

ZF系列数显调速器

ZF Series Digital Speed Controller

使用说明书

Operation Instruction



致用户：To Users:

感谢您购买并使用本产品，为保证安全及正确操作，在使用前请务必仔细阅读此说明书。

Thanks to purchase and use the product, in order to ensure safe and correct operation, please read this instruction before usage.

1 功能及特点 Functions & Features

- 采用MCU数字控制技术，功能丰富，性能优异；
Multi-function and high performance of MCU digital control technology;
- 采用数显菜单式选项，修改设定方便快捷；
Easy setting with digital display of menu;
- 可根据用户显示需要设定显示倍率，自动换算显示目标值；
Shown target value can be adjusted through magnification setting;
- 可实现缓慢加速、缓慢减速；
Slow acceleration & deceleration are capable;
- 可面板操作、外接开关控制；
External keyboard and switch are available;
- 面板旋钮自动匹配最高转速，调速控制方便、安全；
Easy and safe speed controlling and function of adjusting motor speed deviation;
- 内置运行电容；
Built-in run capacitor;
- 自动识别输入电源频率；
Automatically recognize input power frequency;
- 堵转功能保护，防止电机、调速器因堵转烧坏。（此功能可保护堵转过载，但无法保护非堵转过载）
Locked rotor protection to protect motor or speed controller to be burned due to locked rotor.

2 面板介绍 How to Read

- 数显面板式 Digital Display Panel Type:

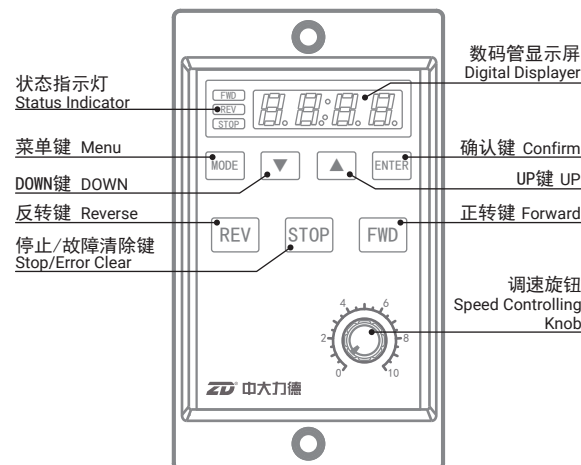
ZF □ □ □ C

名称代号
Name Code

电机输出功率
Motor Input Power

电压Voltage
C:单相220V±10%
A:单相110V±10%
C:Single Phase 220V±10%
A:Single Phase 110V±10%

电机机座号
Motor Frame Size
2: 60mm*60mm
3: 70mm*70mm
4: 80mm*80mm
5: 90mm*90mm
6: 104mm*104mm

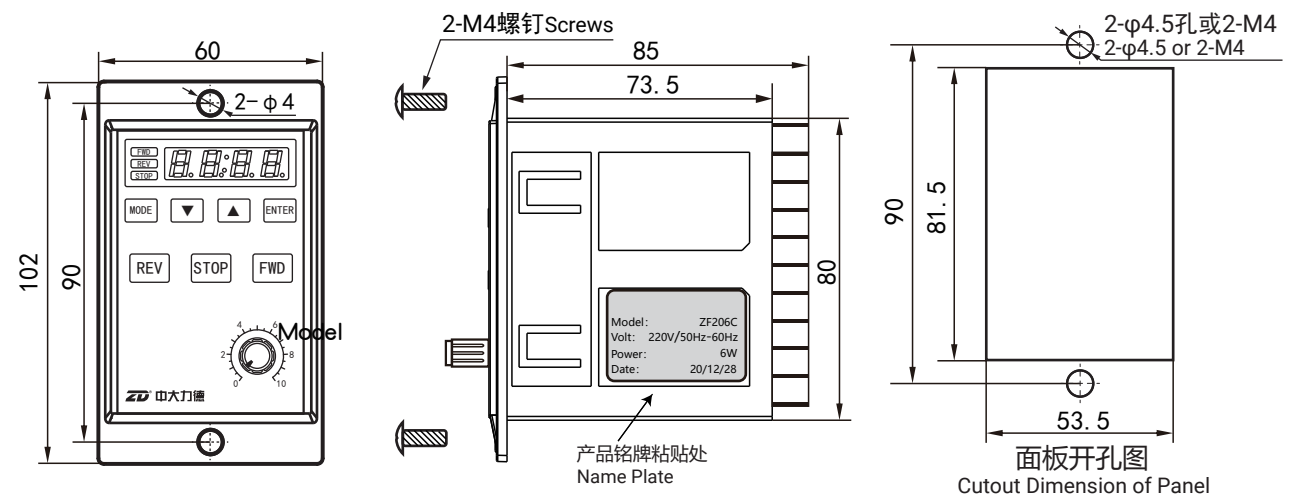


3 型号/性能参数表 Model Number/Function Specifications Table

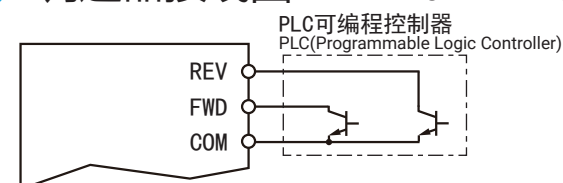
型号 Model Number	ZF206C(A)	ZF315C(A)	ZF425C(A)	ZF540C(A)	ZF560C(A)	ZF590C(A)	ZF5120C(A)	ZF6120C(A)	ZF6140C	ZF6200C
适用电机功率 Applicable Motor Power	6W	15W	25W	40W	60W	90W	120W	120W	140W	200W
使用电机类型 Applicable Motor Type	调速电机 Speed Control Motor									
安装方式 Installation Method	数显面板式 Digital Display Panel Type									
调速方法 Speed Control Methods	面板“▲”“▼”按键；面板旋钮 Button on Panel; Knob on Panel									
运行电容 Run Capacitor	内置（内置于调速器内） Built-in Type									
调速范围 Speed Control Range	50Hz 90-1400r/min; 60Hz 90-1700r/min									
输入电源 Input Power	单相 110V±10%/单相 220V±10%; 50Hz-60Hz Single Phase 110V±10%/Single Phase 220V±10%; 50Hz-60Hz									
使用环境 Usage Environment	-20℃~+40℃（无冻结），85%以下（无结露） -20℃~+40℃(No freezing), Less than 85%(No condensation)									

4 外形及安装 Outline & Installation

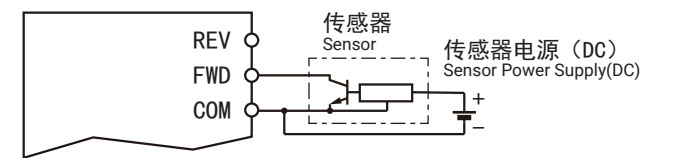
单位Unit:mm



5 调速器接线图 Wire Diagram of Speed Controller



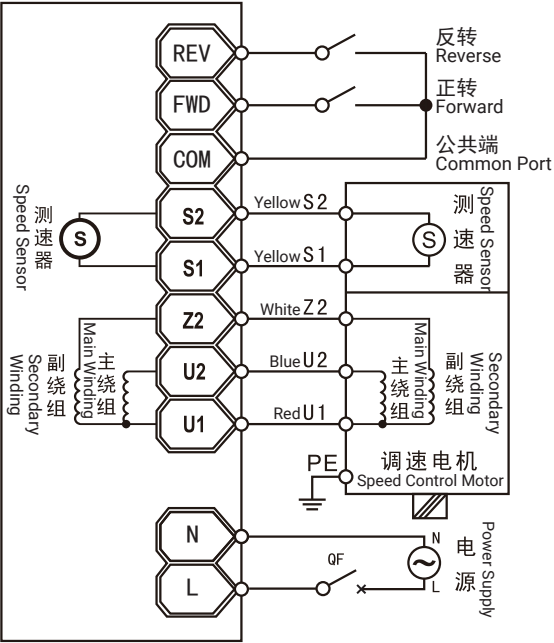
- FWD、REV采用PLC可编程控制器控制
PLC输出方式：NPN或漏型晶体管输出；
菜单设置：运转控制模式F-03改为“2”或“3”
外接开关控制。



- FWD、REV采用传感器控制（光电开关等）
开关输出方式：三线式NPN晶体管输出；
菜单设置：运转控制模式F-03改为“2”或“3”
外接开关控制。

● FWD/REV is controlled by PLC

PLC Output Method: NPN or drain transistor output;
Menu Setting: Change the Operation Control Mode F-03 into
“2”or “3”
Controlled by external switch.



● 电源 Power Supply

电源电压必须与调速器电源电压规格一致。
QF为断路器，发生短路时保护调速器和调速电机。
The voltage of the power supply should be the same with that of
a speed controller.
QF is a circuit breaker, it can protect the speed controller and the
motor in case of short-circuited.

● FWD/REV is controlled by sensor(Photoelectric switch etc.)

Switch Output Method: 3-wire type NPN transistor output;
Menu Setting: Change the Operation Control Mode F-03 into “2”or “3”
Controlled by external switch.

● 旋转方向控制 Rotation Direction Control

1. 菜单设置：运转控制模式F-03改为“2”或“3”
外接开关控制。
1. Menu Setting: Change the Operation Control Mode F-03 into “2”or “3”
Controlled by external switch.
2. 若需电机正转，将“FWD”与“COM”连接；
若需电机反转，将“REV”与“COM”连接。
2. If forward (motor), connect “FWD” and “COM”;
If reverse (motor), connect “REV” and “COM”.

● 电机选型 Motor Selection

调速电机的功率必须与调速器适用电机功率一致，
请注意调速器型号标签功率是否与电机功率一致。
The power of a speed control motor should be the same with that of a
speed controller. Pay attention to the power on model No. of the speed
controller and make sure that it is same with the power of a motor.

电源电压 Power Supply	电机功率 Motor Power	QF电流规格 QF Current Specifications
220V	6-90W	1A
220V	120-200W	2A
110V	6-90W	2A
110V	120W	4A

6 调速器菜单 Speed Controller Menu

● 功能码列表（R/W：可读/写；R0：只读）：
Function Codes Table (R/W: Readable/Writable; RO: Read Only) :

功能码 Function Code	名称 Name	参数详细说明 Detailed Parameter Description	设定范围 Setting Range	缺省值 Default Value	更改 Change
F-01	显示内容 Shown Content	1: 电机转速设定值 1: Motor Speed Setting Value 2: 倍率转速设定值 2: Magnification Speed Setting Value	1~2	1	R/W
F-02	倍率设定 Magnification Setting	倍率值1.0~999.9 倍率转速设定值=电机转速设定值/倍率 Magnification Value 1.0~999.9 Magnification Speed Setting Value=Motor Speed Setting Value/Magnification	1.0~999.9	1.0	R/W
F-03	运转控制模式 Operation Control Mode	1: 操作面板控制 1: By Operation Panel 2: 外接开关控制，面板STOP键无效 2: By External Switch, STOP Button on Panel is invalid 3: 外接开关控制，面板STOP键有效 3: By External Switch, STOP Button on Panel is valid	1~3	1	R/W

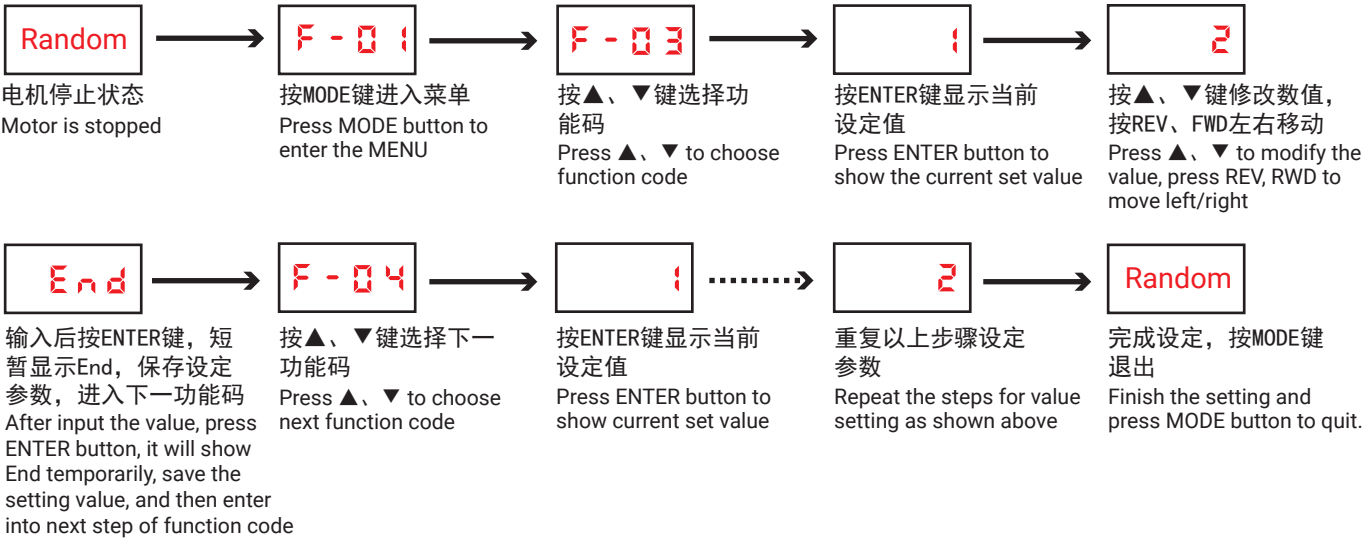
F-04	旋转方式 Rotation Mode	1: 允许正反转 1: Allow to Forward and Reverse 2: 允许正转，禁止反转 2: Allow to Forward, disallow to Reverse 3: 允许反转，禁止正转 3: Allow to Reverse, disallow to Forward	1~3	1	R/W
F-05	旋转方向 Rotation Direction	1: 不取反 1: No Converse 2: 取反 2: Converse	1~2	1	R/W
F-06	调速方式 Speed Control Mode	1: 面板UP/DOWN按键调速 1: UP/DOWN Button Speed Control on Panel 2: 面板旋钮调速 2: Knob Speed Control On panel	1~2	1	R/W
F-07	最高转速 Max Speed	F-08（最低转速）~1700；限制最高转速，防止超速， 发生损坏（50Hz:1400；60Hz:1700） F-08(Min.Speed)~1700;Limit Max.Speed (exceed the limitation) to Protect it from Damage(50Hz:1400;60Hz: 1700)	F-08~1700	1400	R/W
F-08	最低转速 Min. Speed	90~F-07（最高转速） 限制最低转速，防止过低转速运行导致电机不稳定 90~F-07(Max Speed) Limit Min. Speed to protect it from unstable motor running	90~F-07	120	R/W
F-09	正转启动加速时间 Start-up Acceleration Time for Reverse Rotation	0.1~10.0秒 0.1~10.0s	0.1~10.0	1.0	R/W
F-10	正转停止方式 Stop Method for Forward Rotation	1: 自由停止 1: Free Stop 2: 减速停止 2: Decelerate to Stop	1~2	1	R/W
F-11	正转停止减速时间 Stop Deceleration Time for Forward Rotation	0.1~10.0秒（F-10=2时有效） 0.1~10.0s(When F-10=2 is valid)	0.1~10.0	1.0	R/W
F-12	反转启动加速时间 Start-up Acceleration Time for Reverse Rotation	0.1~10.0秒 0.1~10.0s	0.1~10.0	1.0	R/W
F-13	反转停止方式 Stop Method for Reverse Rotation	1: 自由停止 1: Free Stop 2: 减速停止 2: Decelerate to Stop	1~2	1	R/W
F-14	反转停止减速时间 Stop Deceleration Time for Reverse Rotation	0.1~10.0秒（F-13=2时有效） 0.1~10.0s(When F-13=2 is valid)	0.1~10.0	1.0	R/W
F-15	电源频率设定 Power Supply Frequency Setting	1: 驱动器自动检测 1: Driver Self-detection 2: 电源频率50Hz 2: Supply Power Frequency 50Hz 3: 电源频率60Hz 3: Supply Power Frequency 60Hz	1~3	1	R/W
F-16	恢复出厂设置 Reset	1: 不恢复 1: Do not Recover 2: 恢复 2: Recover	1~2	1	R/W
F-17	当前适配电源频率 Current Adaptive Power Frequency	50: 适配50Hz交流电源 50: Adapt to 50Hz AC Power Supply 60: 适配60Hz交流电源 60: Adapt to 60Hz AC Power Supply	50,60	**	RO
F-18	程序版本 Program Version			***	RO

故障维护和状态显示：
Trouble-shooting & Status:

	名称 Name	原因 Cause	处理方法 How to Solve
故障码 Error Code	E.LOC	电机堵转故障 Motor Rotor Locked Error	检查调速器与电机的连接；检查机械故障；按STOP键复位 Check the connection of speed controller and motor; check mechanical error; press STOP button to rest
	E.EEP	参数存储故障 Data Saving Error	重新上电解除警报 Re-power to clear the alarm
提示码 Prompt Code	S.run	电机当前处于运行状态，禁止修改功能码 Motor is running, any modification code is prohibited.	按STOP键停机后修改 Press STOP button and then modify
	S.not.	该按键当前处于无效状态 Function of the button is currently invalid.	修改F-03、F-04或F-06功能码 Modify F-03/F-04 or F-06 function code
	S.Err	驱动器当前处于故障状态 Driver is currently having an error.	清除故障后重试 Clear the error and re-start
	S.loc	按键当前处于上锁状态 The button is locked.	同时按下 DOWN 和 ENTER 键解锁 Press both DWON and ENTER buttons at same time

7 菜单修改 MENU Change

- 为保证安全，请在电机停止的状态下进行修改，运行状态下不可修改。
For safety, please stop the motor and then modify. Modification is not allowed when the motor is running.



注：在驱动器处于运行或者停机界面时，同时按下MODE和ENTER两个按键，按键将处于上锁状态，按键不再具有控制电机或者进入菜单等功能；同时按下DOWN和ENTER两个按键，可以解除按键上锁状态，恢复按键功能。

Note:When the driver is running or stopping, press MODE and ENTER buttons at the same time, the buttons will be locked and won't have the functions to control the motor or enter the MENU etc.;and then press MODE and ENTER buttons at the same time, it will release the lock.

8 使用须知 Usage Instructions

- 请勿在爆炸性环境、易燃性气体环境、腐蚀性环境以及容易沾上水的场所或可燃物周围使用。
Do not use in explosive environments, flammable gas, corrosive environments and anywhere easy to get wet or around combustibles.
- 避免连续振动、过度冲击。
Avoid continuous vibration or over-impact.
- 电机在正常运转状态下，有时电机外壳表面的温度可能会超过70℃。因此在可能触及电机的使用环境下请用户自行加贴下图所示的警告标志！
Under normal operation of the motor, sometimes the surface temperature of the motor case will exceed 70℃, therefore, please paste a warning notice (refer to the drawing below) in case people may touch the motor!



- 电机不允许长时间低转速过负载的情况下连续运行。
No continuously long-time running of the motor under the condition low speed and overload.
- 请务必将接地端子接地。
Do earthing.
- 安装、连接、检查等作业须由专业技术人员进行。
Installation, connection and inspection should be done by professional engineers.