

# M5Stack Module-FAN I2C Protocol

V1 (FW Version)

2024/11/28

REG MAP (Addr: 0x18)		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	note
Fan control	0x00 R/W	Control status															Control status: Fan working state 0: disable 1: enable default: 1	
PWM frequency	0x10 R/W	Frequency															Frequency: PWM frequency 0: 1KHz 1: 12KHz 2: 24KHz 3: 48KHz default: 2	
PWM duty cycle	0x20 R/W	Duty cycle															Duty cycle: Duty cycle value: 0~100 default: 0	
Fan RPM	0x30 R	Speed-L	Speed-H															Speed: Fan speed per minute value: 0~(11500±10%)
Fan signal frequency	0x40 R	Frequency-L	Frequency-H															Frequency: Fan output pin frequency
Flash write back	0xF0W	Write back															write 1, write back	
Firmware Version	0xF0 R															Version	Version: Software version number	
I2C Address	0xF0 R/W															Address	Address: I2C device address value: 0x08-0x77 default: 0x18	

## Register Description

1. Fan Control: Configures the working state of the fan, with the default state set to "on".
2. PWM Frequency: Configures the frequency of the PWM signal output, with the default value set to 24kHz.
3. PWM Duty Cycle: Configures the duty cycle of the PWM signal output, which is used to adjust the fan speed.
4. Fan RPM: Reads the fan's rotational speed (RPM, i.e., rotations per minute).

Formula: Fan RPM = 60 × (Fan signal frequency / Pulse count)

Note:  
Fan RPM indicates the number of rotations the fan makes per minute.  
Fan signal frequency is the signal frequency from the fan output pin.  
Pulse count represents the number of pulses generated by the fan per full rotation (2 pulses per rotation in this case).

5. Fan Signal Frequency: Reads the signal frequency of the fan output pin.
6. Flash Write Back: Writing a 1 to this register saves the configuration information to internal Flash.

Configuration content includes:

Fan control  
PWM frequency  
PWM duty cycle

7. I2C Address: Sets the I2C address. The address setting takes effect immediately and is saved to the internal Flash, persisting even after power-off.

## Notes

1. When writing to Flash, the internal Flash must first be erased, which can take about 20ms.
2. To extend the Flash lifespan, avoid frequent writes.
3. If the value to be written is the same as the current value stored in the internal Flash, the actual write operation will not be performed, reducing unnecessary Flash erase cycles and further extending its lifespan.