ED-CM5ACOOLER

Active Cooler for Raspberry Pi CM5



- Aluminium profile, CNC cut, easy to install
- Active Cooler with a temperature-controlled blower fan and pre-installed with thermal conductive silicone
- Excellent cooling performance to reduce the temperature of Raspberry Pi CM5 CPU, Wi-Fi module and power management chip

Specifications

Cooling Performance		
Test Device Configuration	Raspberry Pi CM5 + Raspberry Pi CM5 IO Board	Raspberry Pi CM5 + Raspberry Pi CM5 IO Board + **ED-CM5ACOOLER**
Software Configuration	CPU 4 cores running at full load via sysbench	
Ambient Temperature	25˚C	
Stable running temperature of CPU (˚C)	84.3	57.6
Test Results: Under the environment of 25˚C, when the device is running in a stable state, ED-CM5ACOOLER can reduce the temperature of Raspberry Pi CM5 CPU by 27˚C, allowing the Raspberry Pi CM5 CPU run continuously at its maximum mains frequency (2400MHZ).		

Temperature-controlled Blower	
Input voltage	5V DC (3.5~5.5V) supplied via four-pin fan header on a motherboard
Start voltage	≥ 3.5V (POWER ON/OFF)
Power consumption	0.75W
Rated current	0.15 ± 0.02A
Fan speed control	Pulse width modulation control with tachometer
Maximum fan speed	8000 RPM ± 15% (At 25˚C, after 3~5 minutes rotating)
Maximum airflow	1.09 CFM
Noise	27.7dB

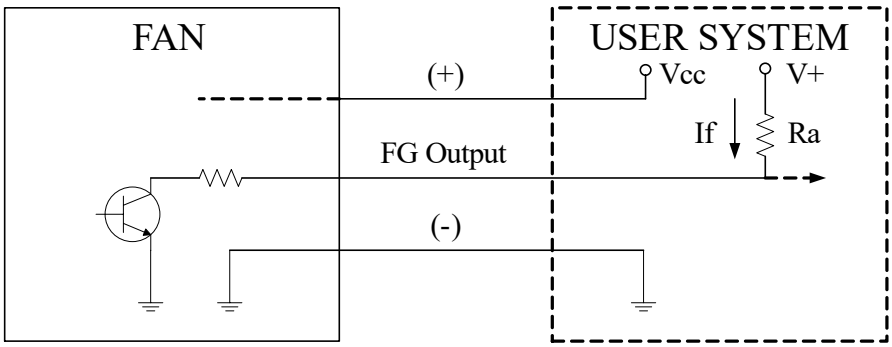
Mechanical Characteristics	
Dimensions	56.5mm x 41mm x 14.1mm (WxDxH)
Weight	About 31g
Material	Aluminium Profile

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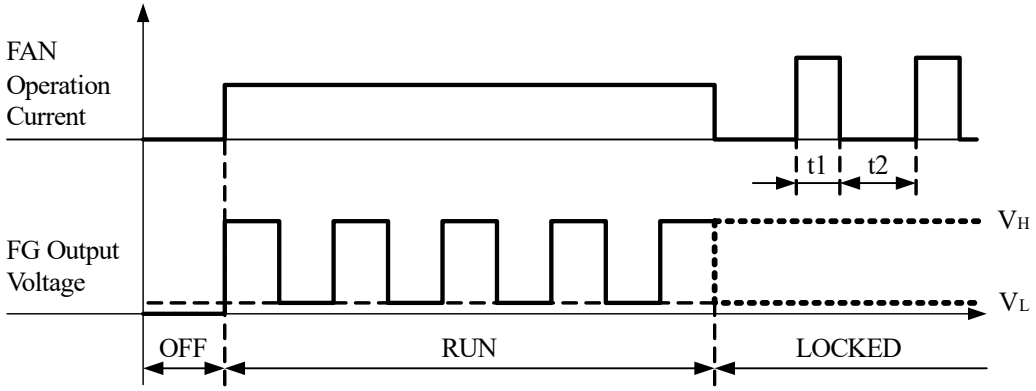
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Frequency Generator (FG) Signal for Temperature-controlled Blower

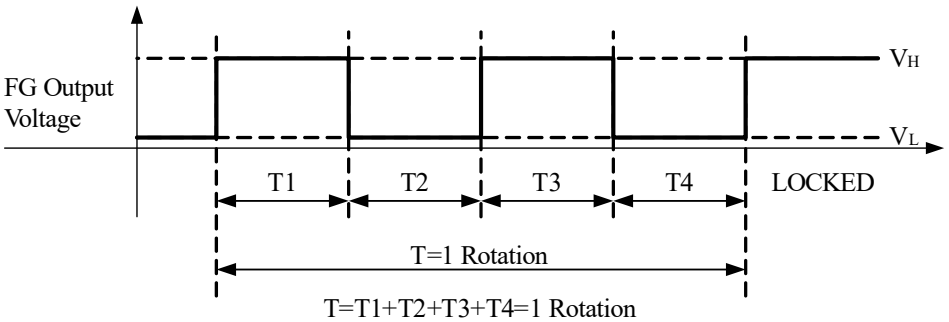


*Ra≥V+/If(max)



Electrical Characteristics: (at Ta=25℃, Vcc=Rated Volt.)

Parameter	Ratings			Unit
	Min	Typical	Max	
FG Supply Voltage (V+)	--	--	5.5	Voltage
FG Output Current (If)	--	--	5	mA
FG Output (V_L)	--	--	0.5	Voltage
FG Output (V_H)	--	V+	--	Voltage



T=T1+T2+T3+T4=1 Rotation

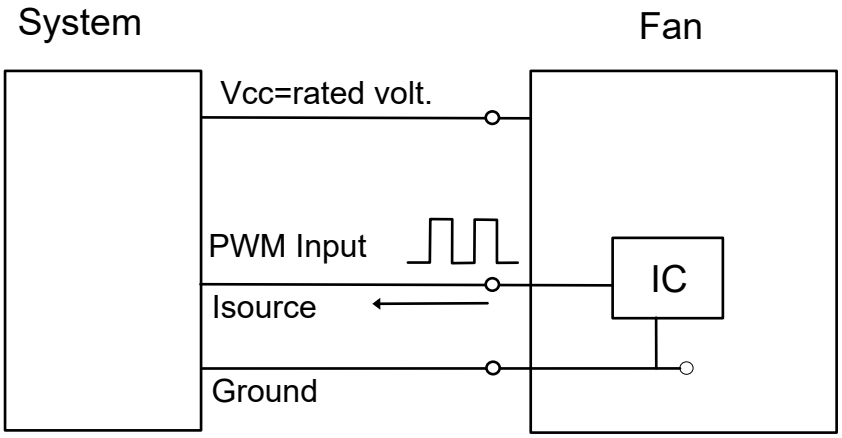
$$T=\frac{60}{rpm}$$

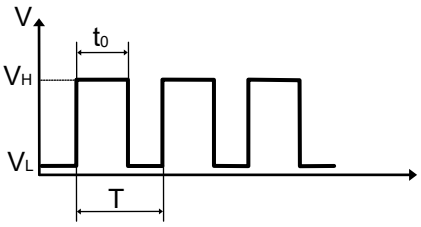
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PWM Control Signal for Temperature-controlled Blower





1. PERIOD: $T = 1/f_{PWM}$

2. Duty Cycle = t_0/T

Parameter	Min	Typical	Max	Unit
f_{PWM}	15K	25K	50K	Hz
V_H	2.5	--	5	V
V_L	0	--	0.8	V

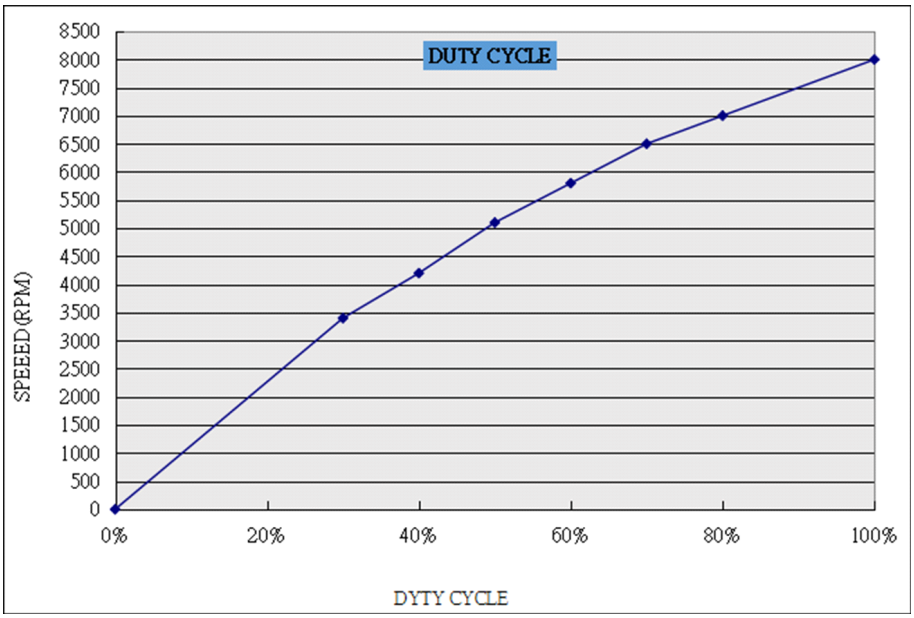
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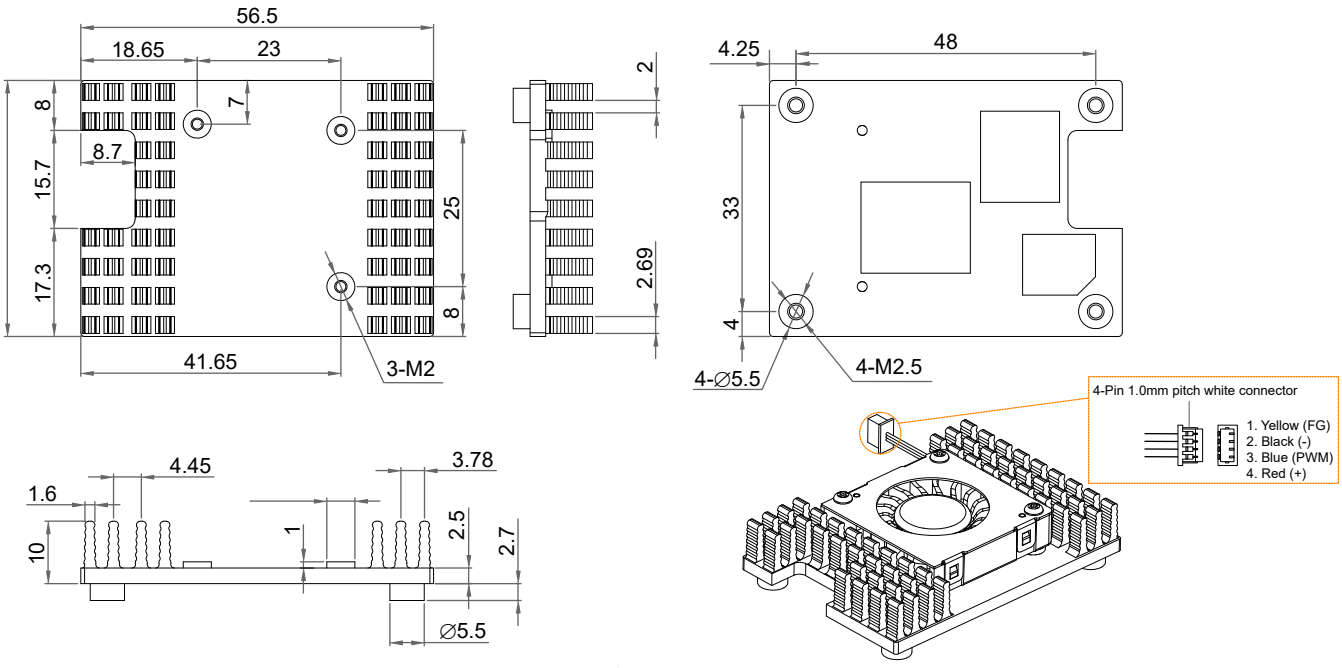
PWM Test Record for Temperature-controlled Blower

8000 RPM PWM TEST RECORD			
DUTY CYCLE	SPEED (RPM)	RANGE	CURRENT (mA)
0%	0	±0	0±0
30%	3400	±800	19±5
40%	4200	±800	30±5
50%	5100	±800	45±10
60%	5800	±800	61±20
70%	6500	±800	80±20
80%	7000	±800	124±20
100%	8000	±800	150±20



Dimensions

Unit: mm



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Ordering Code

P/N: **ED-CM5ACOOLER**

Configuration: Black Active Cooler for Raspberry Pi CM5

Packing List

- 1 x ED-CM5ACOOLER
- 1 x Accessory Set (With 4 x M2.5*8 screws, 4 x M2.5*H1.5 nylon gaskets and 4 x M2.5*H3 nylon gaskets)

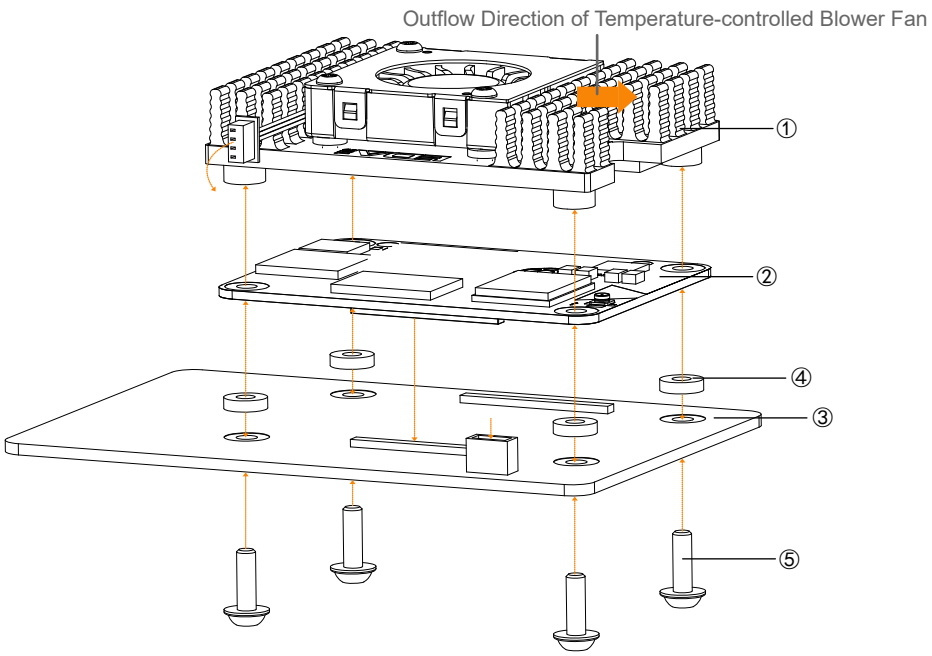
Installation

There are two ways to install ED-CM5ACOOLER, you can insert Raspberry Pi CM5 first or place nylon gaskets first.

Installation 1

Parts list:

NO.	Name	Quantity (PCS)
①	ED-CM5ACOOLER	1
②	Raspberry Pi CM5 (Not provided)	1
③	Motherboard (Not provided)	1
④	M2.5*H1.5 or M2.5*H3 nylon gaskets	4
⑤	M2.5*8 Screws	4



Note:

- Before you start installing, please remove the White Protective Paper from thermal silicone in the ED-CM5ACOOLER.
- Before you start installing, please make sure that the height of Raspberry Pi CM5 connector is 1.5mm or 3mm.
  If the height is 1.5mm, you need select 4 M2.5*H1.5 nylon gaskets to install ED-CM5ACOOLER.
  If the height is 3mm, you need select 4 M2.5*H3 nylon gaskets to install ED-CM5ACOOLER.
- If you need to design a case, it is recommended that the heat sink holes in the case are close to air outlet of the temperature-controlled blower fan on the ED-CM5ACOOLER.

Steps:

1. Place 4 M2.5*H1.5 nylon gaskets or 4 M2.5*H3 nylon gaskets in the four screw hole positions on the **Motherboard**.
2. Insert **Raspberry Pi CM5** into **Motherboard** through the connector.
3. Place the **ED-CM5ACOOLER** on the **Raspberry Pi CM5**, align the 4 screw holes and insert 4 M2.5*8 screws from the bottom of the **Motherboard**. Tighten them clockwise using a screwdriver to install the **ED-CM5ACOOLER** onto the **Raspberry Pi CM5**.
4. Plug the power cable of temperature-controlled blower into the FAN connector on the **Motherboard**.

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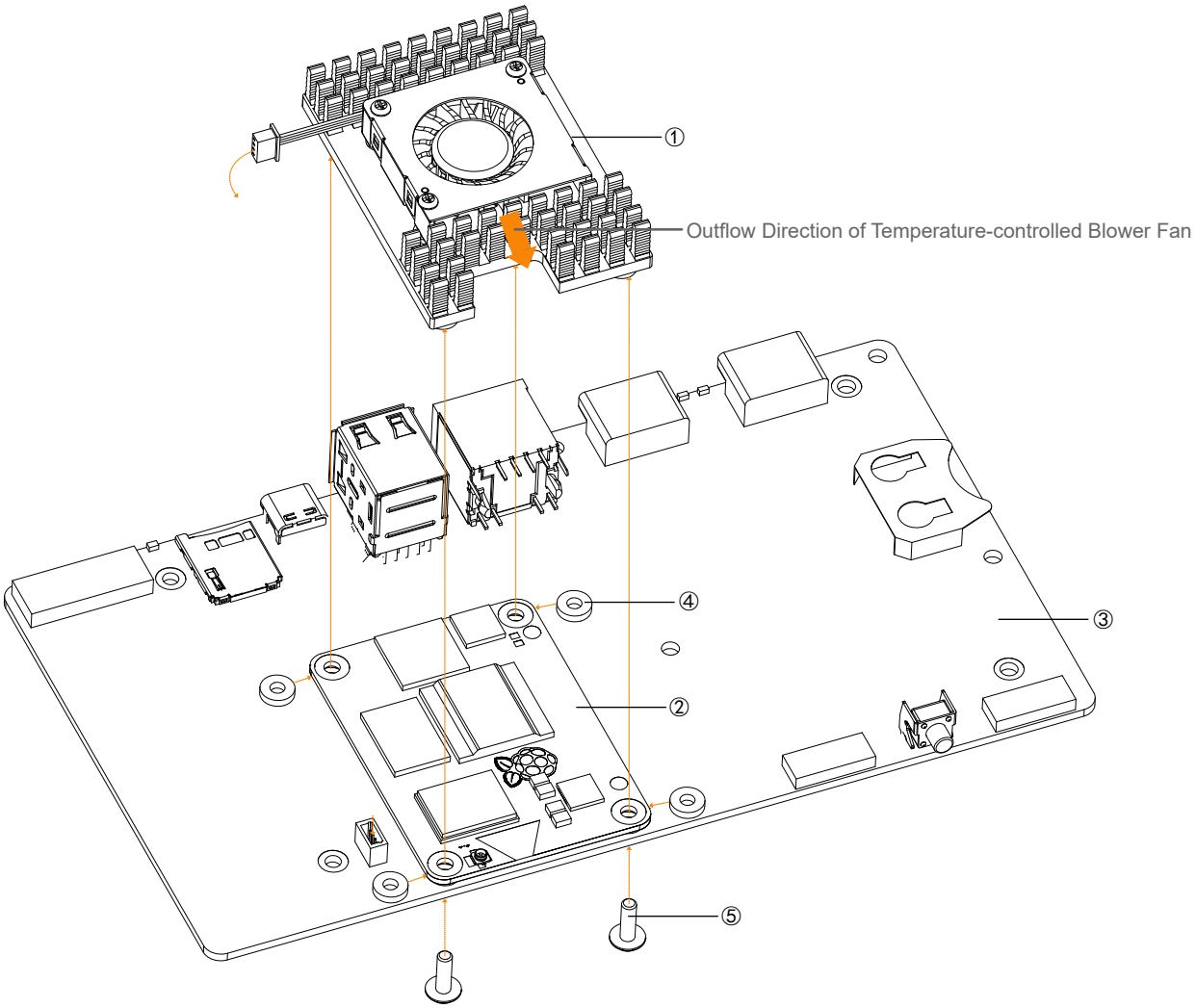
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Installation 2

Parts list:

NO.	Name	Quantity (PCS)
①	ED-CM5ACOOLER	1
②	Raspberry Pi CM5 (Not provided)	1
③	Motherboard (Not provided)	1
④	M2.5*H1.5 or M2.5*H3 nylon gaskets	4
⑤	M2.5*8 Screws	4



Note:

- Before you start installing, please remove the White Protective Paper from thermal silicone in the ED-CM5PCOOLER.
- Before you start installing, please make sure that the height of Raspberry Pi CM5 connector is 1.5mm or 3mm.
  If the height is 1.5mm, you need select 4 M2.5*H1.5 nylon gaskets to install ED-CM5PCOOLER.
  If the height is 3mm, you need select 4 M2.5*H3 nylon gaskets to install ED-CM5PCOOLER.
- If you need to design a case, it is recommended that the heat sink holes in the case are close to air outlet of the temperature-controlled blower fan on the ED-CM5ACOOLER.

Steps:

1. Insert **Raspberry Pi CM5** into **Motherboard** through the connector.
2. Place 4 M2.5*H1.5 nylon gaskets or 4 M2.5*H3 nylon gaskets in the four screw hole positions between the **Raspberry Pi CM5** and the **Motherboard**.
3. Place the **ED-CM5ACOOLER** on the **Raspberry Pi CM5**, align the 4 screw holes and insert 4 M2.5*8 screws from the bottom of the **Motherboard**. Tighten them clockwise using a screwdriver to install the **ED-CM5ACOOLER** onto the **Raspberry Pi CM5**.
4. Plug the power cable of temperature-controlled blower into the FAN connector on the **Motherboard**.