHANICAL

parameter	conditions/description	min	typ	max	units
motor	4 pole DC brushless				
bearing system	omniCOOL™				
direction of rotation	counter-clockwise viewed from front of fan blade				
dimensions	50 x 50 x 15.5				mm
material	PBT [UL94V-0]				
weight	CFM-5015CF-130-224		27.8		g
	CFM-5015CF-145-312		26.9		g
	CFM-5015CF-160-374		27.0		g

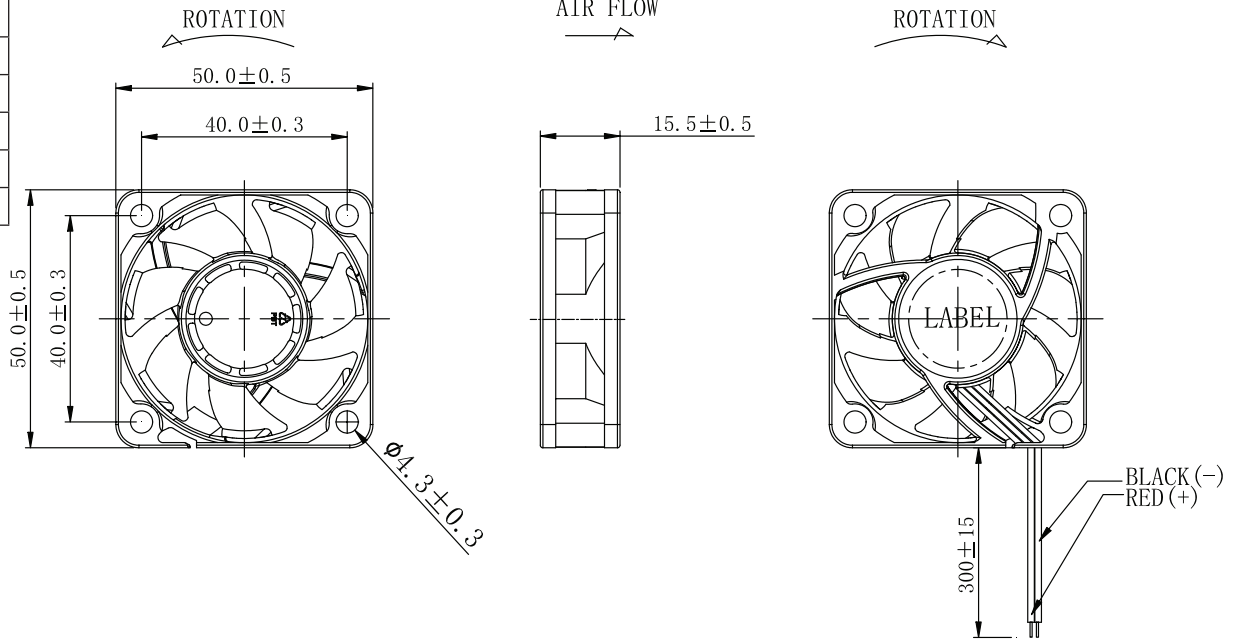
## MECHANICAL DRAWING

units: mm

2 wire versions (+Vin & -Vin): UL 1007, 26 AWG  
 3 wire versions (+Vin, -Vin, & tach): UL 1007, 26 AWG  
 4 wire versions (+Vin, -Vin, tach, & PWM): UL 1061, 26 AWG

MOUNTING SCREW (Pan Head)			
Screw Type	Size	Standard	Torque
Machine Screw	M4	JIS B1111-1974	7.5 kgf-cm
Self-tapping Screw	M4.8	JIS B1122 Type 2	7.5 kgf-cm

WIRE CONNECTIONS	
Wire Color	Function
Red	+Vin
Black	-Vin
Yellow <sup>9</sup>	Tach Signal
Blue <sup>9</sup>	PWM



Notes: <sup>9</sup> Wires only present on versions with output signals.

## APPLICATION NOTES

### Polarity Protection

Able to withstand 10 minutes of reverse polarity connection between the positive and negative wires without causing damage.

### Tachometer Signal [Yellow Wire]

The tachometer signal is for detecting the rotational speed of the fan motor. The output will be a square wave when fan is operating and  $V_{FG}$  or  $V_{CE}$  depending on the locked rotor position when fan motor is locked (See Figures 1~2 below).

Figure 1: Tachometer Output Circuit

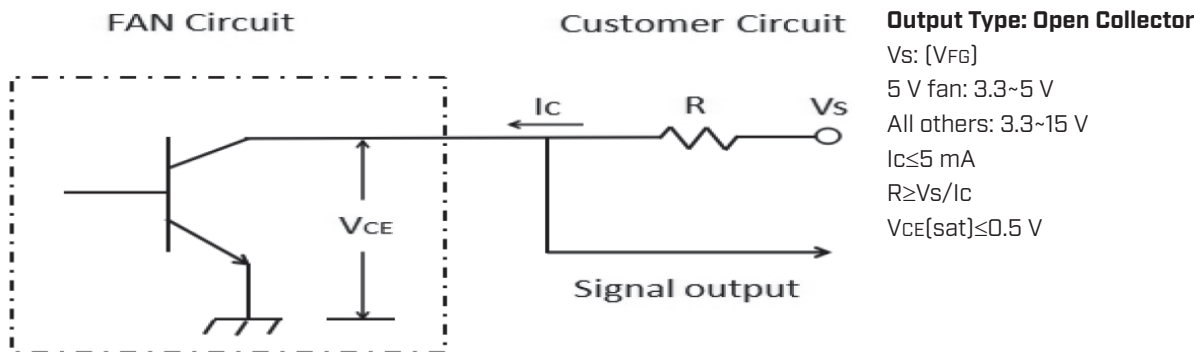
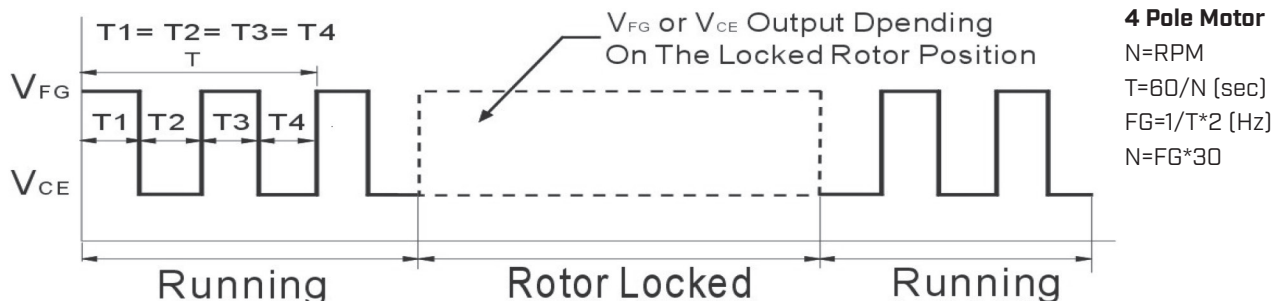


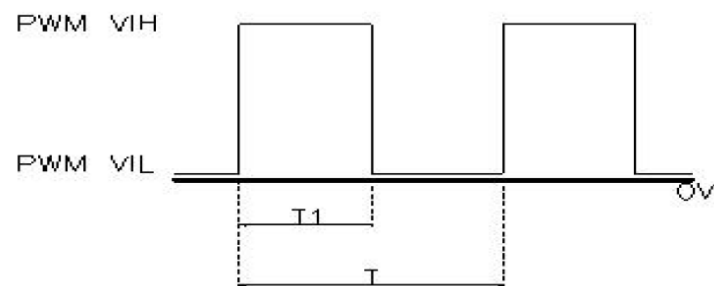
Figure 2: Tachometer Output Waveform



### PWM Signal [Blue Wire]

This wire is for speed control of the fan motor using a PWM input signal from the customer circuit (See Figure 3 below).

Figure 3: PWM Input Signal



PWM Duty Cycle [%] =  $T_1 / T \times 100\%$

Model	PWM Frequency Range [kHz]	PWM $V_{IH}$ [V]	PWM $V_{IL}$ [V]
CFM-5015CF-130-224-22	0.3~45	1.7~6	0~0.7
CFM-5015CF-145-312-22	0.3~45	1.7~6	0~0.7
CFM-5015CF-160-374-22	0.2~50	2.5~10	0~0.8

## REVISION HISTORY

rev.	description	date
1.0	initial release	10/18/2021
1.01	added PWM signal versions	05/19/2022
1.02	logo, datasheet style update	08/12/2022
1.03	updated PWM details	03/19/2024
1.04	CUI Devices rebranded to Same Sky	09/12/2024

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



Same Sky offers a one (1) year limited warranty. Complete warranty information is listed on our website.

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