# SK Series Built-in SPEED CONTROLLER

CE

## Feature

○ Using MCU digital control technology, abundant functions and excellent peformance.
○ Using digital display of menu options, more convenient to modify and set.
○ Based on user's display requirement to set display ratio, automatic conversion and display target value.
○ Able to achieve slow acceleration and slow deceleration.
○ Able to achieve panel control and external switch control.
○ Panel knob automatic matching with the highest speed, more convenience and safety to adjust and control
○ Locked-rotor protection function, prevent motor and speed controller to be burn out for locked-rotor. (This function is to protect the overload by locked-rotor, but it can not protect the overload by unlocked-rotor)

## Model

| Sort / Voltage / Power of Motor | SF Series Panel Speed Controller | | SK Series Built-In Speed Controller | |
|---|---|---|---|---|
| | 220V | 110V | 220V | 110V |
| 6W | SF06E | SF06A | SK200E | SK200A |
| 15W | SF15E | SF15A | | |
| 25W | SF25E | SF25A | | |
| 40W | SF40E | SF40A | | |
| 60W | SF60E | SF60A | | |
| 90W | SF90E | SF90A | | |
| 120W | SF120E | SF120A | | |
| 200W | SF200E | SF200A | | |

## Name Code

### ○ Panel type

SF □ □ E □

- SF — Series
- □ □ — For YT Motor Power (W) 6W . . 200W
- E — Power supply Voltage E( Single-Phase 220V) A(Single-Phase 110V)
- □ — Derivative code

### ○ Built-In type

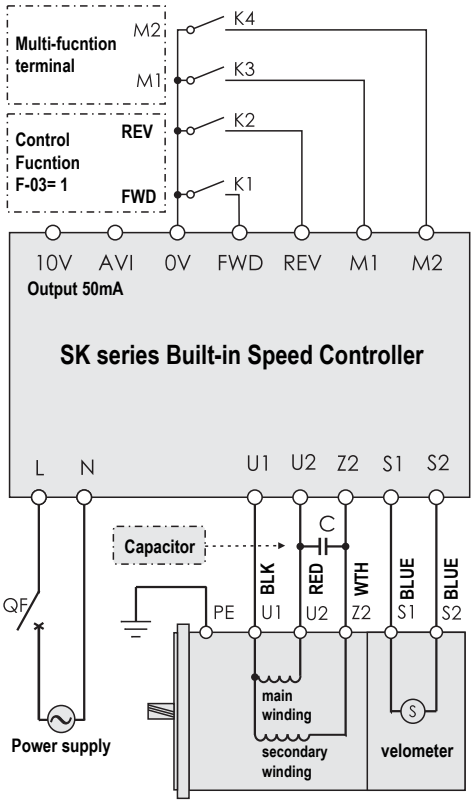
SK 200 E □

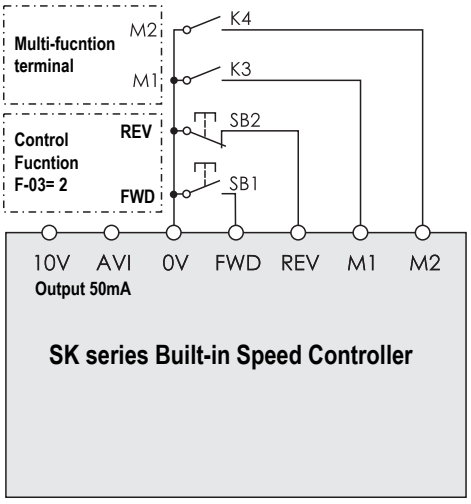
- SK — Series
- 200 — For YT Motor Power (W) 6W . . 200W
- E — Power supply Voltage E( Single-Phase 220V) A(Single-Phase 110V)
- □ — Derivative code

## Specifications

| Model | SF□□E | SF□□A | SK200E | SK200A |
|---|---|---|---|---|
| Type | PANEL | | BUILT - IN | |
| Supply Voltage | Single-phase 220V | Single-phase 110V | Single-phase 220V | Single-phase 110V |
| Freq | 50/60Hz | | | |
| Motor | YT series Variable Speed Motor | | | |
| Capacitor | Built-in speed controller | | Built-out speed controller (need connect) | |
| Motion control fucntion | Panel or external switch motion control, speed adust, slow acceleration, slow deceleration | | Extenal switch motion control, speed adjust, slow acceleration, slow deceleration, fast stop. 4 segments speed | |
| Speed adj method | Panel "▲ " or "▼ " Key, Panel Knob | | Panel "▲ " or "▼ " Key, Panel Knob, 0-10V analog Voltage | |
| Speed Range | 90-3000 r/min (Users can according to the motor's pole. power frequency. use requirement to set | | | |
| Operation Ambient | Ambient Temperature: -10ºC ~ +45ºC (No Freezing), Ambient Humidity: Less than 85% (No Condensation) | | | |

# Connection Diagram of SK series Built-in Speed Controller




## ● Current specification

| Voltage | Power | Current |
|---|---|---|
| 220V | 6~90W | 1A |
| 220V | 120~200W | 2A |
| 110V | 6~90W | 2A |
| 110V | 120~200W | 4A |

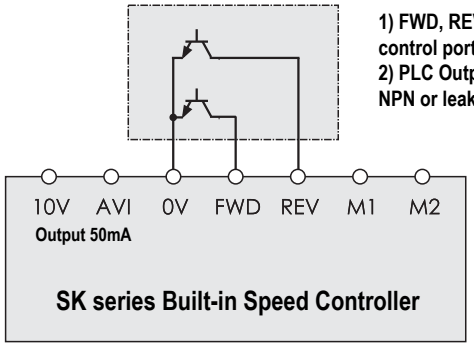
Power supply voltage must be consistent with Speed controller's power Voltage. QF for circuit breaker, in case of short circuit, it can protect Speed controller and YT Series Motor.

## ● Capacitor's specification

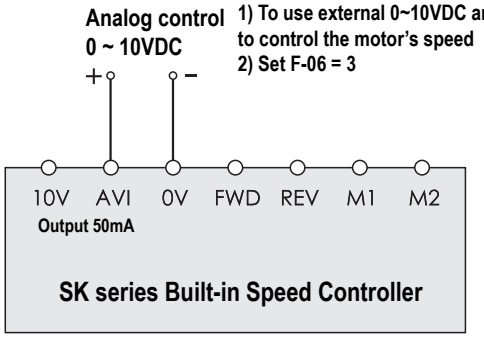
| Power \ Voltage | 220V | 110V |
|---|---|---|
| 6W | 0.7μF / 450V | 2.5μF / 250V |
| 15W | 1μF / 450V | 4μF / 250V |
| 25W | 1.5μF / 450V | 6μF / 250V |
| 40W | 2.5μF / 450V | 10μF / 250V |
| 60W | 3.5μF / 450V | 14μF / 250V |
| 90W | 5μF / 450V | 20μF / 250V |
| 120W | 6μF / 450V | 24μF / 250V |
| 200W | 10μF / 450V | 40μF / 250V |

Atth.the operatng capacitor matchs the corresponding motor and it is placed in motor's package.

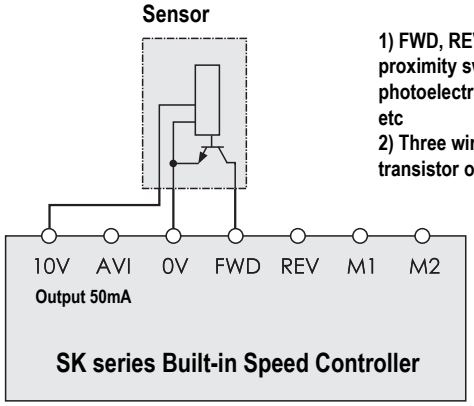
## ● 10V port's Output (max 50mA)



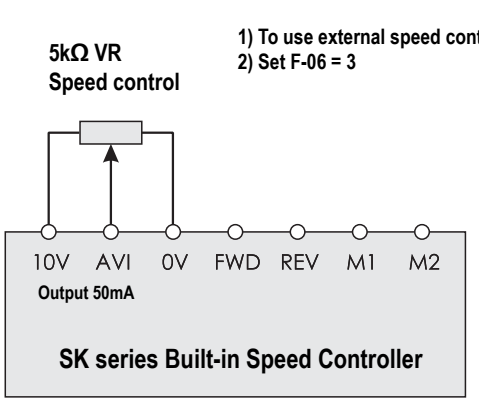

1) FWD, REV, M1, M2 control port is controlled by PLC
2) PLC Output method: NPN or leakage transistor output




1) To use external 0~10VDC analog to control the motor's speed
2) Set F-06 = 3



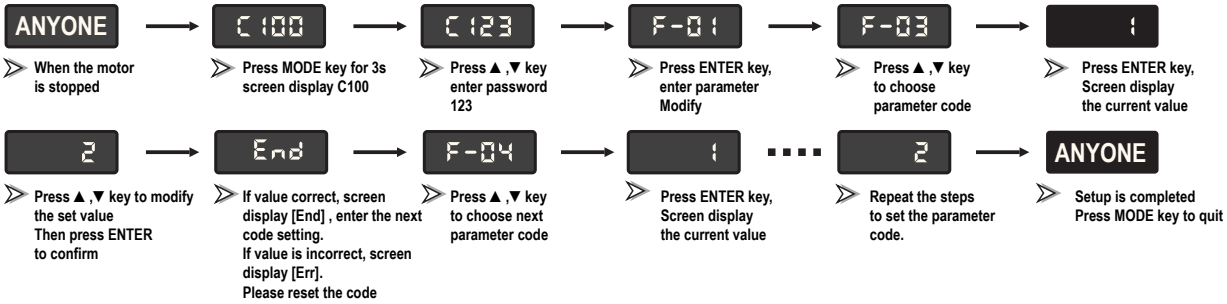

1) FWD, REV, M1, M2 proximity switch photoelectric switch etc
2) Three wire type NPN transistor output




1) To use external speed control by VR
2) Set F-06 = 3

## Menu of SK series Built-in Speed Controller

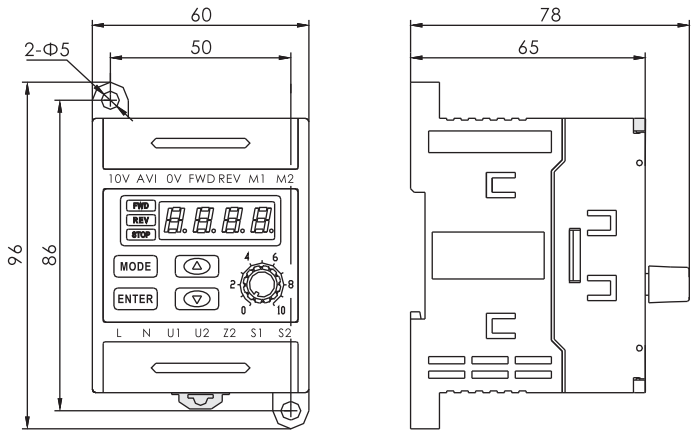
- **Notice: For keeping sate. please modity the parameter F-03,F-05,F-29 when the motor IS in stop state, otherwise you can not set the parameter, and the screen display [Err].**

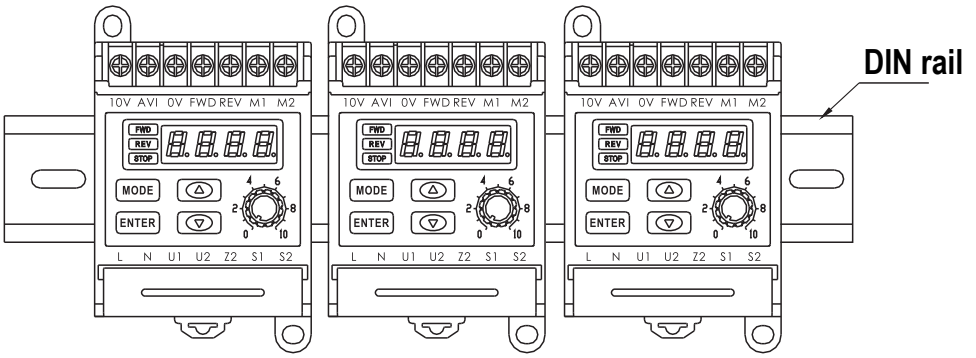



## Parameter of SK series Built-in Speed Controller

| Parameter code | Parameter function | Setting range | Function description | Factory set value | User set value |
|---|---|---|---|---|---|
| F-01 | Display content | 1. Motor speed setting value<br>2. Range speed setting value | Range speed setting value = Motor speed setting value / Range | 1 | |
| F-02 | Set range | 1.0 ~ 999.9 | According the target value | 1.0 | |
| F-03 | Operation control mode | 1. FWD/REV<br>2. FWD/ STOP | FWD/REV, use switch K1 K2<br>FWD/STOP, use knobs SB1 SB2 | 1 | |
| F-04 | Rotate mode | 1. Allow FWD and REV<br>2. Allow FWD, non REV<br>3. Allow REV non FWD | To limit motor rotation direction, prevent equipment failureor accident. When F-03 = 2; F-04 = 2 by itseif, and can not be changed by setting. if you want to change the direction of rotasion, you can set the value by F-05 | 1 | |
| F-05 | Direction of Rotation | 1. Not to change to opposite direction<br>2. Change to opposite direction | Easy to change the motor rotation direction, not to change the motor's wiring, make it consistent with the habits or requirement | 1 | |
| F-06 | Main speed adjust mode | 1. Panel ▲,▼ key<br>2. Panel knobs<br>3. External 0~10VDC analog | 1. When the muli-function terminals of M1,M2 is closed anytime, the motor runs as segments speed, the main speed adjust is invalid.<br>2. The panel knob and external 0-10V analog automatically match 0~Max. speed.<br>3. Because the external speed control potentiometer connect with AVI input port of 0-10V analog. So when the external speed control potentiometer is used, the main speed adjust mode F-06 should choose "3". | 1 | |
| F-07 | Max. speed | 500 ~ 3000 | Limit the maximum speed of motor | 1400 | |
| F-08 | Min. speed | 90 ~ 1000 | Limit the minimum speed of motor | 90 | |
| F-09 | FWD-start Acceleration time | 0.1 ~ 10.0s | The Forward -start acceleration time of Motor | 1.0 | |
| F-10 | Forward-stop mode | 1. Free deceleration stop<br>2. Quick stop<br>3. Slow deceleration stop | 1. When F-10=2<br>To change the speed of stop, change the setting value F-11<br>2. When F-10=3<br>To change the speed of stop, change the setting value F-12 | 1 | |
| F-11 | Intensity Quick FWD-stop | 1~10 | When F-10=2, this function is valid,<br>This value set more highest, the motor stops more quick | 5 | |
| F-12 | FWD stop slow deceleration time | 0.1 ~ 10.0s | When F-10=3, this function is valid,<br>This value set more highest, the motor stops more slow | 1.0 | |
| F-13 | REV-start Acceleration time | 0.1 ~ 10.0s | The Revertsal -start acceleration time of Motor | 1.0 | |
| F-14 | Reversal-stop mode | 1. Free deceleration stop<br>2. Quick stop<br>3. Slow deceleration stop | 1. When F-14=2<br>To change the speed of stop, change the setting value F-15<br>2. When F-14=3<br>To change the speed of stop, change the setting value F-16 | 1 | |
| F-15 | Intensity Quick REV-stop | 1~10 | When F-14=2, this function is valid,<br>This value set more highest, the motor stops more quick | 5 | |
| F-16 | REV stop slow deceleration time | 0.1 ~ 10.0s | When F-14=3, this function is valid,<br>This value set more highest, the motor stops more slow | 1.0 | |
| F-17 | First Segment speed | Min. speed ~ Max. speed | M1 close, motor run as the first segment speed | 500 | |
| F-18 | Second Segment speed | Min. speed ~ Max. speed | M2 close, motor run as the second segment speed | 700 | |
| F-19 | Third Segment speed | Min. speed ~ Max. speed | M1 and M2 close, motor run as the second segment speed | 900 | |
| F-29 | Recover factory setting | 1. No Recovery<br>2. Recover the factory setting | | 1 | |
| F-30 | Program Version | Code + Version | | 02.☆☆ | |
| Fault Alarm Er-1: | | 1. Over-load clocked-motor<br>2. The connection of motor and controller is un-normal | Fault processing method: | 1. Check and debuging<br>2. To power on remove alarm | |

## Appearance/ Installation Dimension of SK series Built-In Speed Controller




## Precautions

- **Do not use in a place where there is flammable gas and/or corrosive gas.**
- **Avoid continuous vibration over impact.**
- **The motor case temperature can exceed 70°C (depending on operation conditions). In case the motor is accessible during operation, please attach the following warning label so that it is clearly visible.**
- **Please connect the grounding terminal with the ground point of the equipment.**
- **Installation, connection and inspection must be performed by a qualified installer.**