CUI INC®

SERIES: CFM-70 | DESCRIPTION: DC AXIAL FAN

FEATURES

- 70 x 70 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_2O)	max (dBA)
CFM-7010-13	12	6~13.8	0.22	0.27	3.24	4,400	31.11	0.16	40.6

Notes: 1. At 0 inch H_20 static pressure.
2. At 0 CFM airflow.

PART NUMBER KEY

CFM-7010-13 - **XX** - **CXX**

Base Number

Fan Signals
10 = no signals
11 = rotation detector signal
20 = tachometer signal
22 = tachometer signal / PWM control signal

Reserved for Custom Configurations

INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage		6	12	13.8	Vdc
current			0.22	0.27	A
power			2.64	3.24	W
starting voltage	at 25°C		6		Vdc

PERFORMANCE

parameter	conditions/description	min	typ	max	units
rated speed	at 25°C, after 10 minutes	3,960	4,400	4,840	RPM
air flow	at 0 inch H_2O, see performance curves		31.11		CFM
static pressure	at 0 CFM, see performance curves		0.16		inch H_2O
noise	at 1 m		39.5	40.6	dBA

PROTECTIONS / SIGNALS[1]

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.

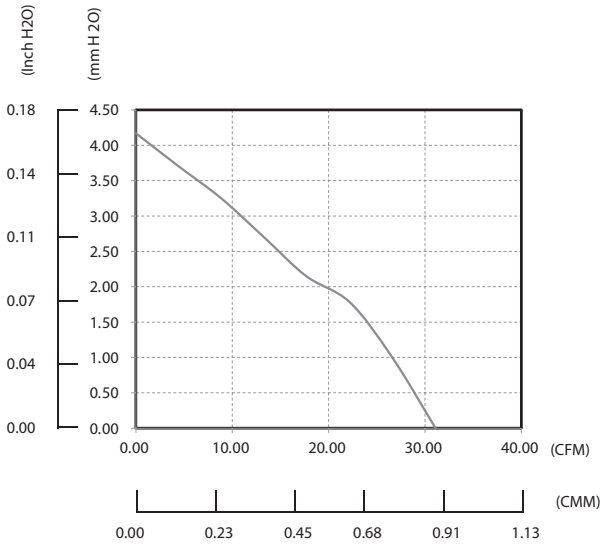
SAFETY & COMPLIANCE

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 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

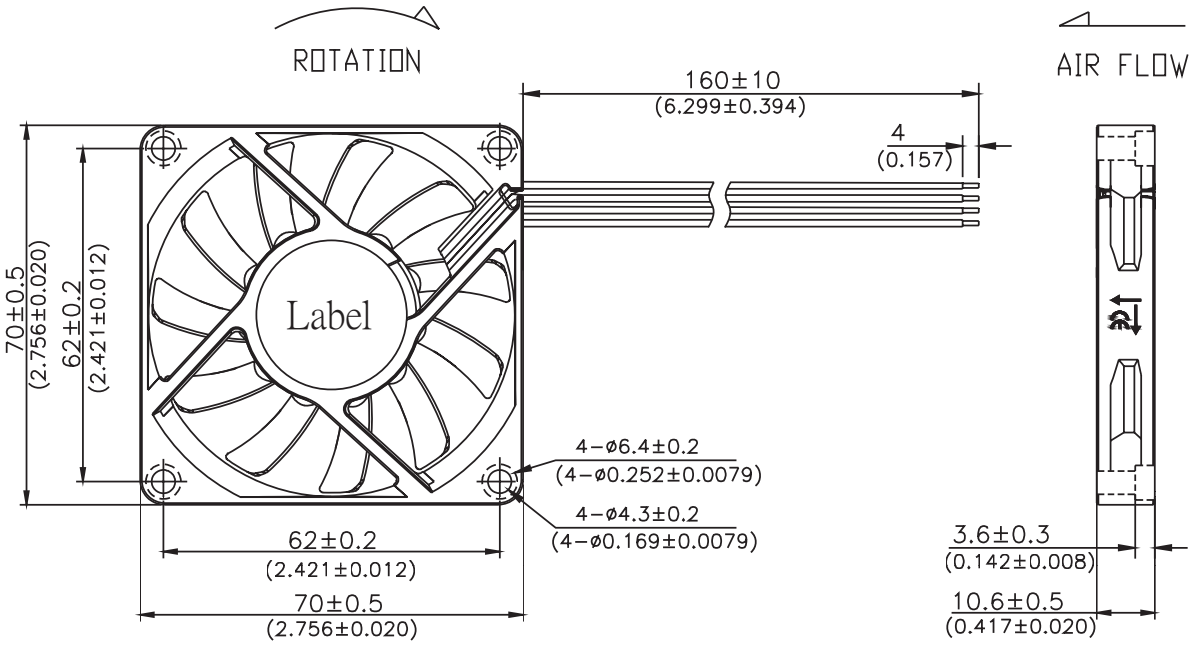
parameter	conditions/description	min	typ	max	units
motor	4 pole DC brushless				
bearing system	ball bearing				
direction of rotation	counter-clockwise viewed from front of fan blade				
dimensions	70 x 70 x 10.6				mm
material	PBT (UL94V-0)				
weight			37.3		g

MECHANICAL DRAWING

units: mm [inch]

wire: UL 1061, 26 AWG

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



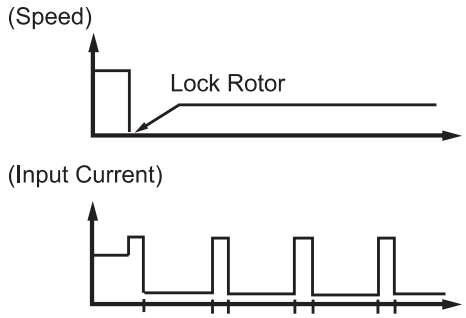
Note: 1. Wires only present on versions with output signals.

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).

Figure 1 Current Limit Protection

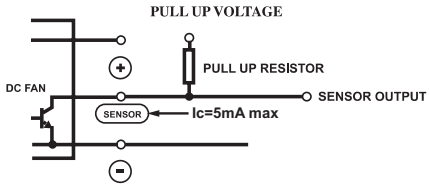


Lock Sensor/Rotation Detector

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).

Figure 2 Alarm High Output Waveform

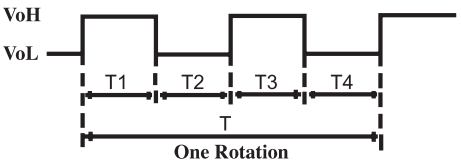
Figure 3 RD Signal Output Circuit: Open Collector



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).

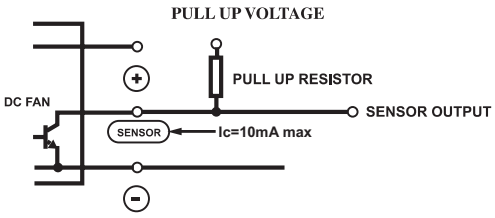
Figure 4 Output Waveform



$T_{1\text{-}4} \fallingdotseq (1/4)T$

N=Fan Rotational Speed(min^{-1})

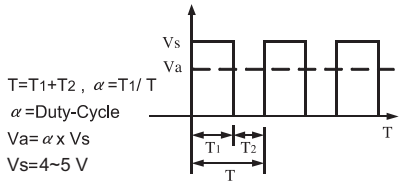
Figure 5 FG Signal Output Circuit: Open Collector



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



REVISION HISTORY

rev.	description	date
1.0	initial release	08/15/2016
1.01	updated datasheet	07/27/2017

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

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