ZK-SMC01 CNC Stepper Motor Controller

1.Description:

ZK-SMC01 is an operation control module specially designed for single-axis stepper motors. The module has built-in multiple fixed operation modes, and the user can quickly select the appropriate motion trajectory.It can save the setting parameters after power off.

It supports setting distance/speed/delay/cycle times. It can run independently as a module, or it can be used in conjunction with other systems. It can be used in general industrial control occasions.

2.Features:

1>.[Step Motor Controller] Integrated controller for Nema17/23 Stepper Motor. It can set and control the working state of the stepper motor in real time.

2>.[Forward & Reverse] It can not only change rotation direction by pressing button, but also by potentiometer. It is also automatically change the direction through the selected working mode to achieve multi-scene and multi-application.

3>.[3 Control Mode] In addition to its built-in parameters work mode,it can also control by external buttons or Auto-Control/Manual control.

4>.[9 work states] Built-in 9 default workflow programs, covering most applications, to meet the needs of different scenarios.Forward/Reverse/Delay/Loop/Self-locking/No-lock/Rotating speed and so on.

5>.[HD LCD display] The HD LCD can clearly display the speed/delay/cycle times, making it easier to browse and set various parameters. Realize high-precision control of the motor. Parameters support memory function that will not be lost.

3.Parameters:

1>.Product name:ZK-SMC01 CNC Stepper Motor Controller
2>.Input voltage:DC 5V-30V
3>.Control shafts:Single axis
4>.Suitable motor:42/57 step motor(Nema17/23 motor)
5>.Control speed:0.1-999RPM
6>.Forward pulses number:1-9999999
7>.Reverse pulses number:1-9999999
8>.Loop times:1-9999
9>.Forward delay time:0.0-999.9s
10>.Reverse delay time:0.0-999.9s
11>.Subdivision:1/2/4/8/16/32/64/128
12>.Acceleration and deceleration control:Yes
13>.Input reverse polarity protection:Yes
14>.Control modes:Auto/Manual/Setup
15>.Work Temperature:-20℃~85℃
16>.Work Humidity:5%~95%RH
17>.Module Size:79*43*41mm

4.Setting methods:

1>.Running interface:

1.1>.The first line displays rotating speed in RPM.
1.2>.The second line displays delay time or loop times which can be set by F-10 menu.
1.3>.Press CW button to clockwise/forward rotating.
1.4>.Press CCW button to counterclockwise/reverse rotating.
1.5>.Press RUN/STOP button to start or stop rotating.
1.6>.Rotate the potentiometer to change the forward or reverse rotation speed. Note:the operation mode is different in different modes.
1.7>.Keep press potentiometer more than 3second enter into parameter set mode.

2>.Parameter interface:

2.1>.Rotate the potentiometer to change parameter F-01~F-13 after enter parameter set mode.
2.2>.The selected parameter keeps blinking.
2.3>.Press potentiometer to selected parameter value.
2.4>.Modify Value Method 1: Directly rotate the potentiometer to change value.
2.5>.Modify Value Method 2: Press the potentiometer again and the selected bit keep blinking. Then rotate the potentiometer to change value for this bit form 0 to 9. Modify other bits in the same method which can improve setup efficiency and save your time.
2.6>.Press RUN/STOP button return to parameter(Note:parameter and parameter value are not the same).
2.7>.Set others parameters and parameters value if needs.
2.8>.Save and exit parameter set mode after keep press potentiometer more than 3second.

3>.Auxiliary function:

3.1>.It can work independently by default, only need to connect the power supply and stepper motor driver, and no longer need to connect other accessories.

3.2>.Users can also connect external control buttons to change the operation mode. External control buttons can input from COM/STOP/CCW/CW/OUT terminal on PCB.

3.3>.Users can also connect other types of stepper motor driver and just use ZK-SMC02 alone as a stepper motor controller.Auto/Manual/Setup

4>.Work Mode:

4.1>.Automatic Control Mode: Step motor works with ZK-SMC02's parameters set.

4.2>.Manual Control Mode: This mode needs connect buttons to COM/STOP/Forward/Reverse terminal on ZK-SMC01.

4.3>.Setup Control Mode: This mode needs connect to others stepper motor driver and just use ZK-SMC01 alone as a stepper motor controller.

5.Function Parameter Table:

[F] Function Parameter Table			
Parameter	Function	Set Ranges	Defaults
F-01->?	Working mode selection. Refer to the Work Mode Table.	P01~P09	P01
F-02	Forward pulses number. High/Low bit change by press potentiometer: High 3Bit: Hxxx Low 4Bit: xxxx	1~9999999	1600
F-03	Forward rotation speed in RPM	0.1~999.9	10
F-04	Reverse pulses number. High/Low bit change by press potentiometer: High 3Bit: Hxxx Low 4Bit: xxxx	1~9999999	1600
F-05	Reverse rotation speed in RPM	0.1~999.9	10
F-06	Cycle work times('----' means infinite loop)	0~9999 or infinite loop	1
F-07	Forward in-position delay in second. +/-0.2s	0.0~999.9	0.0
F-08	Reverse in-position delay in second. +/-0.2s	0.0~999.9	0.0
F-09	Pulse numbers for one circle. Unit is *10. E.g. if step anglemar is 1.8 and subdivision is 8. So that the pulse numbers for one circle is 360/1.8*8=1600. So the set value should be 160.	1~9999	160
F-10	Set LCD display parameters: 0:1st line display motor rotating speed in rpm. 2nd line display delay time in second. 1:1st line display motor rotating speed in rpm. 2nd line display cycle work times.	0 or 1	0
F-11	Set motor working state after press RUN/STOP button: 0:Slow down and stop. 1:Stop immediately.	0 or 1	0
F-12	Set the acceleration/deceleration level: 001 is the slowest and 100 is the fastest.	001~100	020
F-13	Set device address	001~255	001

6.Work Mode Table:

Work Mode	Work Process
F-01->P01	1.Function:Motor works with the rotation of potentiometer. That is, motor can only be controlled by potentiometer, and other buttons are invalid. 2.Motor rotates forward and CW indicator turns ON if potentiometer is turned clockwise. 3.Motor rotates reverse and CCW indicator turns ON if potentiometer is turned counterclockwise.
F-01->P02	1.Function:Motor rotates when keep press buttons and stop if release button. 2.Motor rotates forward and CW indicator turns ON if keep press CW button. Motor stops if release the button.Rotating potentiometer to reset motor rotate speed in RPM. 3.Motor rotates reverse and CCW indicator turns ON if keep press CCW button. Motor stops if release the button.Rotating potentiometer to reset motor rotate speed in RPM.
F-01->P03	1.Function:Rotates at first press and stop press again. self-locking control. 2.Motor rotates forward and CW indicator turns ON if press CW button. Motor stops if press again.Rotating potentiometer to reset motor rotate speed in RPM. 3.Motor rotates reverse and CCW indicator turns ON if press CCW button. Motor stops if press again.Rotating potentiometer to reset motor rotate speed in RPM. 4.Note:please stops motor at first when the motor is running if need change the running direction.

F-01->P04	1.Function:Motor rotates from pulses number F-02/F-04, then stop. Then loop F-06 times. 2.Press CW button, then motor keep rotates forward from F-02, Then stop for delay time F-07.Then loop like this. Loop time from F-06. E.g. Forward->OFF->....->Forward->OFF. 3.Press CCW button, then motor keep rotates reverse from F-04, Then stop for delay time F-08.Then loop like this. Loop time from F-06. E.g. Reverse->OFF->....->Reverse->OFF. 4.Rotating potentiometer to reset motor rotate speed in RPM. 5.Note:please stops motor at first when the motor is running if need change the running direction.
F-01->P05	1.Function:Motor rotates from pulses number F-02/F-04, then stop. Then loop F-06 times.Then running and return to start positive in the opposite direction. 2.Press CW button, then motor keep rotates forward from F-02, Then stop for delay time F-07.Then loop like this. Loop time from F-06. Then reverse return to start positive. E.g. Forward->OFF->....->Forward->OFF->Reverse. 3.Press CCW button, then motor keep rotates reverse from F-04, Then stop for delay time F-08.Then loop like this. Loop time from F-06. Then forward return to start positive. E.g. Reverse->OFF->....->Reverse->OFF->Forward. 4.Rotating potentiometer to reset motor rotate speed in RPM. 5.Note:please stops motor at first when the motor is running if need change the running direction.
F-01->P06	1.Function:Motor rotates from pulses number F-02/F-04,then stop and change rotation direction. Then loop F-06 times. 2.Press CW button, then motor keep rotates forward from F-02, then stop for delay time F-07,then reverse from F-04,then stop for delay time F-08. Then loop like this. Loop time from F-06. E.g. Forward->OFF->Reverse->OFF....->Reverse->OFF->Forward->OFF. 3.Press CCW button, then motor keep rotates reverse from F-04, then stop for delay time F-08,then reverse from F-02,then stop for delay time F-07. Then loop like this. Loop time from F-06. E.g. Reverse->OFF->Forward->OFF....->Forward->OFF->Reverse->OFF. 4.Rotating potentiometer to reset motor rotate speed in RPM. 5.Note:please stops motor at first when the motor is running if need change the running direction.
F-01->P07	1.Function:Motor rotates when keep press and stop if release button.Then running and return to start positive in the opposite direction. 2.Motor rotates forward and CW indicator turns ON if keep press CW button. Motor stops for time F-07 if release the button. Then reverse return to start positive. 3.Motor rotates reverse and CCW indicator turns ON if keep press CCW button. Motor stops for time F-08 if release the button. Then forward return to start positive. 4.Rotating potentiometer to reset motor rotate speed in RPM.
F-01->P08	1.Function:Motor rotates from delay time F-07/F-08, then stop. Then loop F-06 times. 2.Press CW button, then motor keep rotates forward from F-07, Then stop for delay time F-08.Then loop like this. Loop time from F-06. E.g. Forward->OFF->....->Forward->OFF. 3.Press CCW button, then motor keep rotates reverse from F-08, Then stop for delay time F-07.Then loop like this. Loop time from F-06. E.g. Reverse->OFF->....->Reverse->OFF. 4.Rotating potentiometer to reset motor rotate speed in RPM. 5.Note:please stops motor at first when the motor is running if need change the running direction.
F-01->P09	1.Function:Motor forward rotates from pulses number F-02,then stop for time F-07, then rotates reverse from F-04, then stop for delay time F-08, and loop like this. Then loop F-06 times. 2.Rotating potentiometer to reset motor rotate speed in RPM. 3.Note:please stops motor at first when the motor is running if need change the running direction.

7.Note:

1>.It is suitable for 2 phase stepper motors whether it is 4-wire or 5-wire or 6-wire or 8-wire.

2>.It is a step motor controller which can output control signal to step motor driver, so it can not connect step motor directly.

8.Application:

1>.Industrial Automation Control
2>.CNC machine
3>.Mechanical packaging
4>.Electronic processing and testing
5>.Automatic assembly line

9.Package:

1>.1pcs ZK-SMC01 CNC Stepper Motor Controller
2>.1pcs 20mm XH2.54-5P Wire