

**SERIES:** CBM-40C | **DESCRIPTION:** DC BLOWER**FEATURES**

- omniCOOL™ bearing system
- 40 x 40 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)	max (A)	max (W)	typ (RPM±15%)	(CFM)	(inch H <sub>2</sub> O)	typ (dBA)
CBM-4010C-140-178	12	10.8~13.2	0.08	0.96	4,000 <sup>5</sup>	1.17	0.07	17.8
CBM-4010C-150-227	12	10.8~13.2	0.09	1.08	5,000 <sup>5</sup>	1.46	0.11	22.8
CBM-4010C-160-267	12	10.8~13.2	0.11	1.32	6,000	1.75	0.16	26.7

- 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±900 at rated voltage.
  6. All specifications are measured at 25°C, 65% relative humidity unless otherwise specified.

**PART NUMBER KEY**

**CBM-4010C-140-178 - XX - CXX**

Base Number

Fan Signals  
 "blank" = no signals  
 20 = tachometer signal  
 22 = tachometer signal / PWM control signal

Reserved for Custom Configurations

## INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage <sup>7</sup>		10.8	12	13.2	Vdc
starting voltage	12 Vdc input models		8.0		Vdc

Note: 7. See Model section on page 1 for specific input voltage ranges.

## PERFORMANCE<sup>8</sup>

parameter	conditions/description	min	typ	max	units
rated speed	at rated voltage, 25°C, after 3 minutes	4,000		6,000	RPM
air flow	at 0 inch H <sub>2</sub> O, see performance curves	1.17		1.75	CFM
static pressure	at 0 CFM, see performance curves	0.07		0.16	inch H <sub>2</sub> O
noise	at 1 m, rated speed	17.8		26.7	dB(A)

Note: 8. See Model section on page 1 for specific values.

## PROTECTIONS / FEATURES<sup>9</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: 9. See Application Notes for details.

## SAFETY & COMPLIANCE

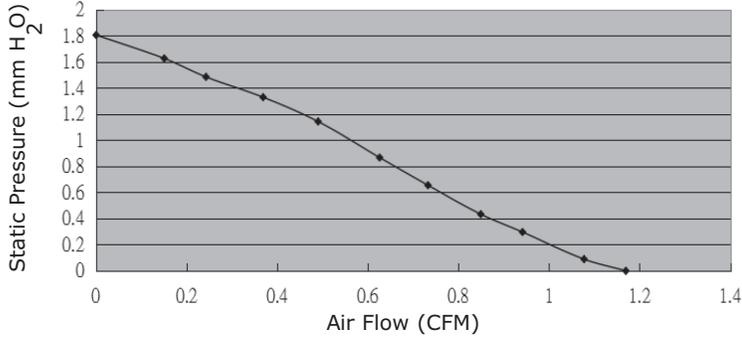
parameter	conditions/description	min	typ	max	units
insulation resistance	at 500 Vdc between frame and positive terminal	10			MΩ
dielectric strength	at 500 Vac, 60 Hz, 1 minute between housing and positive terminal			5	mA
safety approvals	UL/cUL 507, TUV (EN/IEC 62368-1:2020+A11)				
EMI/EMC	EN 55032:2015,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

## ENVIRONMENTAL

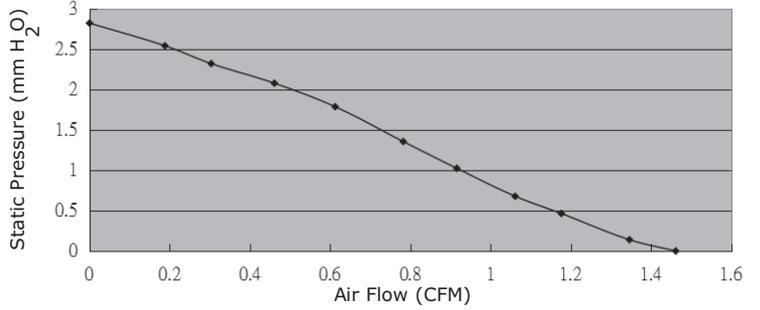
parameter	conditions/description	min	typ	max	units
operating temperature		-10		70	°C
storage temperature		-40		75	°C
operating humidity	non-condensing	35		85	%
storage humidity	non-condensing	35		85	%

## PERFORMANCE CURVES

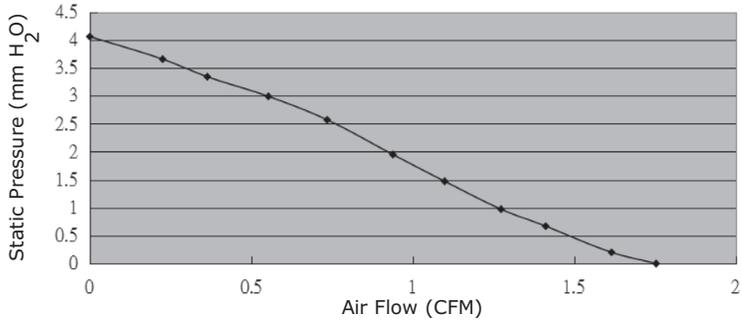
**CBM-4010C-140-178**



**CBM-4010C-150-227**



**CBM-4010C-160-267**



## 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	39.5 x 39.5 x 10				mm
material	PBT (UL94V-0)				
weight			11.8		g

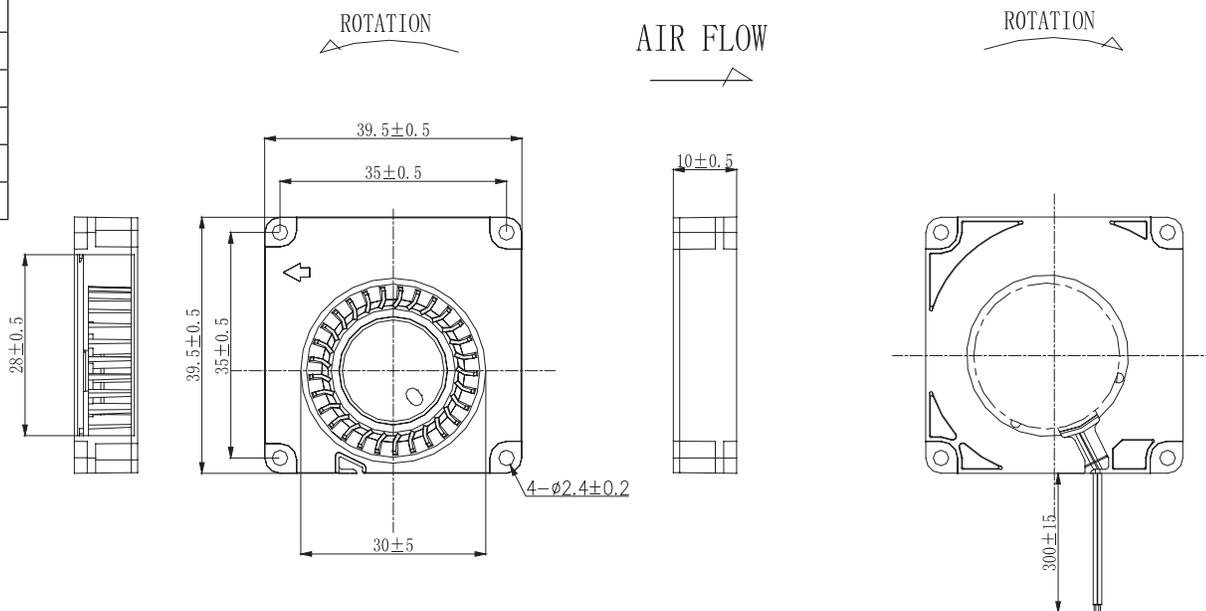
## MECHANICAL DRAWING

units: mm

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

MOUNTING SCREW (Pan Head)			
Screw Type	Size	Standard	Torque
Machine Screw	M2	JIS B1111-1974	1~2 kgf-cm

WIRE CONNECTIONS	
Wire Color	Function
Red	+Vin
Black	-Vin
Yellow <sup>10</sup>	Tach Signal
Blue <sup>10</sup>	PWM



Notes: 10. Wires only present on versions with output signals.

## APPLICATION NOTES

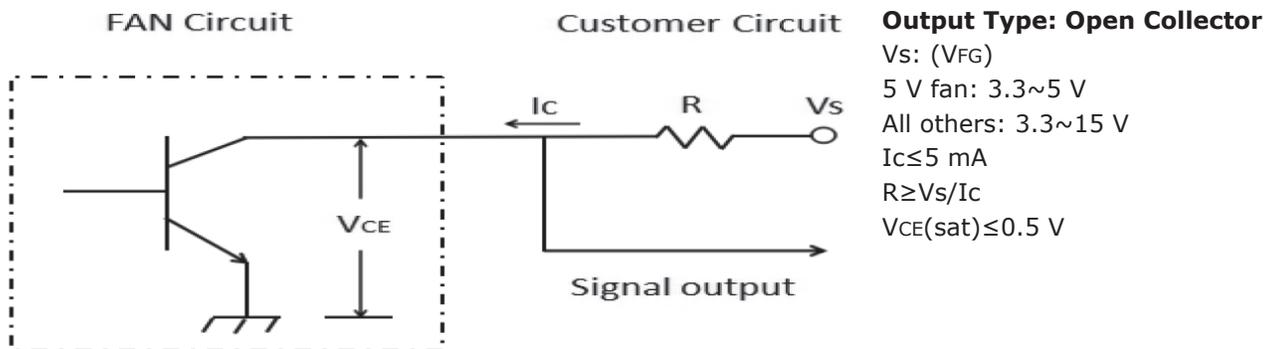
### Polarity Protection

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

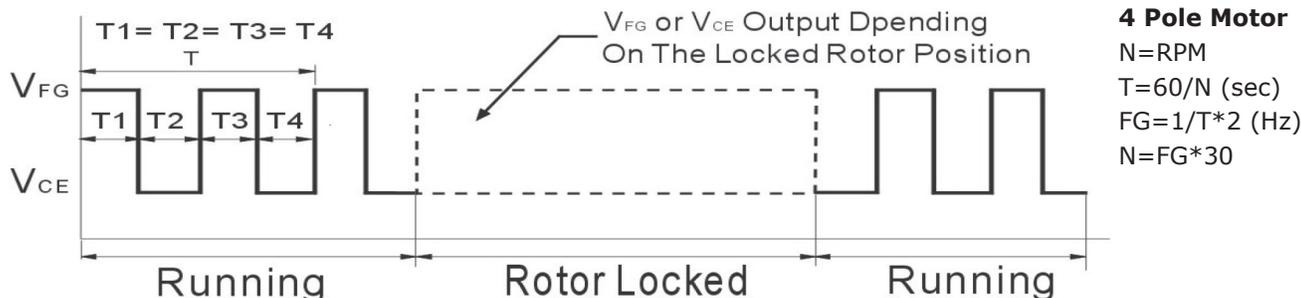
### Tachometer Signal (Yellow Wire)

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<sub>FG</sub> or V<sub>CE</sub> depending on the locked rotor position when fan motor is locked (See Figures 1~2 below).

**Figure 1: Tachometer Output Circuit**



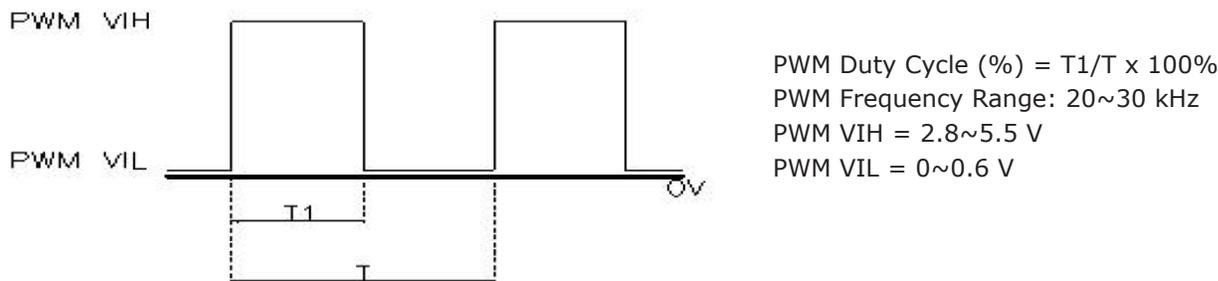
**Figure 2: Tachometer Output Waveform**



### 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**



## REVISION HISTORY

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rev.	description	date
1.0	initial release	05/13/2021
1.01	added PWM signal versions	05/19/2022

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

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