

Cautions:

- 1 Don't use in inflammable and explosive environment.
- 2 Don't carry out any reform and disassembly.
- 3 Breaking all power supply before installing step line.
- 4 Suggesting user to renew carry out sensor alignment for one time after users' equipment completed replacing material.
- 5 It must ensure correct connection of plug, otherwise will cause unpredictable outcome.
- 6 When user using unwinding and winding to rectify a correction, it must design mechanical limiting position device, otherwise it will cause unpredictable result.
- 7 For the purpose of guaranteeing best control effect, it require to clean measuring optical component of infrared sensor or sending and receiving component of ultrasonic sensor. After implementing clean to measuring optical component of infrared sensor or sending and receiving component of ultrasonic sensor, it must renew carry out sensor alignment, please referring to relevant contents of 8.2 chapters and sections.
- 8 When rectifying correction controlling system to replace new controller or new driver, please firstly carrying out driver stroke alignment, otherwise system is unable to work normally.
Please referring to relevant contents of 8.4 chapters and sections.

Functional characteristics

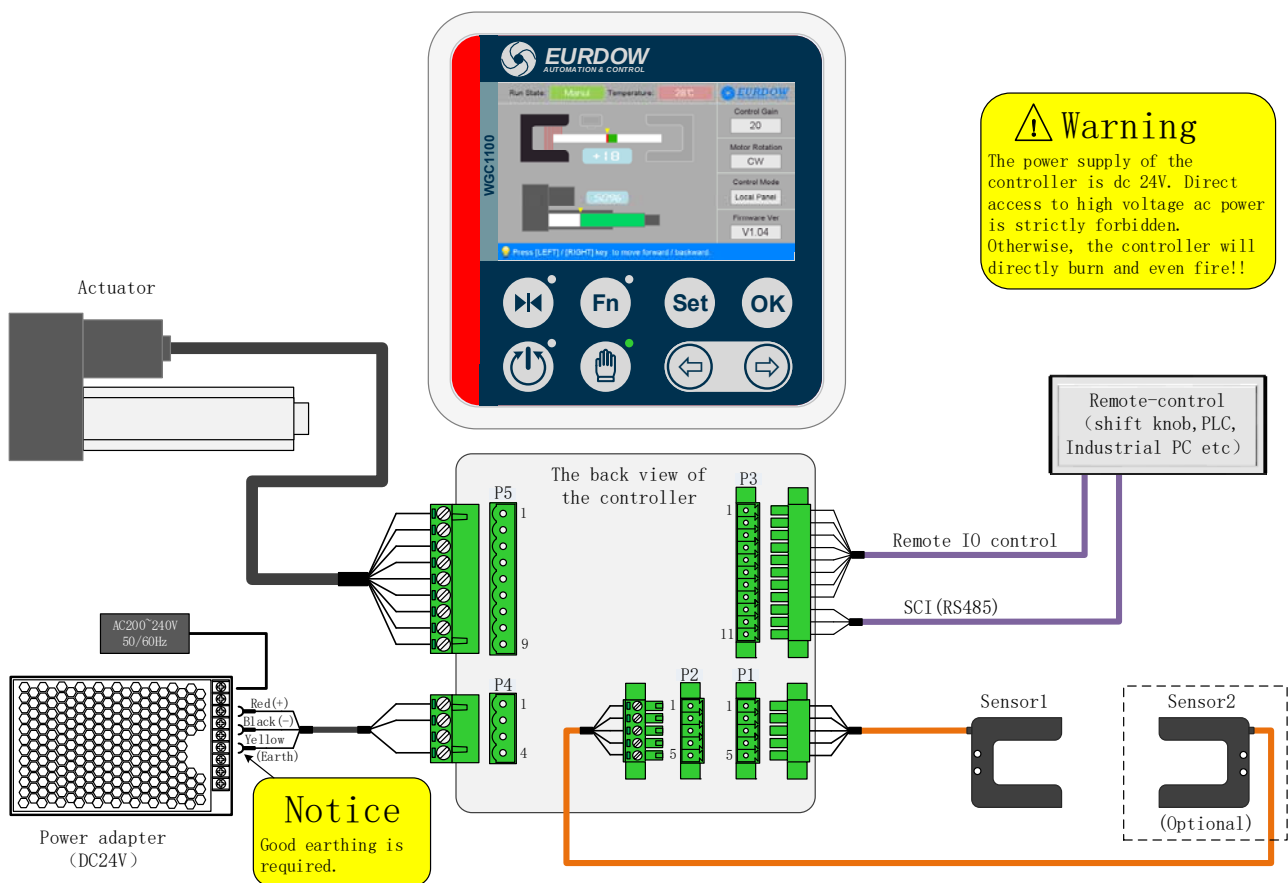
- 1 Real-time display of working state.
- 2 Intelligent judgment prompt of system failure.
- 3 Brushless servo drive, durable in use and free of maintenance.
- 4 High dynamic response with accurate location.
- 5 Limiting position point and centering point could be adjusted randomly.
- 6 Supporting standard Modbus (RS485) communication interface and remote IO controlling interface, facilitating customer could carry out integration control in PLC system.
- 7 Connecting paper platform is applied pressing roll design, with larger operating space; Exclusive and overlenth pressing paper air bag, with better customer experience.
- 8 Electric circuit with high integration level and lower failure rate.

9 Shortcut operation of composite key achieve online modifying parameter under the operating status of system.

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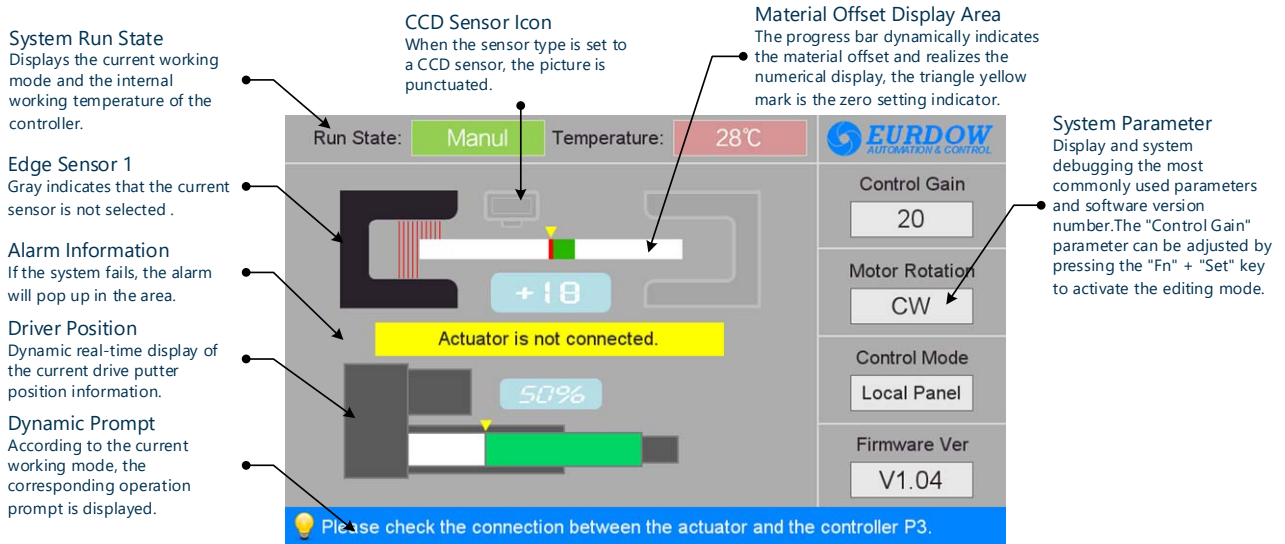
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1. System wiring and electrical connection

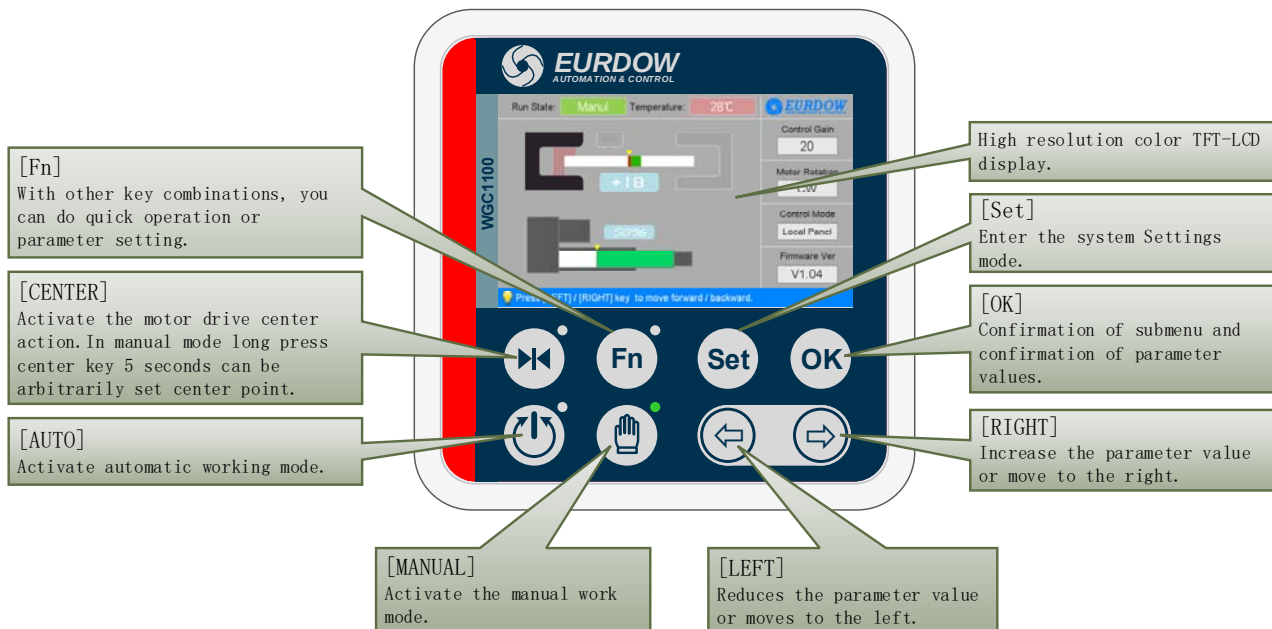


2. Controller panel and main interface

2.1 Area description of display screen

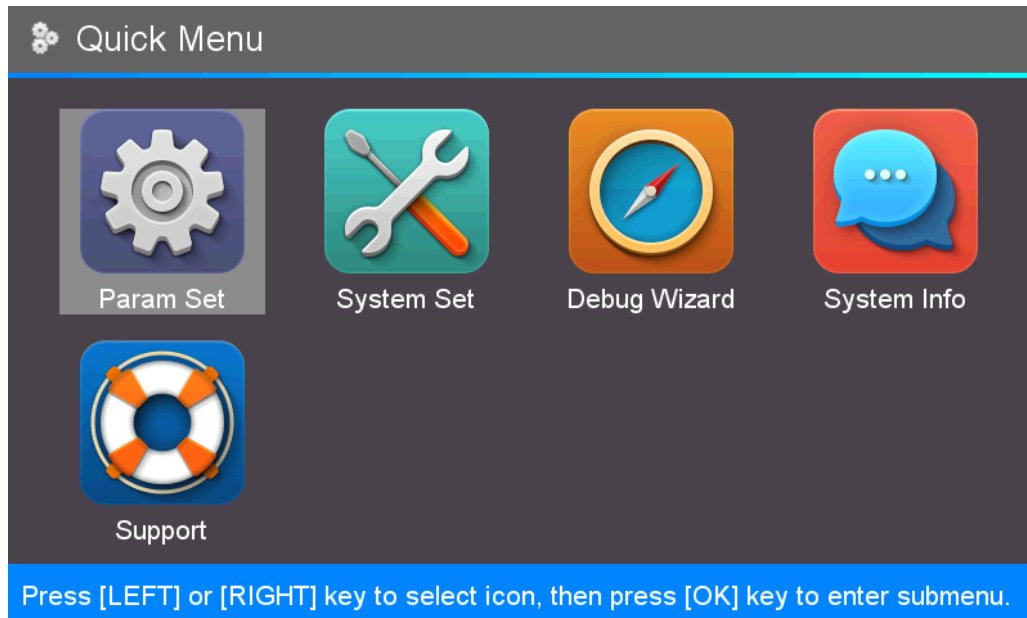


2.2 Pressing key description



3.Shortcut menu

Under circumstance of displaying main interface, pressing 【Set】 button could enter into "Shortcut menu" page, as shown on following figure.



3.1. Parameter setting: It could set common rectifying parameter to improve rectifying performance. Selecting this icon and pressing 【OK】 button, it will enter into parameter settings page. If" password protection of parameter table " parameter setting password, it will popup password input box after entering into parameter page, and it only could enter after entering into correct password. leaving the factory setting without password protection.

3.2. System settings: This page mainly used for setting system hardware configuration relevant parameter, used for satisfying customers' partial special function requirements. Namely it belongs to more professional operation, if it is non-professional commissioning personnel, easily don't set up any parameter under this page, otherwise it could lead to system working abnormal due to parameter settings. It will popup password input box after entering into this page, and it only could enter after entering into correct password. Initial password is 1000 when leaving the factory

3.3. Commissioning guide: Finishing what basic settings will be through step by step prompt of this page, after finishing prompted step of commissioning guide, rectifying system will start to work normally. Suggesting after completing new machine installation or replacing certain system component, renew commissioning system according to commissioning guide.

3.4. System information: This page used to display software edition, hardware edition no. system serial no. of system and operational time of system etc. information.

3.5. Technical support: Contact way of service technical center is provided by this page. When the system occurs abnormal and can't be eliminated voluntarily, please contacting service technical center according to provided contact way, we will sincerely providing satisfied service for you.

4. Parameter setting

Under page of "shortcut menu", selecting "parameter setting" icon, then pressing **【OK】** button will enter into parameter settings page. As shown on following figure.

 Param Setting

NO.	Value	Description	Tips
F00	20	Control Gain	The bigger the parameter, the faster the response. It will cause the frame vibrate with oversized settings. Please set the appropriate number.
F01	100	Back-end Limit Point	
F02	100	Fore-end Limit Point	
F03	50	Center Point	
F04	0	Motor Rotation	
F05	1	Sensor Select	
F06	1	语言选择/Language	
F07	0	Initial Mode	
F08	000	Password	

Press [LEFT] / [RIGHT] key to select parameter item, then press [OK] key to modify

Carrying out operation according to operation shown on prompt column at the bottom of page, and it could select parameter by up and down movement, and show context of right prompt box will display corresponding parameter setting description with movement of selected parameter, and user could set parameter value size correctly according to prompt.

Note:

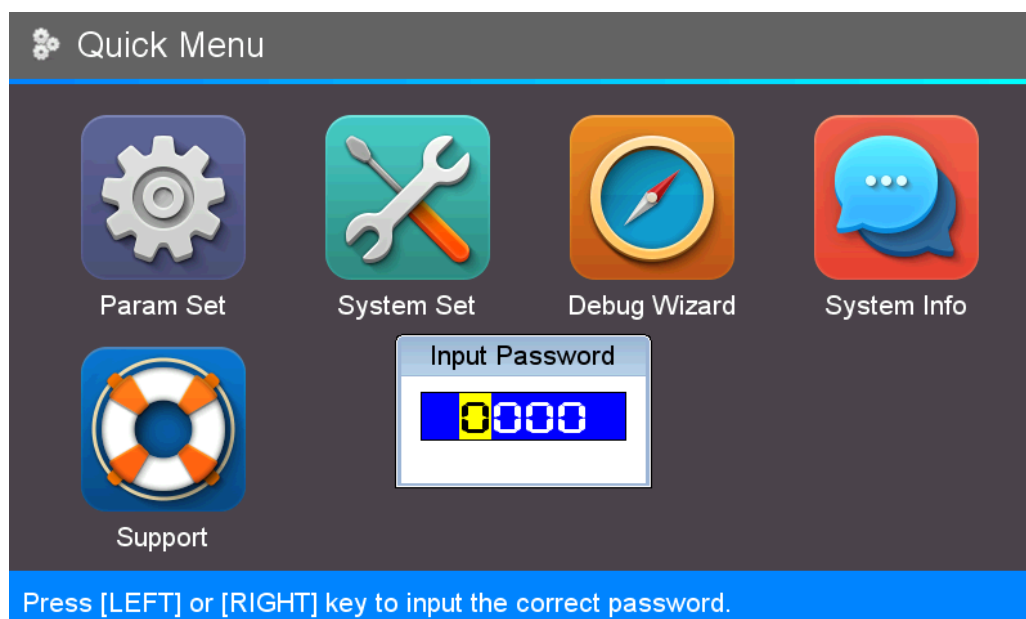


If parameter value of "Password protection of parameter table" isn't 000, then it indicates require to enter password if entering into parameter setting page, and password namely setted parameter value.

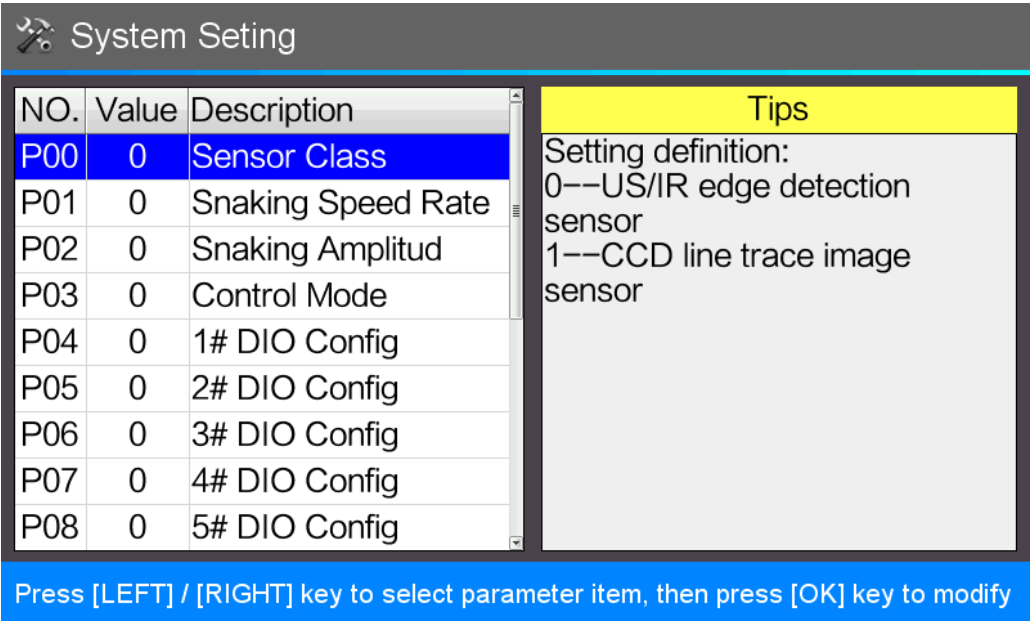
5. System setting

5.1. Selecting "system setting" icon under page of "shortcut menu", then pressing **【OK】** button it will popup password input box, and it only could enter after entering into right password. As shown on following figure.

Initial password is 1000 when leaving the factory



5.2 After entering right password, it will voluntarily enter into system configuration page. As shown on following figure.



Carrying out operation according to operation shown on prompt column at the bottom of page, and it could select parameter by up and down movement, and show context of right prompt box will display corresponding parameter setting description with movement of selected parameter, and user could set parameter value size correctly according to prompt.

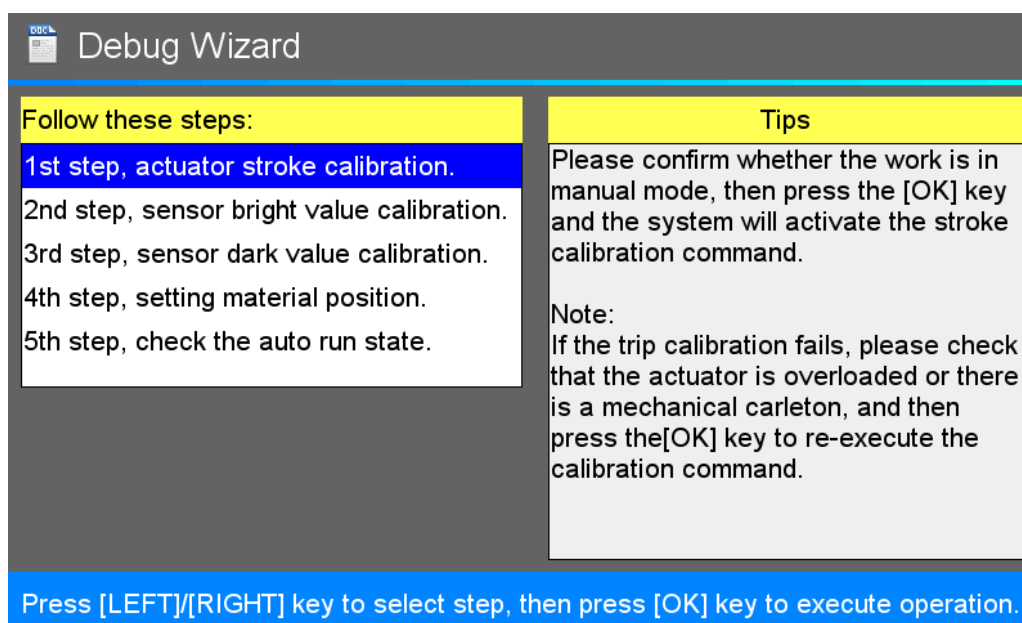
6. Commissioning guide

Under page of "shortcut menu", selecting "parameter setting" icon, then pressing 【OK】 button will enter into "commissioning guide" page. As shown on following various steps. Commissioning step totally divided into five steps, it could select require implemented step by up and down movement of cursor of 【move left】、【move right】 button, then implementing corresponding operation according to prompt of prompt box, then could finish commissioning step step by step. When all steps are carried out correctly, system could work normally.

6.1. The first step, Adaptive alignment of driver stroke.

Controller could realize check to driver rotational speed of motor and pushing rod position through checking relative encoder signal built-in driver, so it require to renew align position information internal recorded in controller when carrying out new machine installation, namely actual position of driver's pushing rod require to match with recorded data of controller internal, thus controller could have function of electronic limiting position protection.

In addition, when user only require to replace controller or driver due to failure etc. reasons during usage, it require to renew carry out alignment to driver, for the purpose of ensuring (replaced) saved driver stroke parameter inside controller completely matched with (replaced) driver.

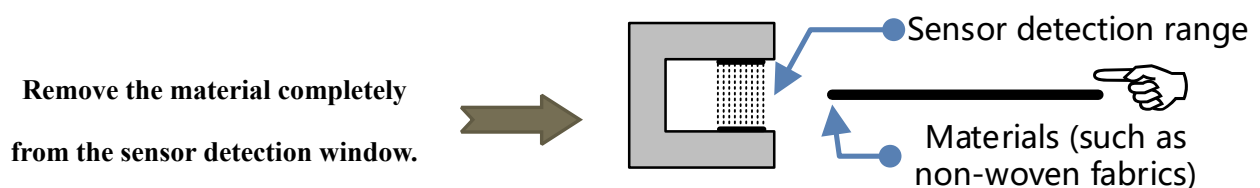
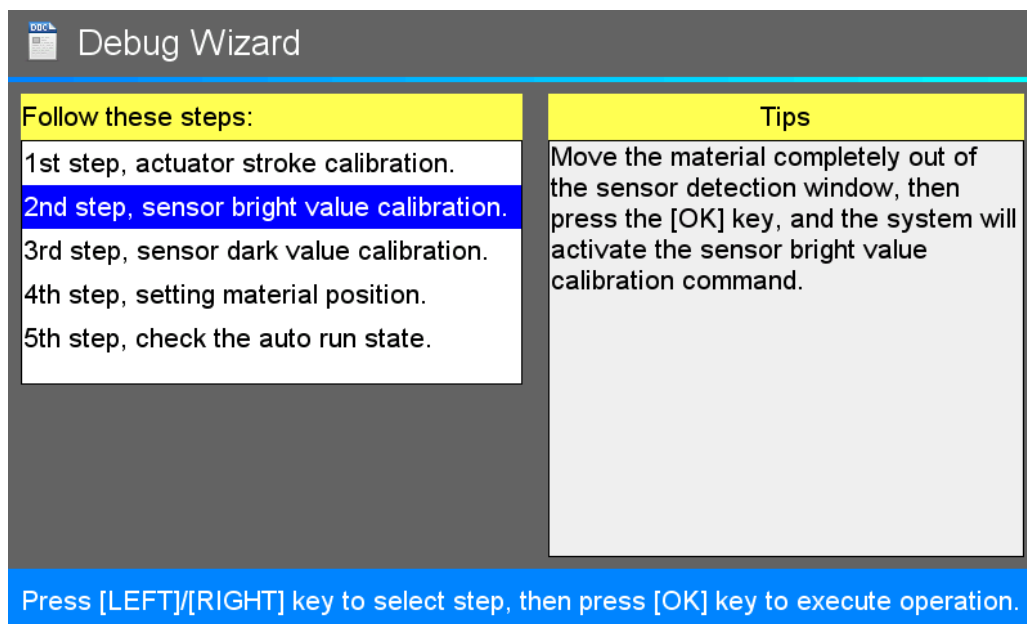


It requires to carry out carefully observation to driver's movement when carrying out stroke alignment, whether separately proceed to maximum or minimum mechanical stroke position of driver. If driver mechanical friction is larger or driver under overloading status during alignment procedure, it probably caused stroke course

failure due to smaller alignment current setting (probably it will not have corresponding failure prompt), this require to renew set stroke alignment current parameter at this time, then carrying out alignment once again.

6.2. Step 2, fully open alignment (bright value)

Edging sensor detector is divided into ultrasound and infrared these two types. Due to temperature, humidity and light etc. factors of working environment could affect the maximum checked value of detector, namely checking range of sensor may have error. So it suggests carry out alignment for one time after installation of new machine. Please carrying out operation according to corresponding prompt as shown on following figure for alignment operation, namely could finish alignment order.



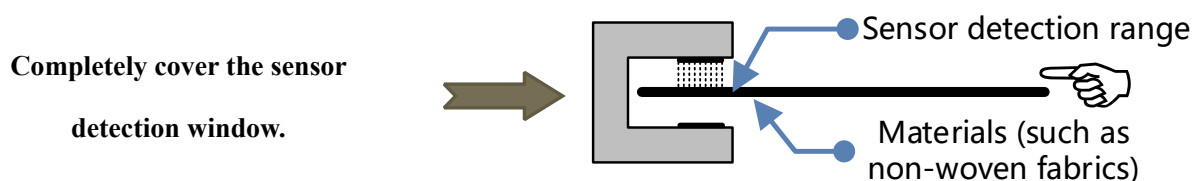
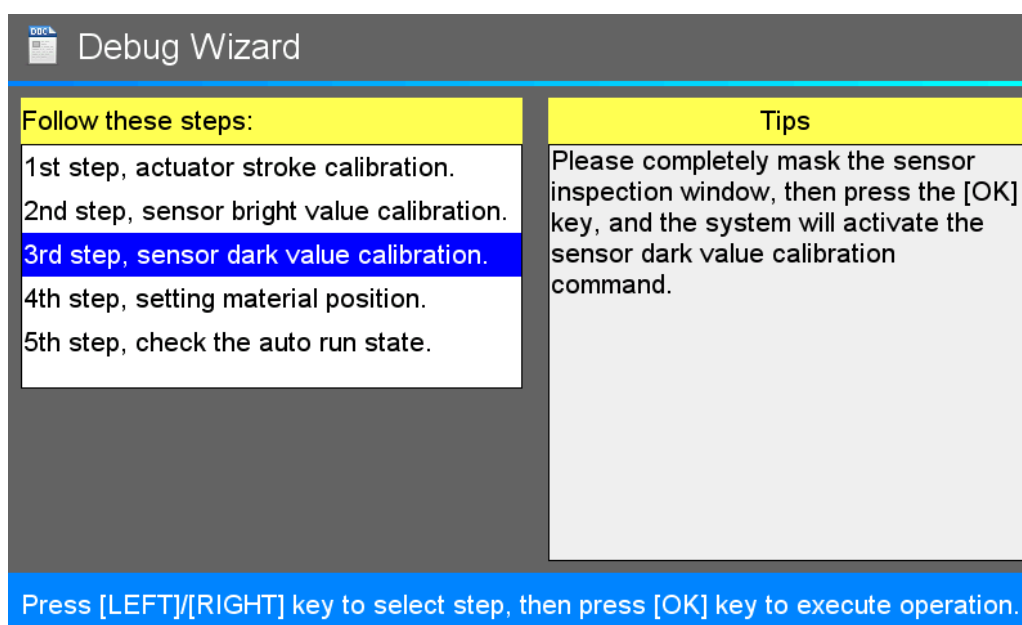
In addition, when it occurs following two circumstances, it requires to implement fully opened alignment order of sensor for one time.

1. When checking window of sensor detector without material, if material offset value of material of controller main interface less than +90, then it require to implement fully opened alignment order to detector.

2. When effective checking range of sensor detector obvious lessened, it requires to implement fully opened alignment order to detector.

6.3. Step 3, fully covered alignment of sensor (dark value).

Edging sensor detector is divided into ultrasound and infrared these two types. It probably could affect the minimum checked value of detector due to material quality, mesh hole, transparency, light reflecting characteristics etc. different cases of checked material, namely effective checking range of detector probably become smaller. So it requires to implement fully covered alignment to detector. Please carrying out operation according to corresponding prompt as shown on following figure for alignment operation, namely could finish alignment order.

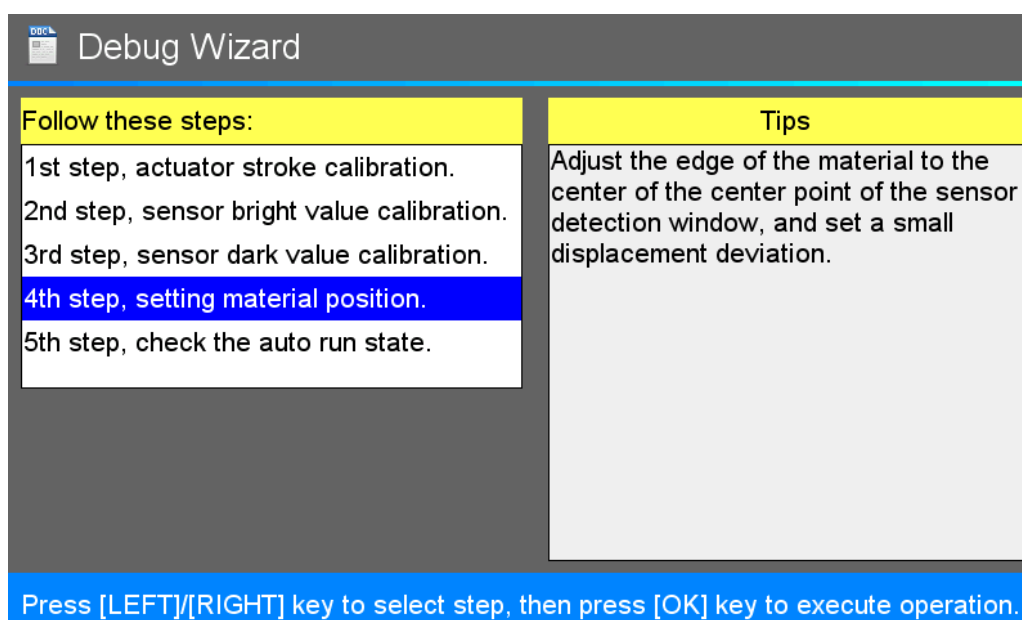


In addition, when occurs following several circumstances, it requires to implement fully opened alignment order of sensor for one time.

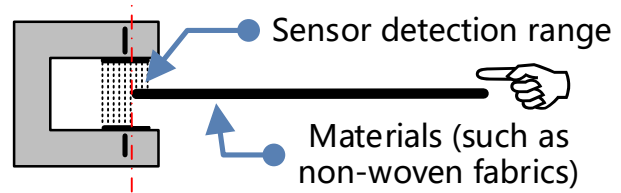
1. When checking window of sensor detector is fully covered by material, if material offset value of material of controller main interface not less than -90, then it require to implement fully covered alignment order to detector.
2. When effective checking range of sensor detector obvious lessened, it requires to implement fully covered alignment order to detector.
3. When replacing new material, due to characteristic of material occurs change, it requires to implement fully covered alignment order.

6.4. Step 4. Adjusting material position.

This step mainly only require to adjust material edge to calibration line nearby of sensor checking window center, namely setting one small displacement deviation (could carry out fine adjustment knob settings by detector position). Please carrying out operation according to corresponding prompt as shown on following figure.

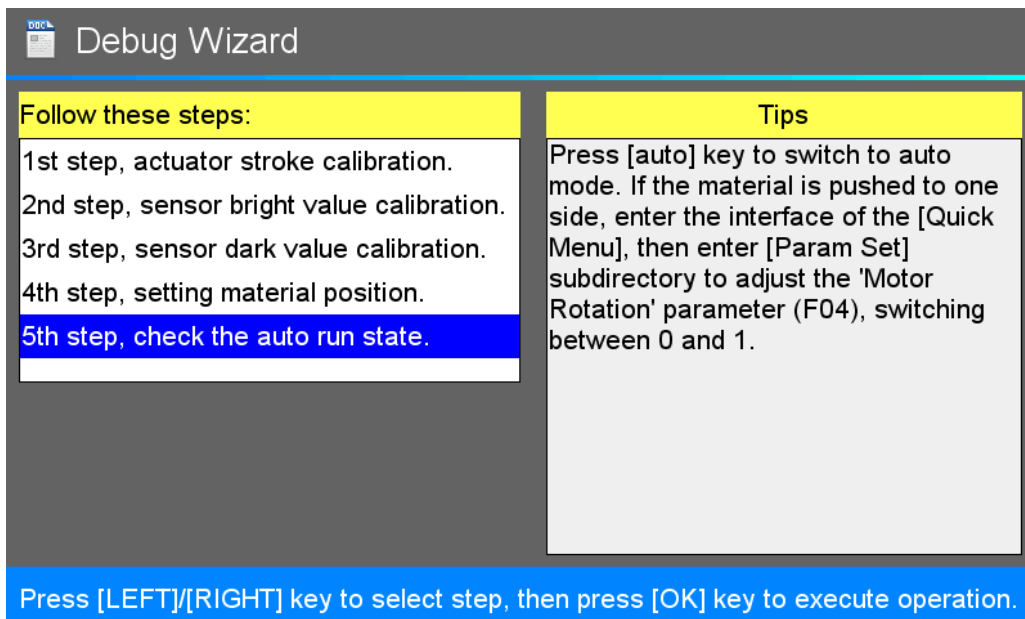


Adjust the material to the center scale.



6. 5. Step 5. Checking automatic operational status whether normal.

After correctly complete before four steps, pressing **【automatic】** button will switch to main interface entering into automatic working mode. Due to step 4 setting one material small deviation value, so under normal condition, deviation rectifier will automatic drag material to zero point. If pushing material to the side, namely unable to automatic return to zero, then it indicates require to renew setting electric motor rotation direction, and setting method operated according to corresponding prompt of following figure shown interface.



7. Sensor setting

Two-way sensor detector signal input is supported by this system, namely it could support double detector centering rectify work mode. When only use one-way detector signal to carry out unilateral tracing mode, it requires to correctly set "sensor parameter selection" parameter value according to sensor detector actual electrical

connection (referring to system electrical connection figure). Parameter setting value definition as shown on following figure interface.

 Param Setting

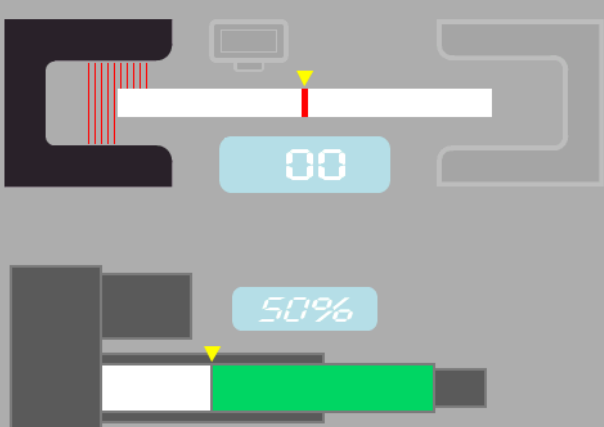
NO.	Value	Description
F00	20	Control Gain
F01	100	Back-end Limit Point
F02	100	Fore-end Limit Point
F03	50	Center Point
F04	0	Motor Rotation
F05	1	Sensor Select
F06	1	语言选择/Language
F07	0	Initial Mode
F08	000	Password

Tips
Setting definition:
1--sensor 1 (P1 connector)
2--sensor 2 (P2 connector)
3--double sensor mode (center alignment mode)

Press [LEFT] / [RIGHT] key to select parameter item, then press [OK] key to modify

When "sensor selection" parameter value is setted as "1", it indicates sensor detector 1 is selected as working detector. Meanwhile ensuring connector of sensor detector correctly insert into "P1" socket of the back of controller , otherwise system is unable to correctly checked material deviation value. Interface as shown on following figure.

Run State: Manul Temperature: 28℃



Control Gain

20

Motor Rotation

CW

Control Mode

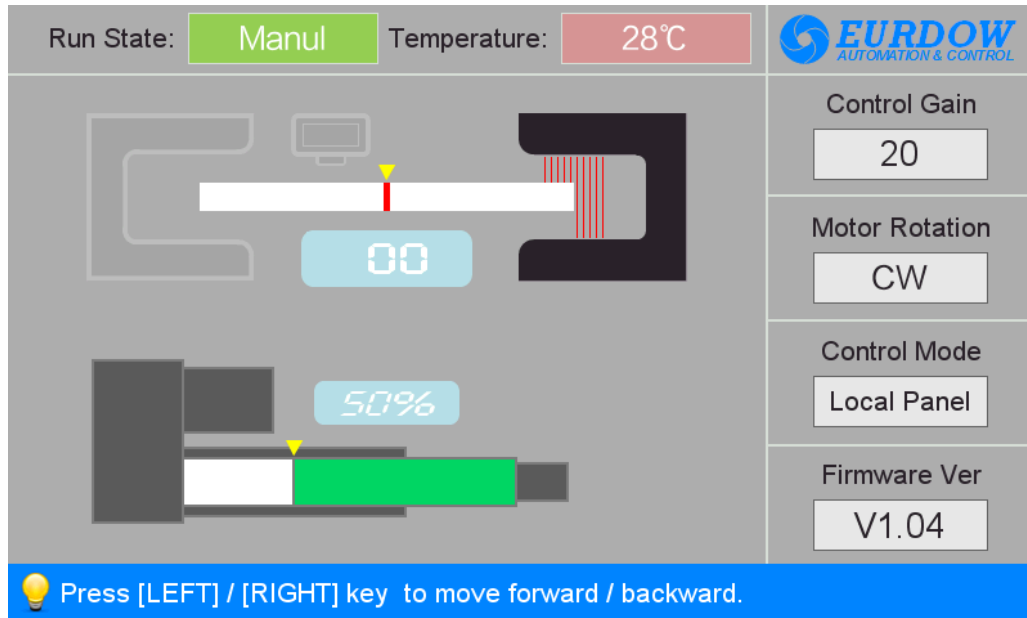
Local Panel

Firmware Ver

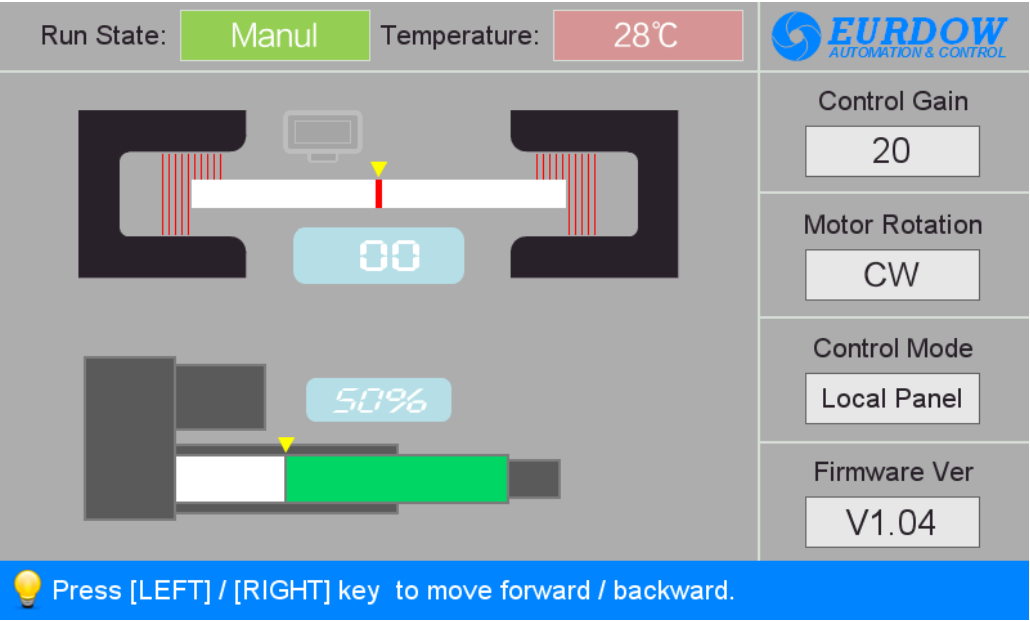
V1.04

 Press [LEFT] / [RIGHT] key to move forward / backward.

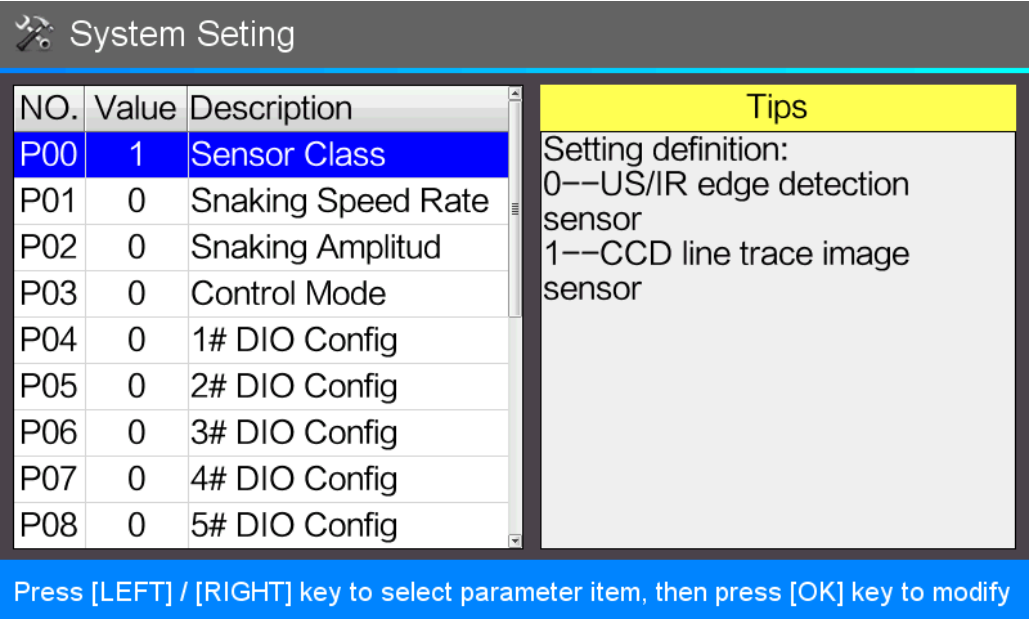
When "sensor selection" parameter value is setted as "2", it indicates sensor detector 2 is selected as working detector. Meanwhile it requires to ensure connector of sensor detector correctly insert into "P2" socket of the back of controller, otherwise system is unable to correctly checked material deviation value. Interface as shown on following figure.



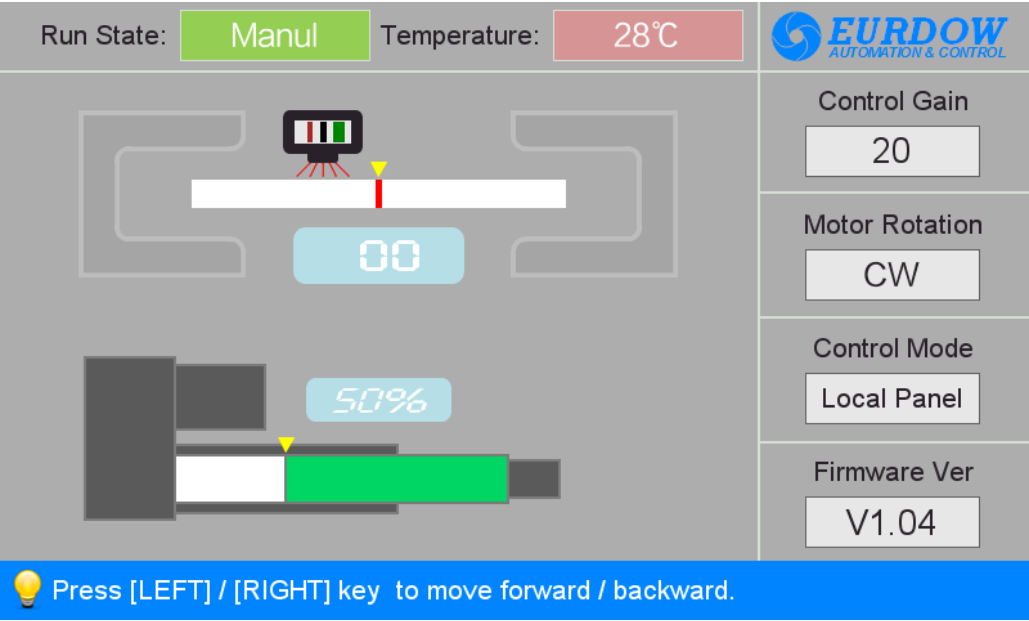
When "sensor selection" parameter value is setted as "3", it indicates double detectors centering rectify working mode. Meanwhile it requires to ensure connector of sensor detector correctly insert into "P2" , "P1" socket of the back of controller , otherwise system is unable to correctly checked material deviation value. Interface as shown on following figure.



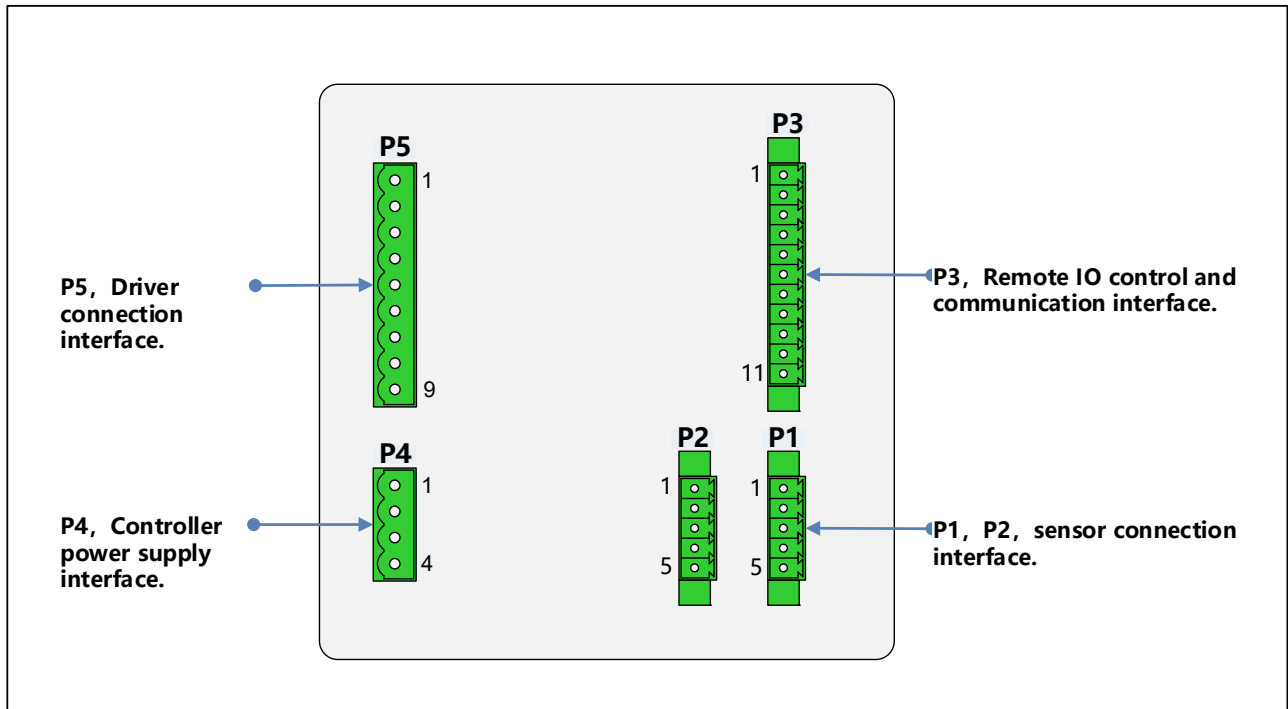
When the system selecting CCD sensor detector to carry out trace to material, it requires to set "sensor type" parameter value as "1" at "system settings" page. Interface as shown on following figure.



When the system selecting CCD sensor detector to carry out trace to material, it requires to set "sensor type" parameter value as "1" at "system settings" page. Main interface as shown on following figure.



8. External interface



Pin	Name	Description
P1, P2 socket (rectifying sensor connection interface)		
1	DC24 V	Positive electrode of sensor power supply
2	Ain	Sensor simulation measuring signal
3	0 V	Negative electrode of sensor power supply
4	Earth	Grounding point of cable shielding layer
5	LIN_Bus	LIN communication signal
P3 socket (remote controlling interface and communication interface)		
1	DC24 V	Power supply positive electrode of number IO
2	DIO_1	Input and output switching value (Detailed definition should be set by parameter F22)
3	DIO_2	Input and output switching value (Detailed definition should be setted by parameter F23)
4	DIO_3	Input and output switching value (Detailed definition should be

Pin	Name	Description
		setted by parameter F24)
5	DIO_4	Input and output switching value (Detailed definition should be setted by parameter F25)
6	DIO_5	Input switching value (Detailed definition should be setted by parameter F26)
7	DIO_6	Input switching value (Detailed definition should be setted by parameter F27)
8	0 V	Power supply negative electrode of number IO
9	RS485_G	Communication reference ground of RS485
10	RS485_B-	Communication data signal of RS485
11	RS385_A+	Communication data signal of RS485
P4 socket (controller power supply interface)		
1	DC24 V	Positive electrode of controller power supply
2	0 V	Negative electrode of controller power supply
3	0 V	Negative electrode of controller power supply
4	Earth	Caseground wire (grounding point of shielding layer)
P5 socket (Driver connection interface)		
1	HALL_V+	Hall sensor signal, connection cable general is red color
2	HALL_C	Hall sensor signal, connection cable general is yellow color
3	HALL_B	Hall sensor signal, connection cable general is orange color
4	HALL_A	Hall sensor signal, connection cable general is brown color
5	HALL_0V	Hall sensor signal, connection cable general is black color
6	Motor_U	Electric motor driving signal, connection cable general is red color
7	Motor_V	Electric motor driving signal, connection cable general is white color
8	Motor_W	Electric motor driving signal, connection cable general is black color
9	Earth	Grounding point of cable shielding layer



Note:

It must ensure correct connection of plug, otherwise will cause unpredictable outcome.

9. External control

Except for various operational controlling of operation panel, this rectifying controlling system still owns one external controlling interface (P3) used for expanding various controlling functions of rectifying controller. External controlling function totally divided into four kinds of controlling mode: Native mode, remote IO mode, communication mode and native+remote IO hybrid controlling mode, separately suitable for various applicable occasions, and setting of controlling mode could be setted by modifying "system controlling mode" parameter value under "system setting" page(as shown on following figure interface), and detailed setting method see relevant contents of 5.2 section system settings.

 System Setting

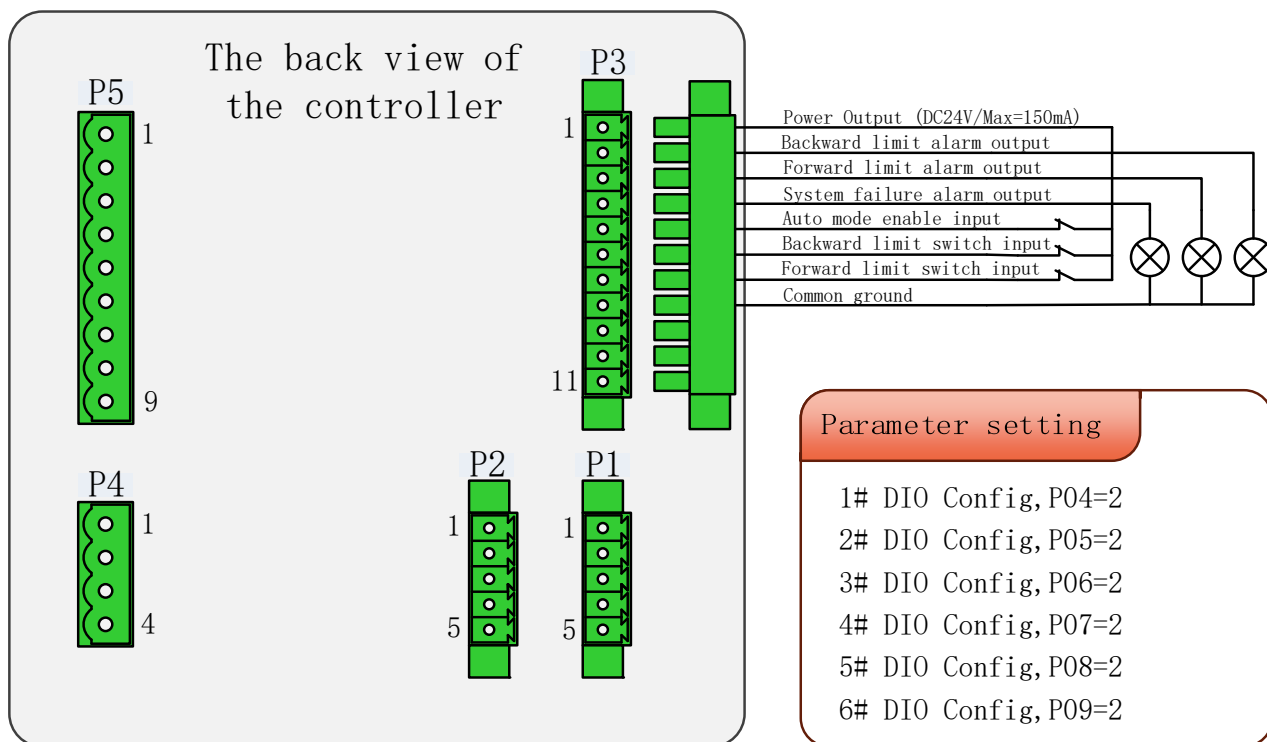
NO.	Value	Description
P00	1	Sensor Class
P01	0	Snaking Speed Rate
P02	0	Snaking Amplitud
P03	0	Control Mode
P04	0	1# DIO Config
P05	0	2# DIO Config
P06	0	3# DIO Config
P07	0	4# DIO Config
P08	0	5# DIO Config

Tips
Setting definition:
0--Local controller panel
1--Remote IO mode
2--Remote communication mode
3--Local + Remote IO mode

Press [LEFT] / [RIGHT] key to select parameter item, then press [OK] key to modify

9.1. Native panel controlling mode

External controlling interface could output limiting position of controller and failure alarm status to port by relevant digital port parameter configuration under native panel controlling mode, used for driving indicator or buzzer to carry out sound and light alarm; It could access startup/stop of switch signal controlling automatic rectifying mode, such as could remotely access one emergency stop button used for working of startup/rectifying controller when two materials; And rectifying controller internal has already make use of encoder inside driver brushless electric motor to realize electronic limiting position function, but it also could realize limit position protection function through external access limiting position switch. Following figure is typical connection diagram and parameter configuration of multiple applicable occasion.



Note:

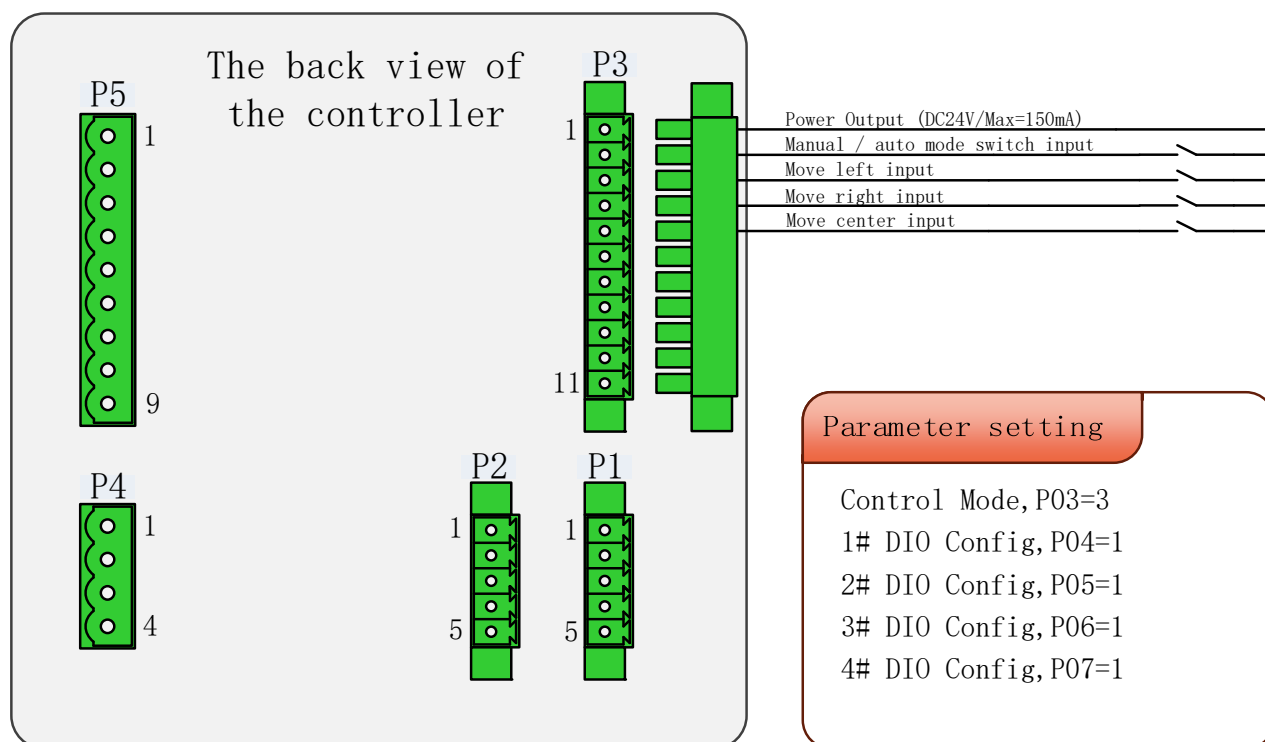


1. 24V output power supply common terminal maximum output is only 150mA, so it can't access loading that over its burden.

2. Automatic rectifying enable signal and external limiting position switch input signal require to access normally closed contacts.

9.2. Native panel+Remote IO controlling mode

Except for could carry out various operations, rectifying controller still owns remote IO controlling function, it only require to make system controlling mode and various configuration parameters of digital port making correspond settings, that it could realize remote manual/automatic mode switch to rectifying controller, and before and after actions of driver, centering movement. Following figure is typical connection diagram and parameter configuration of multiple applicable occasion.



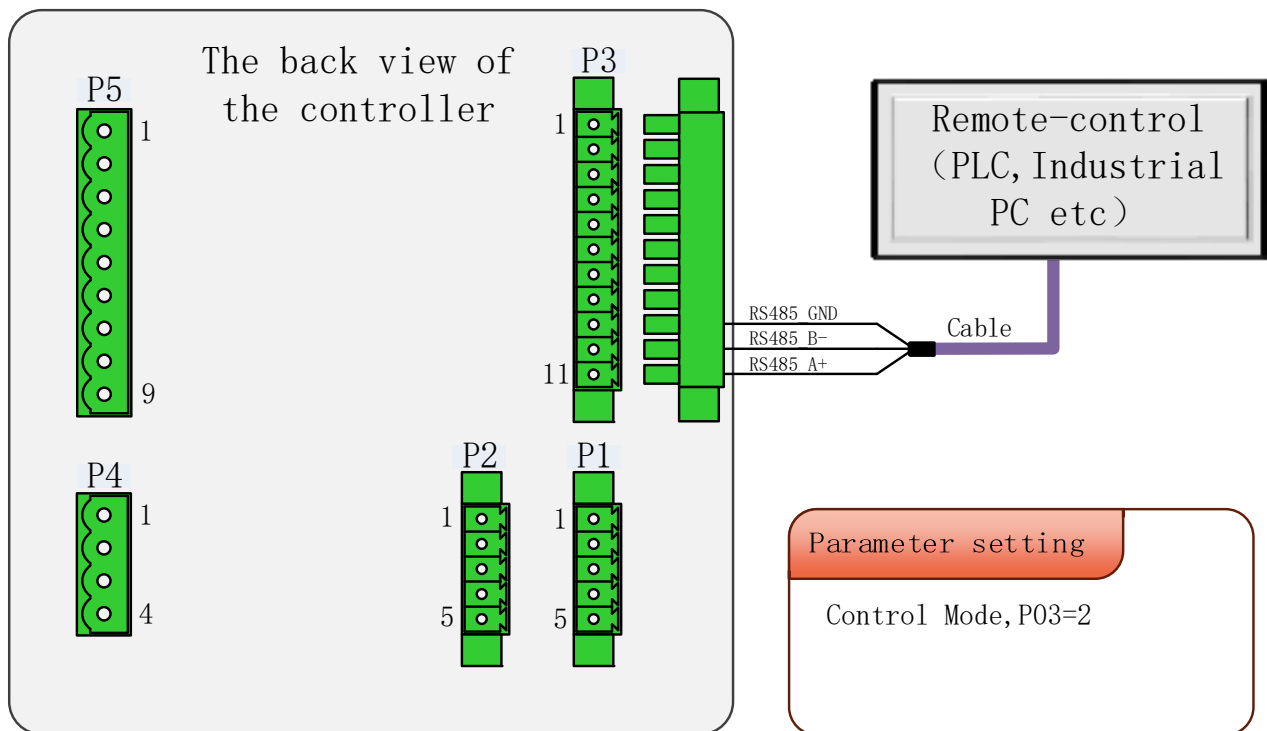
Note:



1. DC24V output power supply common terminal maximum output is only 150mA, so it can't access loading that over its burden.
2. Automatic rectifying enable signal and limiting position switch input signal require to access signal which is similar to normally closed switch.

9.3. Remote communication controlling mode

Another way to realize remote control is to make use of RS485 serial communication interface to carry out remote control to controller. Modbus-RUT communication agreement is abided by communication interface. Except for controlling various operations of rectify controller, it still could acquire internal various status of data and parameter settings of controller. The detailed communication Modbus-RUT agreement, please contacting our company's technical support to claim.



Note:

Except for accessing parameter design interface to configure parameter, other operation of native operational panel is invalid.

10.Composite key description:

Manual mode under main interface	 + 	Driver stroke alignment	Startup driver stroke alignment movement.
	 + 	Fully covered alignment of sensor	Sending fully covered alignment movement order of sensor to sensor. It requires to use effective checking window of fully covered sensor of checked materials.
	 + 	fully open alignment of sensor	Sending fully covered alignment movement order of sensor to sensor. Effective checking window of sensor without cover.
Manual/automatic mode under main interface	 + 	Rapid setting rectify sensitivity parameter value	Pressing composite key will activate rectify sensitivity parameter setting mode under main interface of manual/automatic mode.

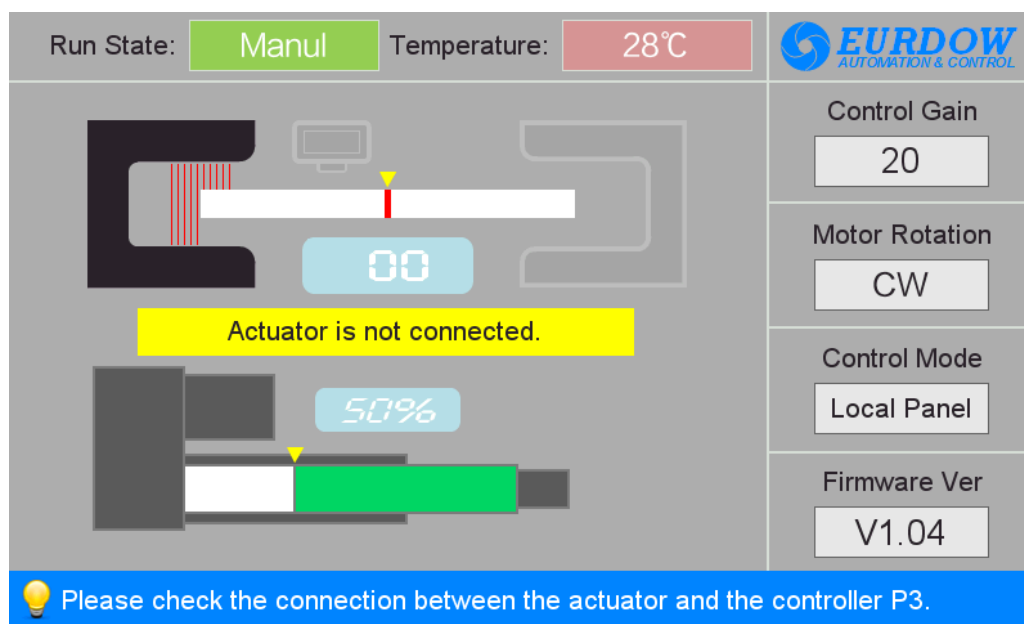


Note:

Operating way of composite key : pressing **【Fn】+【__】**button at the same time under main interface, start to implement corresponding movement order, then loosen two buttons at the same time.

11. Failure alarm and abnormal treatment

Controller owns failure diagnosis function during operational process, and displaying on the display screen, if it occurs failure and without any prompt, please referring to contents of working abnormal of this section.



10.1 Failure diagnosis prompt

No.	Failure prompt content	Treatment method
1	(Without failure prompt)	Current system is normal
2	Automatic rectifying is overtime	Please checking whether driver jammed, or whether F31 parameter setting value matched with driver stroke
3	Driver disconnection	Please checking P3 connector which connecting with driver whether connected reliably
4	Driver overcurrent protection	Please checking power driving line of driver whether occurs short circuit
5	Self-adaptation stroke alignment is failure	After renew setting alignment current, carrying out stroke alignment once again
6	Driver overload protection	Please checking whether driver matching with load

7	Driver overheat protection	Please checking whether driver matching with load
8	Driver CPU overheat protection	Please checking work temperature of controller whether too high
9	System voltage of power supply is abnormal	Checking 24v DC power supply whether working normally
10	Current sensor of driver failure	Internal failure of controller, please contacting service
11	CRC verification mistake of system parameter sheet	Please renew checking and setting working parameter of controller (This failure only could have diagnosis when carrying out power on self test at controller)
12	Lost of power failure backup data	Please aligning driver stroke under condition of driver without load
13	Overtime protection of serial communication	Please checking communication cable whether connected reliably
14	Driver internal reference voltage abnormal	Internal failure of controller, please contacting service
15	Under-voltage protection of backup power supply	Internal failure of controller, please contacting service
16	Internal communication failure	Internal failure of controller, please contacting service
17	Product unauthorized protection	Internal failure of controller, please contacting service

10.2 Working abnormal treatment

No.	Failure content	Treatment method
1	Driver out of service under manual mode	Please implementing driver alignment order, referring to 6.1 section.
2	Driver out of service under automatic mode	1 Checking sensor signal whether normal, whether moving materials of sensor have+and-value change, if it is without please operating for one time according to 6.2 and 6.3 section.

		2 Making parameter value of "electric motor rotation direction" under "parameter settings" page switched for one time between 0 and 1. 3 Please making power supply grounding treatment.
3	Offset indicator of display screen is constant for a long time	1 Please checking connection line of sensor detector whether well. 2 Checking sensor selection whether matching, referring to section 7.
4	Sensor signal is unstable and number jumping and changing are large	1 Please implementing driver alignment order, referring to 6.2 and 6.3 section. 2 Please making switch power supply grounding treatment, referring to the first section.