PWM Temperature Control DC Fan Speed Governor

Model: JPF4816

User Guidev3.0

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Version Information:

Version	Main Changes	Date
V1.00	Initial version	2017-09
V1.10	Model change, changing the original JPF4846 to JPF4816	2018-08
V2.00	Cancel the buzzer alarm function	2019-02
V2.01	Optimized for detailed description	2021-05
V3.00	Add fan speed detection, PWM frequency related description	2022-10

1. Functional Overview:

Industrial-grade technical solution, using ARM core single-chip microcomputer as the main control chip, with a temperature display frame, which can be directly embedded in the panels of various chassis and cabinets. The governor controls the speed of the fan through the detected temperature. The higher the temperature, the higher the speed. The faster it is, when the temperature is lower than the starting temperature, the fan will stop or maintain the minimum speed. When it is higher than the starting temperature, the fan will run at low speed. When the temperature is high, the fan will run at full speed, and when the temperature starts to drop, the fan speed will also drop automatically, so as to work in a cycle;

The speed controller supports RS485 serial port communication. Through the serial port protocol, the speed of the fan can be controlled, and the parameters/status of the speed controller can be configured/queried. The serial port commands follow the modbus-rtu protocol, and the speed of the fan can be adjusted from 0-100%.

2. Product Performance/Technical Parameters

1. Industrial-grade solution, using ARM core series single-chip microcomputer as the main control chip, with stable performance

2. Wide voltage design, support 12V/24V/48V 4-wire PWM fan/motor direct access, maximum drive current 6A

3. With LED indication, visually indicate the working status of the governor

4. Power supply anti-reverse connection protection design, the power supply reverse connection will not burn the board

5. The start-up and full-speed temperature can be set freely, and it supports two working modes: minimum speed and shutdown fan

6. Support fan fault detection, and fan fault NPN signal output

7. Standard modbus-rtu protocol, support RS485 serial port to set various parameters and query fan status

8. RS485 serial port TVS anti-surge design, serial port parameters default to 9600bps, 8, N, 1

9. Fan power management, 100% shutdown of all 4-wire fans

10.PWM output frequency adjustable, amplitude 5V

11. Temperature measurement range: -10~99℃,

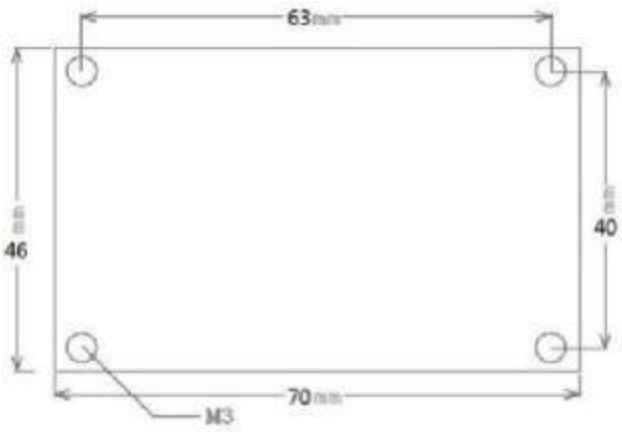
12. Temperature measurement accuracy: ±1°C

13. Working temperature range: -30~80℃

14. Support fan speed detection

3. Product Dimensions

3.1, Motherboard: 70mm*46mm; Mounting Hole Size: 63mm*40mm



3.2, Display: 79mm*42mm*26mm; Installation Opening 76mm*40mm

4.Terminal Introduction&Interface Description

No. 1: Governor power supply + pole interface

No. 2: Speed governor power supply - pole interface

No. 3: RS485 serial port A / D+; Terminal 4: RS485 serial port B / D-

No. 5 is connected to fan power supply -, No. 6 is connected to fan power supply +, No. 7 is connected to fan speed signal, No. 8 is connected to fan PWM control line

*No. 5~8 are mainly for the convenience of fan wiring without plugs, and they are straight through with the 4 pins of the 14th interface

No. 9: Fan fault signal OC output port (NPN output interface) (*see the end of the article for instructions)

No. 10: GND

No. 11: Display board port

No. 12: Temperature probe port

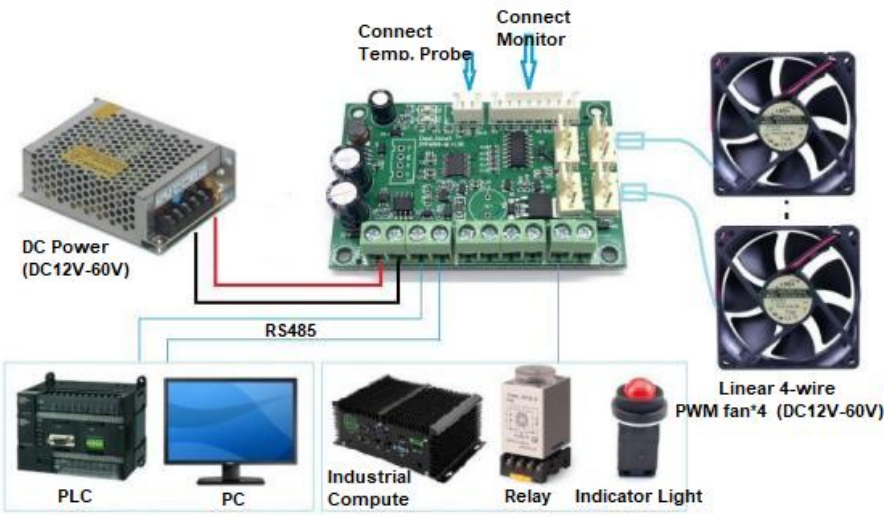
No. 13: LED indicator light, POW is the power indicator light of the whole machine, PWM is the fan control indicator light

No. 14~17: 4 fan ports, standard KF2510-4P socket, (P=PWM, S=Sensor/FG, FV+, FV-)

***Schematic diagram of full-function wiring**: (Some functions may not be used, just ignore the wiring In actual use.)

*The voltage of the DC power supply must be consistent with the rated voltage of the fan connected, and the output current must be greater than the sum of the fan current

*Try not to plug and unplug the fan while the power is on

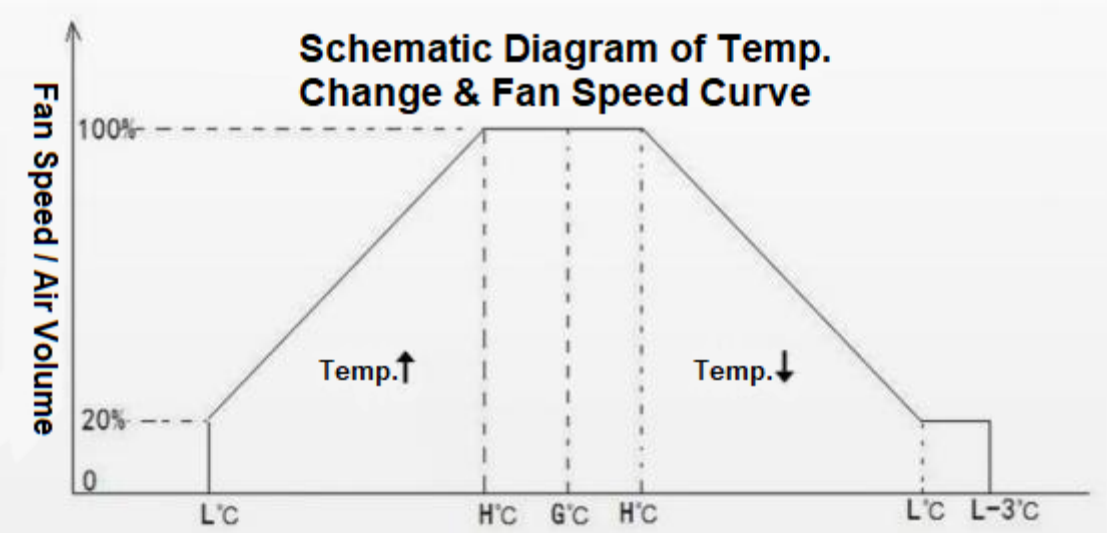


5. Basic instruction

5.1 Connect the wiring according to the interface description

5.2 After the power supply is normal, the POW light on the main board will light up. At this time, the governor starts to detect the current temperature, and adjusts the speed of the fan according to the currently set temperature range. Take the factory default temperature range of the governor as an example. The default temperature range of the controller is L=30°C~H=50°C. When the current temperature is detected to be greater than or equal to 30°C, the governor will adjust the fan speed according to a linear ratio. When the temperature rises, the fan speed will also increase. When the temperature When ≥50℃, the fan becomes full speed. When the temperature drops to ≤27°C (L-3), the governor keeps the fan at minimum speed and/or turns off the fan.

Fan Speed & Temp. Relationship Diagram:



•"L" in the above figure is the starting temperature of the fan, and "H" is the full speed temperature of the fan, both of which can be set freely

•"G" is a high temperature value ≥ H, only for temperature change indication

6. Instructions for digital panel operation

The digital panel displays the current temperature in real time, with 4 buttons, through which all parameters of the governor can be set

In standby mode, press the “MODE” button to enter the configuration/switching parameter item, press the t key to adjust the value during configuration, and press the “OK” to confirm

*When setting parameters, every time you set a parameter (change the parameter value), you must press “OK” once to confirm, and then set the next item.

The parameter items are as follows:

Digital Code	Parameter Definition	Parameter Description
Lxx	Fan Starting Temp.	Set the start (lower limit) temp. value of the fan Setting range: 1~99℃
Hxx	Fan Full speed Temp.	Sets the fan's full speed (upper limit) temp. value Setting range: 1~99℃, the value of H must be greater than the value of L
Axx	MODBUS Address	Set the address of the 485 serial MODBUS protocol of the governor Setting range: 1~254
Pxx	Operating Mode	Set the working mode of the governor When the ambient temp. ≤ fan start temp. L-3°C, use this parameter to set the governor to control the fan off or maintain the fan at the minimum (20%) speed) Setting range: 01 means to maintain the minimum speed, 00 means to turn off the fan
Fxx	Fan Quantity	Set the number of fans connected to the speed controller The value of this parameter must be consistent with the number of fans actually connected, and when connecting the fans, the fans must be connected in the order of FAN1~FAN4. If the setting is 01, the fan must be connected to the fan1 port when the fan is actually connected. If the setting is 02, the two fans must be connected to fan1 and fan2 when actually connecting fans. By analogy, if it is not connected according to this requirement, it will cause an error in the fan fault detection function. Setting range: 0~4 (when it is set to 0, it means that the fan fault detection function is not enabled)

*Take setting the fan start and full speed temperature as an example

In standby mode, the panel displays the current temperature value, press the “MODE” button once, the digital tube displays “Lxx”, “L” represents the starting temperature, and “xx” represents the currently set temperature value;
Press the up and down keys to adjust the parameter value. After the adjustment is completed, press the “OK” key to confirm and return to the standby interface.

In standby mode, press the “MODE” twice, the digital tube will display “Hxx”, “H” represents full speed temperature, “xx” represents the current set temperature value, press the up and down keys to adjust the parameter value, after the adjustment is completed, press the “OK” to confirm.

After the setting is completed, the governor will automatically control the speed of the fan according to the newly set temperature parameters.
The settings of other parameters are similar to the above steps.

*The above parameters can be configured/queried by RS485 serial port in addition to the buttons can be used to set

- Order (Version) Information

JFP4816-J	Basic Standard Version: with display, without RS485 serial port
JFP4816-JL	Basic Economical Version: without display, without RS485 serial port
JPF4816-G	Advanced Standard Version: with display, with RS485 serial port
JPF4816-GL	Advanced Economical Version: without display, with RS485 serial port