ELECTRONIC LEADSCREW
OWNER'S MANUAL

SET/SAVE   SUB-FN   RST/CAN

FUNCTION   −   +   FWD/REV   ST/SP
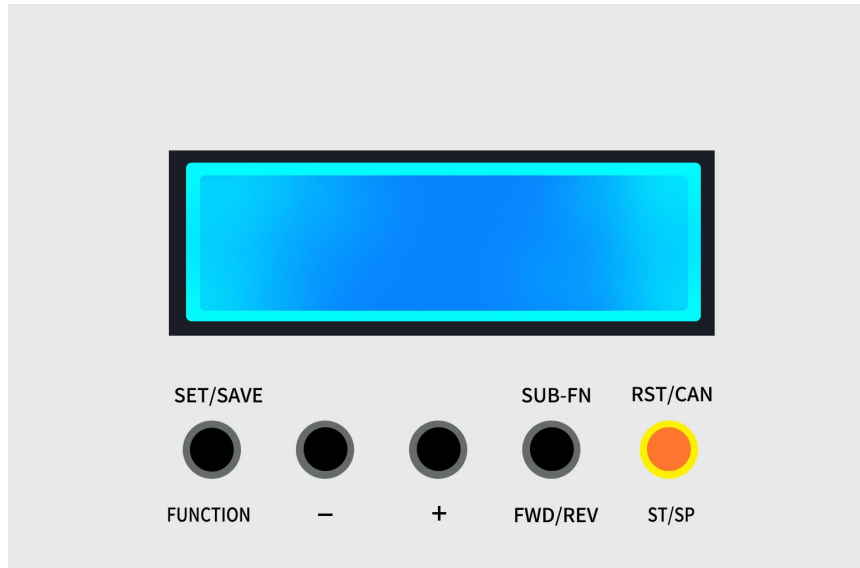
SECTION 1: INTRODUCTION

1. The controller supports an ultra-wide voltage input of 8~40V , so that it can share a power supply with the stepper motor.

2. It supports photoelectric incremental encoders with 10~3000 lines, and the encoder pulse supports one decimal point. Even if the gear ratio between the spindle and the encoder is not an integer, the pulse measurement function of this controller can also accurately calculate the number of coded pulses per revolution of the spindle;

3. It adopts 32-bit single-chip microcomputer, which has powerful performance and supports rich functions. It can display the tooling distance of the pallet in real time throughout the process.

4. In addition to the powerful automatic threading function, this controller also integrates very practical automatic reciprocating turning, fixed-point movement, gear shaping, winding and other practical functions.

SECTION 2: FUNCTION INTRODUCTION

1. Automatic forward and reverse cutting function: with it we can adjust the cutting speed and direction at any time, supporting cutting speed: 0.01~999.99mm. It can also set the cutting distance, and it can automatically stop or reverse the cutting after the cutting is completed. (Note: The maximum cutting speed is determined by multiple factors such as encoder, stepping drive subdivision, screw lead, etc.)

2. Automatic threading function: We only need to control the amount of feed, and the spindle can run continuously without stopping or reversing; the controller supports metric, imperial or any number of pitches. The maximum supported thread is related to the resolution of the encoder and the lead of the screw; when using a 1000P/R line encoder, the pitch can be as high as 3mm or more.

3. Specify the moving distance of the large carriage, or manually control the movement of the large carriage to facilitate the movement of the turning tool to the designated position. The controller adopts a seven-segment S acceleration algorithm to support stepping and high-speed operation;

4. Round-trip turning function: We can control the round-trip turning of the turning tool by placing two hardware limit switches, or set a distance to realize round-trip turning; when boring holes and turning outer circles, we only need to control the feed amount of each turning which can greatly reduce the operation complexity;

5. Chuck indexing function: the controller can display the rotation angle of the chuck. When the encoding pulse generated by the spindle per revolution is 1200, the minimum angle value of the chuck is 9';

6. Gear shaping function: Which is used in conjunction with the indexing function of the chuck, you can use a lathe to make gears, or make handwheel scale lines;

7. Winding function: This function can be used to wind coils or springs;

SECTION 3: ADJUSTMENT INTRODUCTION

1. Parameter setting

1.1. Enter the parameter setting interface ➤ After starting up, press and hold the 【SET/SAVE】key to enter the setting interface, and short press the 【SET/SAVE】 key to successively set the pulse number of the encoder per revolution of the spindle【Encode Pulses】 ⇨ stepping drive subdivision Number of pulses【Step Motor Pulses】 ⇨ stepping tool distance per revolution【Lead Screw】⇨ 【limit switch 1】 ⇨【limit switch 2】 ⇨ Z-axis moving speed【Z-Moving Frequency】 ⇨ 【key sound】 ⇨ feed acceleration 【Feed ACCEL】 ⇨ safe feed speed 【Limit Feeding Speed】 ⇨ feed motor start/stop 【Start Motor by Def】 ⇨ feed function on/off 【FEED】 ⇨ Moving function on/off 【MOVE】 ⇨Manual moving function on/off【Manual Move】 ⇨ Indexing function on/off 【DEG】

⇨ gear shaping function on/off 【GEAR】 ⇨Automatic threading function on/off 【Thread Turning】 ⇨ Automatic reciprocating turning function on/off 【Automatic Turning】 to select and set, short press 【 - 】 key or 【 + 】 key to modify the parameter value, press and hold the 【SET/SAVE】 key again to save the setting and exit. Short press the 【RST/CAN】 key to abandon the modification, exit the system settings and return to the main interface.

1.2. Encoder Setting ➤ After entering the parameter setting interface, short press the 【SET/SAVE】 key to enter the 【Encode Pulses】 interface, set the spindle encoder pulse number, that is, the number of pulses sent by the encoder when the spindle rotates one circle , which is equal to the resolution of the encoder × the gear ratio of the main shaft encoder; if the resolution of the encoder is 1000 pulses and the gear ratio of the main shaft and the encoder is 2:1, then the number of pulses of the main shaft encoder in the parameter is: 1000×2 /1=2000.

1.3. Stepping motor subdivision number setting ➤ After entering the parameter setting interface, short press

the 【SET/SAVE】 key to enter the 【Step Motor Pulses】 interface, and set the pulse value required for each revolution of the stepping motor , that is, the subdivision value of the stepper motor driver, which needs to be the same as the setting value of the DIP switch on the stepper motor driver.

1.4. Lead screw pitch setting ➤ After entering the parameter setting interface, short press the 【SET/SAVE】 button to switch to the 【Lead Screw】 Stepping feed distance per revolution, that is, every time the stepping motor rotates, the screw drives the large The moving distance of the pallet, if the pitch of the lead screw is 2mm, and the gear ratio of the stepper motor and the lead screw is 1:2, then the distance of the stepping tool per revolution in the parameter is: 2mm×1/2=1mm.

1.5. Lead screw pitch setting ➤ After entering the parameter setting interface, short press the 【SET/SAVE】 key to enter the 【Lead Screw】 interface, that is, every time the stepping motor rotates one circle, the distance

that the screw rod drives the large pallet to move. If the lead screw pitch is 2mm, the gear ratio of the stepping motor and the lead screw is 1:2, then the stepping tool distance per revolution in the parameter is: 2mm× 1/2=1mm.

2. Detect the direction of spindle rotation

Exit the system parameter setting, return to the function interface, short press the 【FUNCTION】 key, switch the controller function to the Indexing function, set the direction to "<=", manually rotate the spindle forward at a slow speed, and the indexing value should increase , rotate the spindle in the opposite direction, the division value should decrease, if the test value changes in the opposite direction, then exchange the A/B phase feedback line of the encoder.

3. Detect the direction of rotation of the stepper motor

Switch the controller to the Manual Move function, press and hold the 【 - 】 button, the large pallet will move to the spindle end, press and hold the 【 + 】 button, the large pallet will move to the tailstock end; If the large pallet moves in the opposite direction, then exchange the two direction wires of the stepper motor A+/A-.
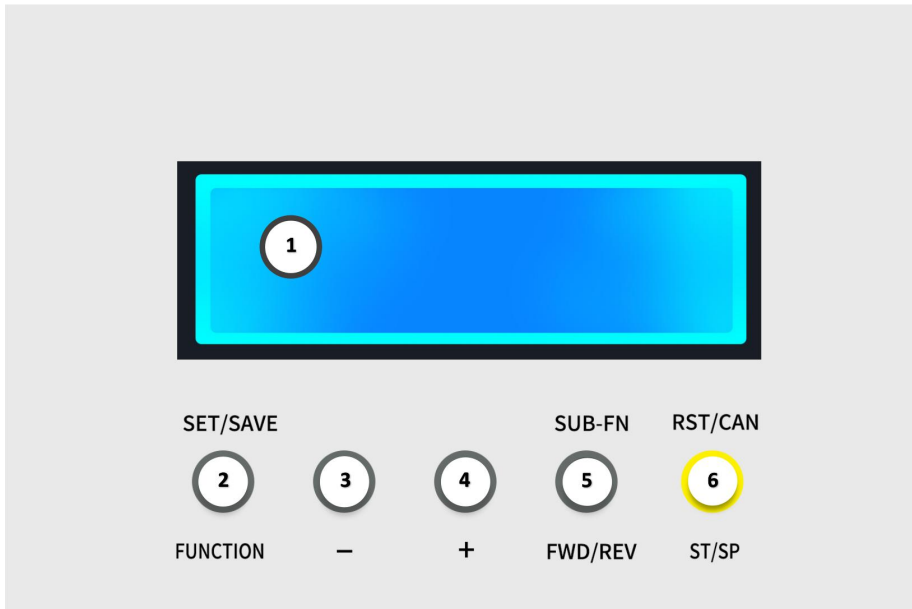
4. Stepper driver subdivision setting reference

According to the installed stepper drive subdivision setting table, turn the subdivision number dial switch on the side of the stepper driver to the corresponding position, that is, the stepper driver subdivision number setting is completed; the default subdivision number of the electronic hanging wheel controller is 1600 pulses/rev.
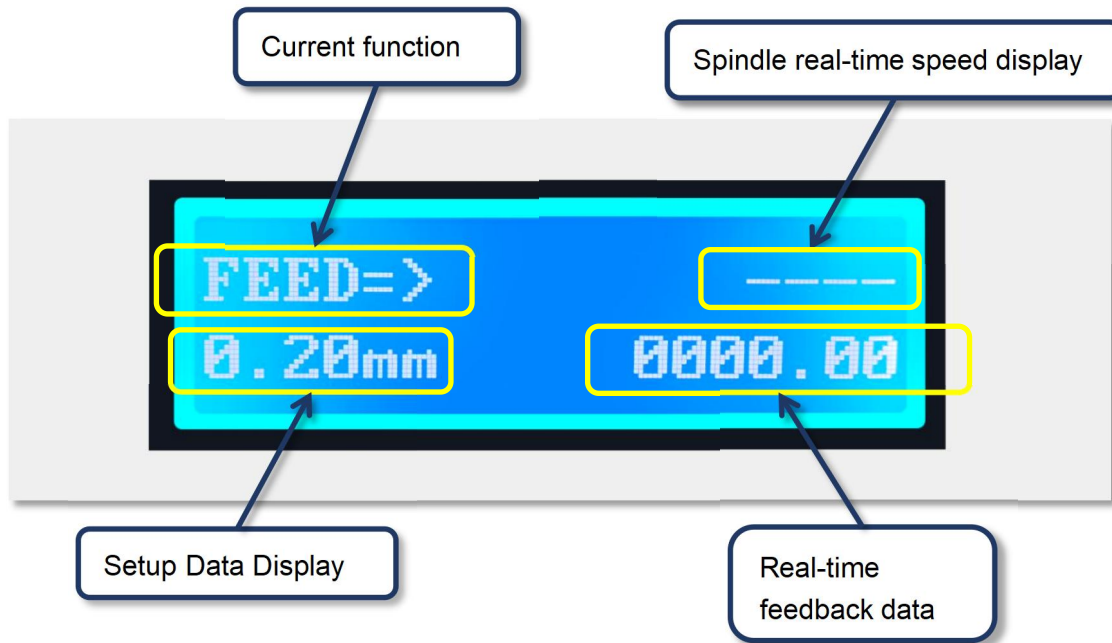
SECTION 4: MATTERS NEEDING ATTENTION

1. FEED function ➤ 1. It is recommended to set the cutting value between 0.05mm-0.20mm, 0.05mm is the finishing turning, 0.1mm is the common value, and 0.2mm is the rough turning value.

2. Thread turning speed ➤ 2. When turning 1mm pitch, the spindle speed is ≦400 rpm; when turning 2mm pitch, the spindle speed is ≦200 rpm; when turning 3mm pitch, the spindle speed is ≦150 rpm.

3. The limit switch ➤ is mainly used to realize fast fixed-point in the tool-feeding function, and perform round-trip tooling in the undetermined interval. When performing other functions, the limit switch is invalid.

SECTION 5: ELECTRONIC CONTROLS IDENTIFICATION

①.Display ➤Display the operation content of the controller (LCD)

Current function

Spindle real-time speed display

FEED=>
0.20mm

0000.00

Setup Data Display

Real-time feedback data

②.**Composite button ➤ [SET/SAVE] and [FUNCTION] options, long press for parameter setting and**

saving, short press for function selection.

2.1.【SET/SAVE】 ➤ Press and hold to enter the parameter setting interface and save parameters, and you

can set and save parameters such as the number of pulses of the encoder per revolution of the spindle ⇨

the number of subdivision pulses of the stepping driver ⇨ the distance of the stepping tool per

revolution.

2.2.【FUNCTION】 ➤ Short press it to select the operation functions such as automatic threading ⇨

automatic reciprocating turning ⇨ feeding ⇨ moving.

③.Adjustment button ➤ 【 - 】 , short press to adjust and modify the parameters, operating data

and built-in functions in descending order.

④.Adjustment button ➤ 【 + 】 , short press to adjust and modify parameters, operating data and

built-in functions incrementally.

⑤.**Composite button ➤【SUB-FN】 and 【FWD/REV】 options, you can adjust and confirm the**

sub-functions in turn.

5. 1. 【SUB-FN】 ➤Short press this button to confirm and enter the selected main function, and to switch

and select the operating parameters.

5.2. 【FWD/REV】 ➤Short press this button to switch the current running direction.

⑥.**Composite key ➤【RST/CNA】and【ST/SP】options, you can adjust and confirm the sub-function**
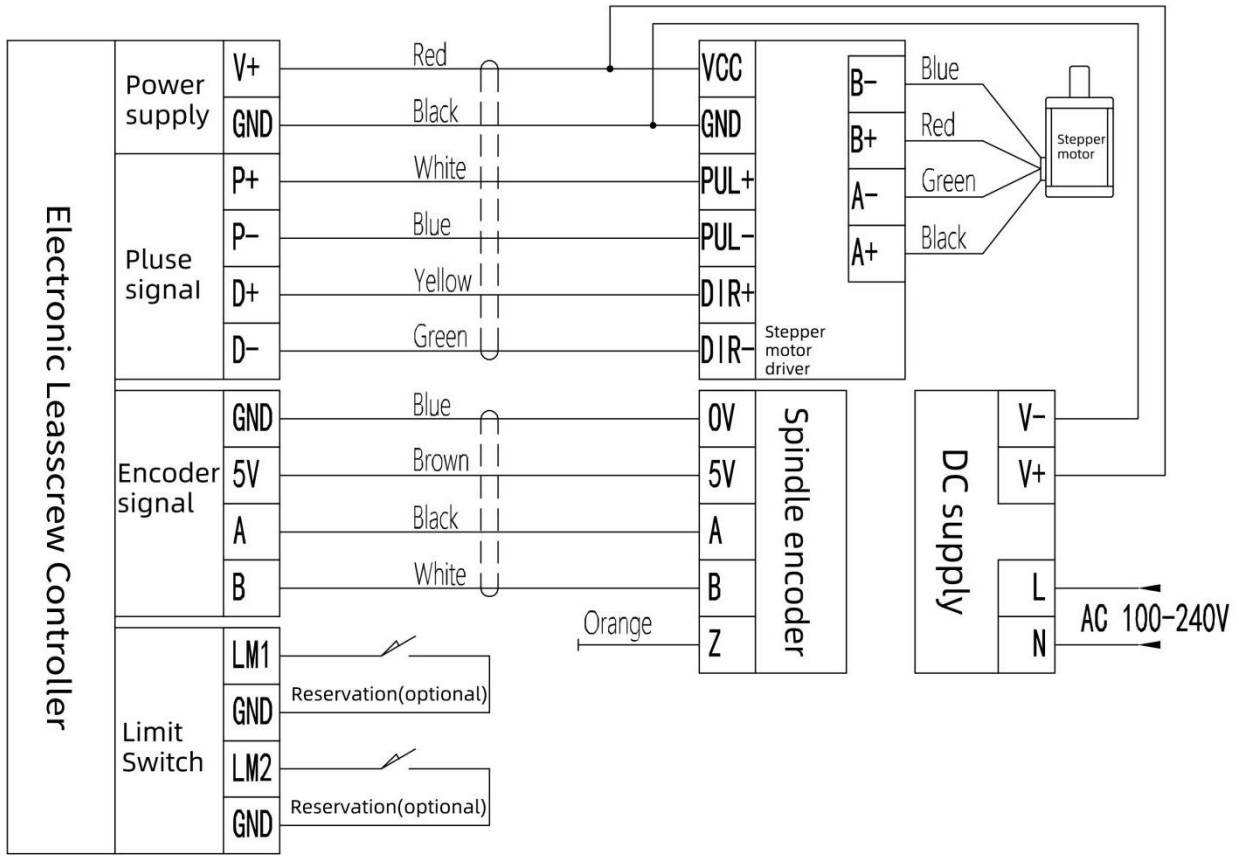
data in turn.

6.1. 【RST/CNA】 ➤Short press this button to reset the selected sub-function data and give up the

parameter setting.

6.2. 【ST/SP】 ➤ Short press this button to start or stop the selected sub-function.
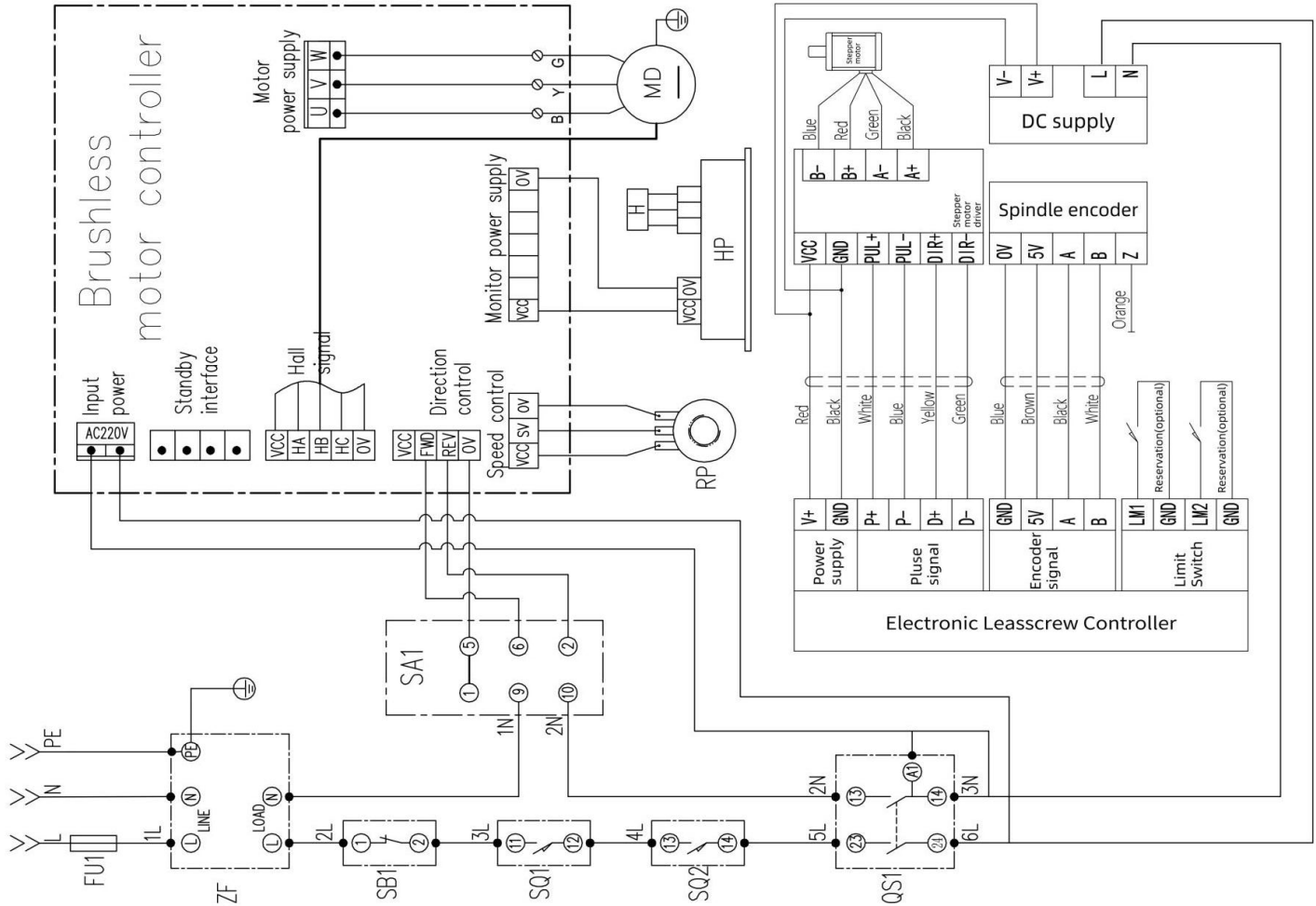
SECTION 6: WIRING DIAGRAM

5. Controller Signal

Control Signal
Connection Terminal
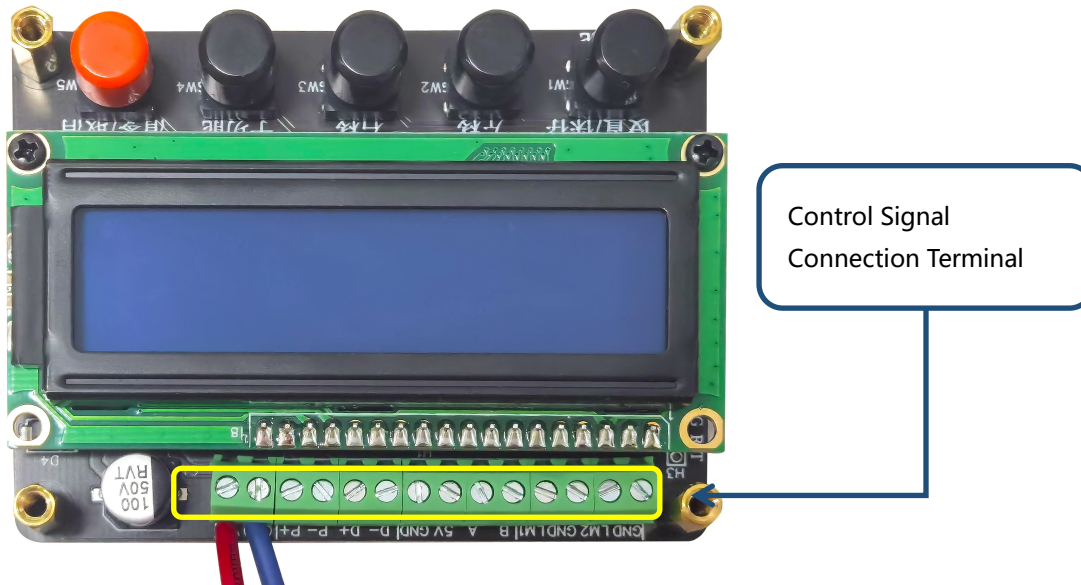
6. Wiring Diagram (DC Brushless Model)

SECTION 7: ELECTRICAL COMPONENTS

No.	PART	DESCRIPTION	QTY
1	Controller	V5.0	1
2	DC power supply	HDR-60-24	1
3	Encoder	E2B2-CWZ6C/1000PR	1
4	Stepper driver	DM542	1
5	Stepper motor	57BYGH112-401A	1
6	Signal line mm2	6×0.5mm^2 (Sheathed cable)	1