HANKUN

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HITORK®

Electric Actuators

USER MANUAL

HKM.2
Multi-turn Series

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Version 1.0

Note：As the products improvements, specifications are subject to change without notice.Please kindly contact us for latest information.

Scope of use: HITORK® second generation multi-turn series electric actuators.

Actuators must be checked and set up to meet the requirements of field operation and process control system before being put into use.Please ensure that you read and understand this manual completely.

As our products are constantly developing and improving,the design of HITORK® actuator is subject to change without notice.Please contact us for the latest technical information.

CONTENTS

1. Operator interface

The operator interface of HITORK® electric actuator is composed of handwheel,clutch switch knob, display interface,on-off knob,and local-remote knob,remote controller as shown in figure 1.

1.Display
2.On-off knob
3.Local-remote knob
4.Clutch switch knob
5.Handwheel
6.Remote controller

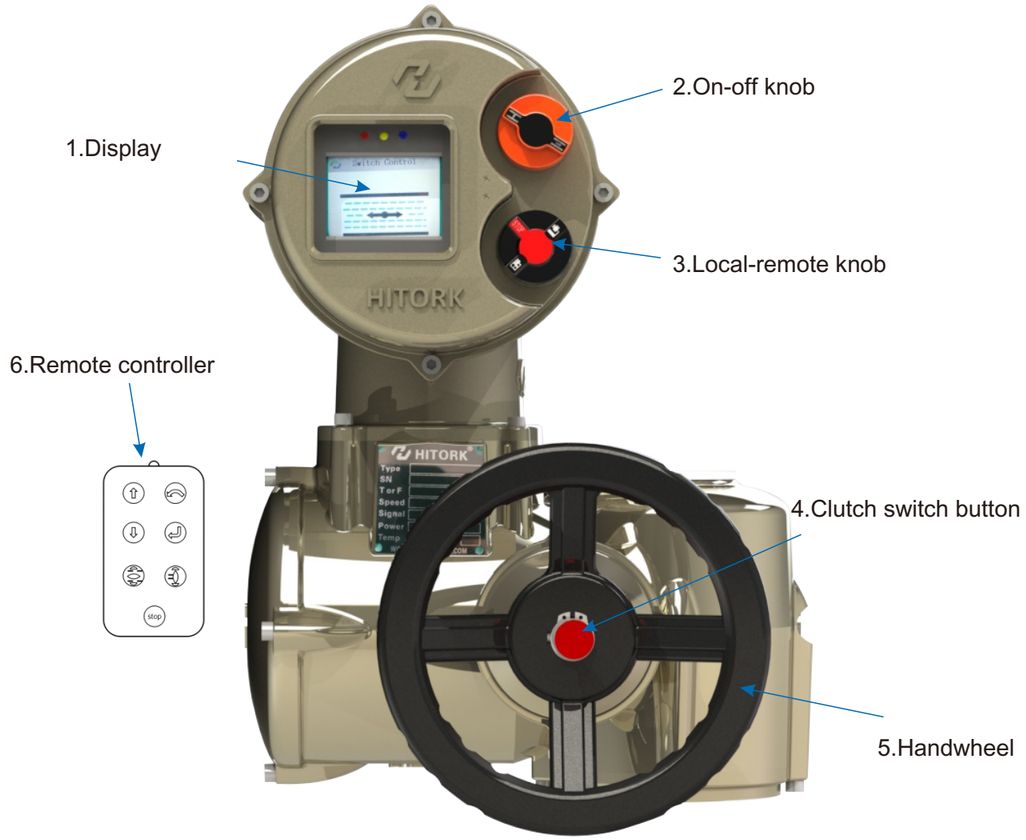


Figure 1: The operator interface

2. Manual operation

Press the clutch switch button at the center of the handwheel to engage the clutch with the handwheel,then you can turn the handwheel to drive the main shaft to rotate.The clutch will automatically disengage and return to the motor drive state when the actuator is electrically operated.

Electric operation is not allowed when using handwheel.To prevent personnel and equipment damage caused by wrong operation,turn the Local-remote knob (red knob) to the stop state before turning the handwheel.

In general,the default direction of turning the handwheel clockwise is the valve closing direction, while the default direction of turning the handwheel counterclockwise is the valve opening direction.

3. Electric operation

⚠ Warning

Power Supply : Check the power supply voltage,make sure it is consistent with the voltage on the actuator nameplate, and then turn on the power.

Local-remote knob (red knob): three states can be switched among local/remote/stop The stop function remains active when the knob is locked in the local or remote position.When the knob is locked in the stop state,it can prevent local or remote operations from being performed.

The local control: turn the red knob to the local state,rotate the black knob next to it to on or off state,then conduct the local electric operation.

Remote control: change the red knob to remote state,at this time the local switch is failed,the actuator can be controlled by remote on-off signal or analog signal.

4.Display

The composition of the HITORK® actuator display interface is shown in figure 2:

(1) Green -- Valve closing indicator
(2) IR sensor
(3) Blue -- Bluetooth connection status indicator
(4) Red -- Valve opening indicator
(5) LCD colorful display

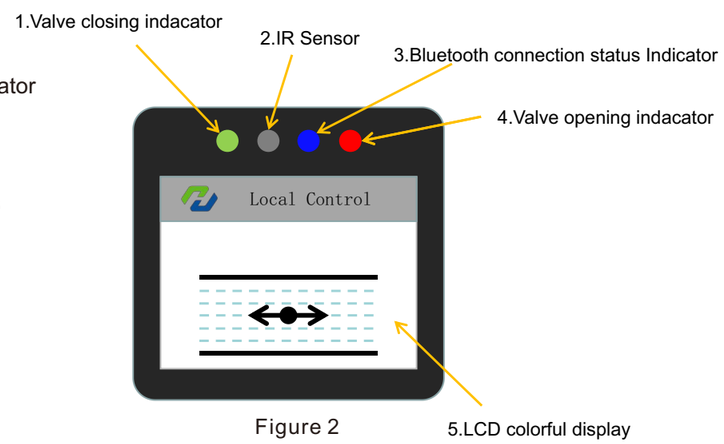


Figure 2

The corresponding status of LED indicator:

1) Opening process: the red indicator light flash
2) Closing process: the green indicator light flash
3) Fully open state: the red light is constantly lighting
4) Fully closed state: green indicator light is constantly lighting
5) Alarm Status: red light and green light flash simultaneously
6) Bluetooth connection state: blue light flashes

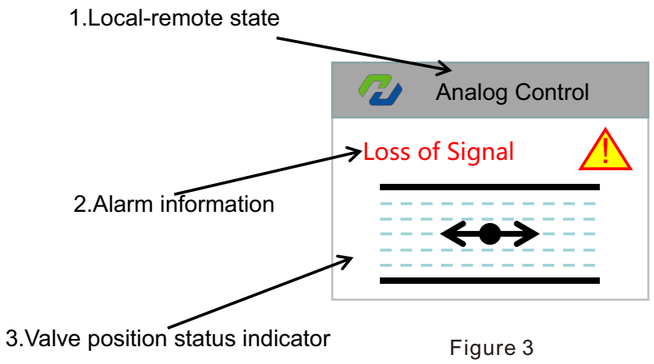


Figure 3

LCD display:

The HITORK® actuator is powered on and the system is initialized and loaded, the default display contents of the LCD display screen are shown in figure 3

Display specific content:

1.Local-remote state (text)

2.Alarm information (if there is an alarm, the corresponding error information will be displayed)

3.Valve position status indicator (Valve position indication (fully open ; fully closed) ; valve opening percentage)

LCD status display interface figure legends :

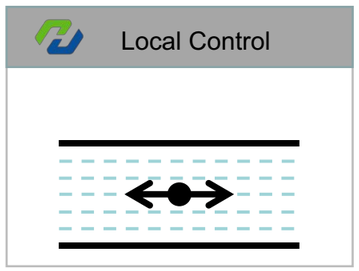


Figure 4: Fully open

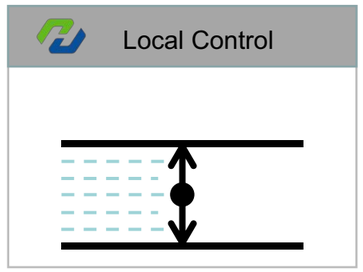


Figure 5: Fully closed

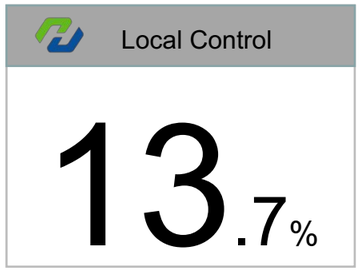


Figure 6: Valve opening percentage

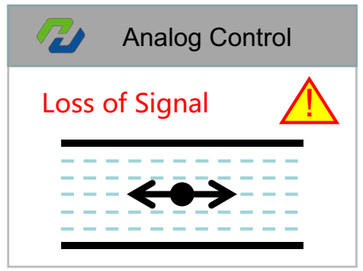


Figure 7: Alarm indication
(phase failure, torque, stroke, overheating, signal loss, etc.)

5. The remote controller

Description(Figure 8):

1. Up: select to move up

2. Down: select to move down

3. Undo/back: used to undo the Settings or menu function back.

4. Enter/confirm: menu entry; menu selection confirmation; parameter setting confirmation.

5. Open: used to locally open the valve by remote controller

6. Close: used to locally close the valve by remote controller

7. Stop: Stop the actuator from opening and closing the valve

8. Infrared signal transmitter

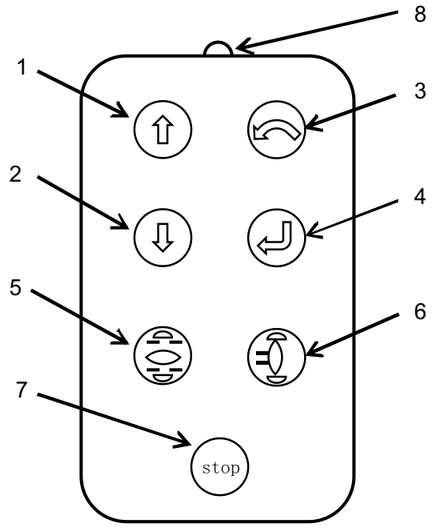


Figure 8: The remote controller

Use of remote controller:

When use the remote controller to set up and operate the actuator, turn the local-remote knob (red knob) to be locked at the local state,then the actuator can be set and switched on and off by the buttons on the remote controller,for better remote control response,aim the infrared signal transmitter at the display interface during operation.

Note: Actuator knob setting instructions

HITORK® intelligent electric actuators also support knob setting to meet the needs of actuator parameter setting in emergency situations. Local-remote knob (red knob) is locked at the stop state and keep the on-off knob (black knob) in the open state for more than 3 seconds,you can enter the parameter setting mode.

In the parameter setting mode, the knob combination action can correspond to the key setting function of the remote controller:

The local-remote knob from the stop state to the local state corresponding to the enter/confirm function of the remote controller ⏎;

The local-remote knob from the stop state to the remote state corresponding to the function of undo/back function of the remote ↩;

The local-remote knob is in the stop state,

On-off knob inching for On is to move downwards,corresponding to the function of remote controller ⇩;

On-off knob inching for Off is to move upwards,corresponding to the function of remote controller ⇧.

6. System program

The system program of HITORK® second generation actuator includes four functional modules: parameter setting, system status,data recording and resource management.

Parameter settings: including Basic Settings,Advanced Settings and Factory Settings, mainly to realize the inspection and settings of the operating parameters and factory parameters of the actuator.

System status (advanced customization function) reflects the current system status in real time, and provides predictive maintenance and suggestions through self-diagnosis and intelligent analysis and calculation of historical records.

Data recording (advanced customization function.): set and view data records of various parameters during the operation of the actuator,and visualize historical data.

Resource management (advanced customization function): system application,joint control and intelligent management of network equipment resources.

Steps to enter the system program:

Actuator power on,and after the system is initialized,it shows the current valve position,turn the local-remote knob (red knob) to the local,press ⏎ on the remote controller to enter the interface showed valve position and torque, press the key ⏎ again to enter the system menu interface, according to the need press ⏎ to enter into the different function menu,perform specific operations such as actuator parameter setting or data viewing.

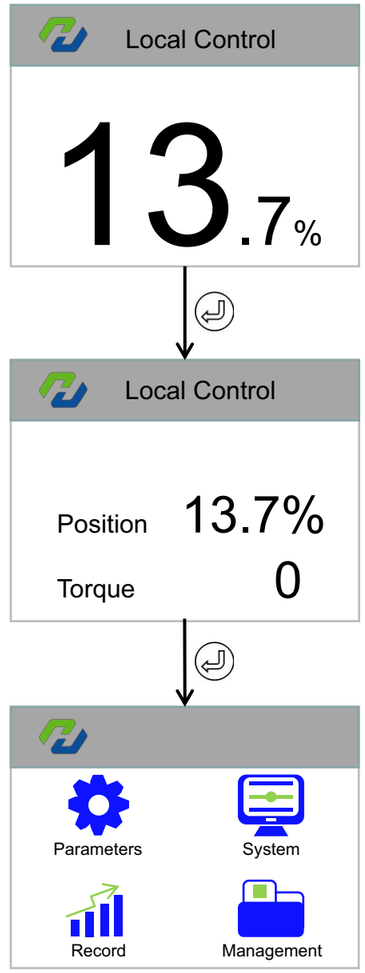


Figure 9: System program

【Parameter Settings】

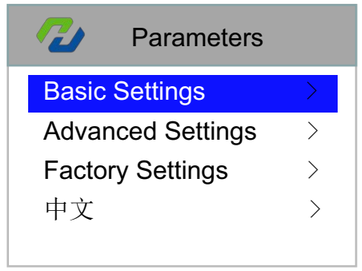


Figure 10: Parameter Settings

Parameter setting is the basic standard function of the actuator, which is divided into three parts: basic setting,advanced setting and factory setting.

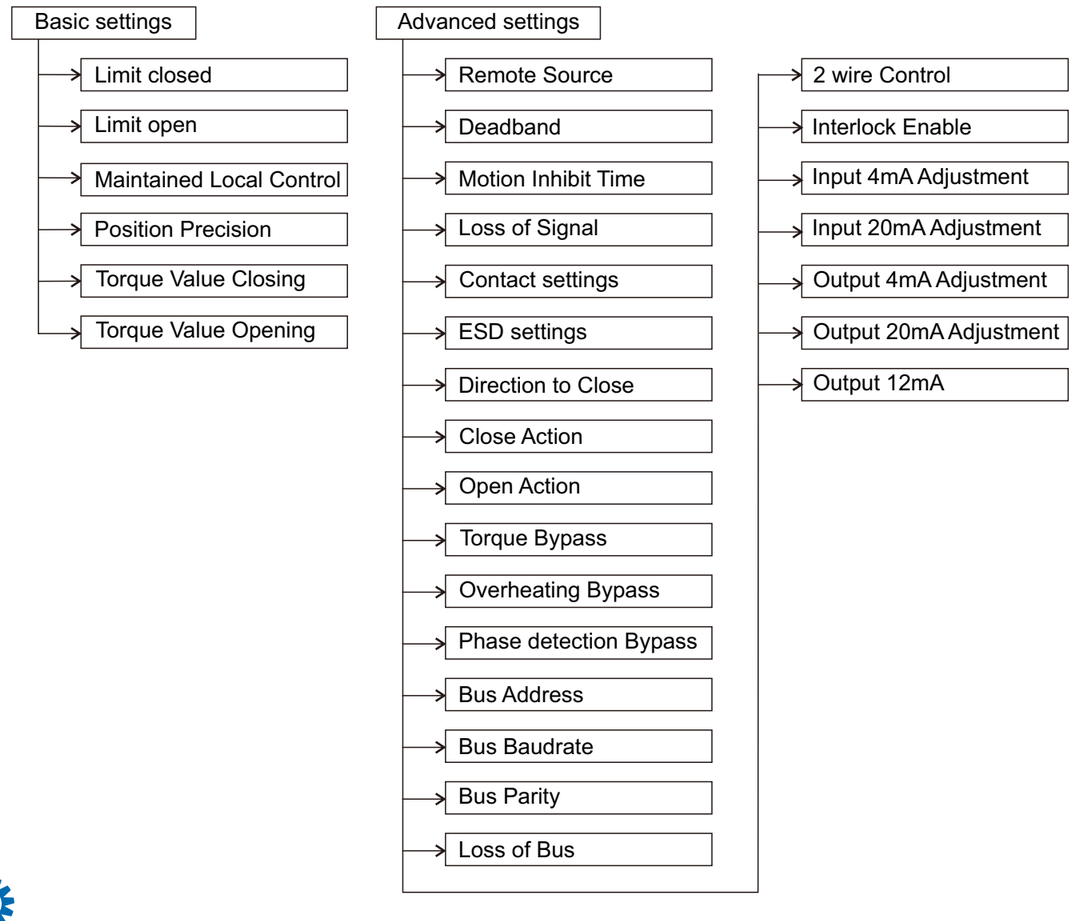
[**Basic settings**] is the basic parameter setting for the actuator. Before normal use of the actuator,it is necessary to set and adjust parameters,including the opening and closing of valve position with Limit Open and Limit Closed, Maintained local control,Positioning Precision setting,Torque protection towards opening direction and closing direction with Torque Value Opening and Torque Value Closing.

[**Advanced settings**] is the system parameter setting of the actuator,including remote source,Deadband, Motion Inhibit Time,Loss of Signal,Contact settings, Direction to Close,Close Action,Open Action, ESD settings,Alarm Bypass Setting and Analog Signal Adjustment etc.

[**Factory settings**] is generally used for testing and debugging by the manufacturer of the actuator or customization of specific functions. The equipment is normally used by the customer,no need to do this settings.

[中文] can change the system language to Chinese.

Parameter setting menu structure



【Parameters】→【Basic Settings】

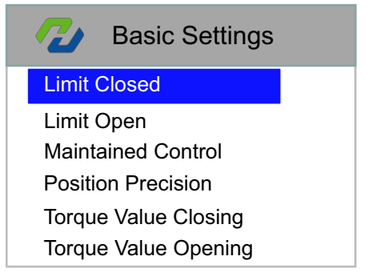


Figure 11: Basic Settings

[**Basic Settings**] is the basic parameter setting for the actuator application.Before normal use of the actuator,it is necessary to set and adjust parameters,including the opening and closing of valve with Limit Open and Limit Closed,Maintained control,Positioning Precision setting,torque protection towards opening direction and closing direction with Torque value opening and Torque value closing.

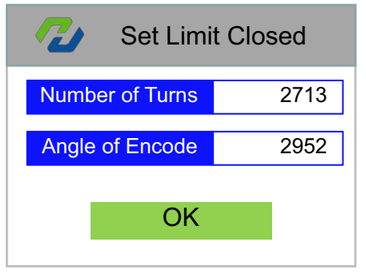


Figure 12: Limit Closed

[**Limit Closed**] set the encoder parameter value when the actuator corresponds to the full closing valve position.

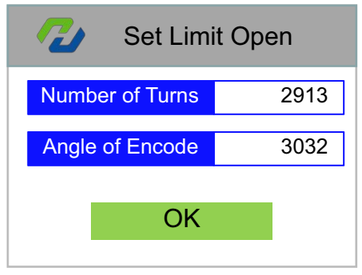


Figure 13: Limit Open

[**Limit Open**] set the encoder parameter value when the actuator corresponds to the full valve opening position.

【Parameters】→【Basic Settings】

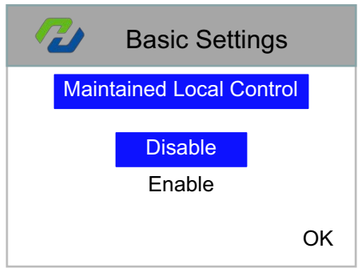


Figure 14:Maintained Local Control

[**Maintained Local Control**] Set the working mode of black on-off knob.This setting has two options: Disable and Enable.

Disable: forbid the function of local control, that is, you can only operate the actuator with local inching operation.When the black knob is operated,keep it at the on or off position continuously.When the knob is reset and the motor will stop running.

Enable: enable the local control, turn the black knob to the position of on or off and trigger the operation of "on" or "off",even if the knob is reset,the motor keeps running until the valve is fully open or closed.After the knob triggers on and off operation,if you want to stop the motor operation in the middle,you need to hit the red knob to stop or use the stop button of the remote control.

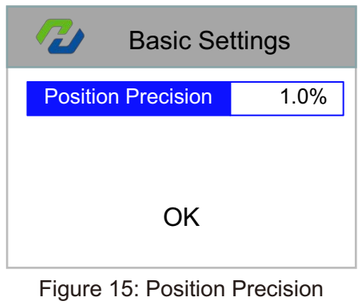


Figure 15: Position Precision

[**Position Precision**] when the valve position signal is given by the analog signal,the positioning accuracy of the actuator's actual travel is expressed as the percentage of the full travel,which is set as 1.0% by default. Accuracy setting range is 0.1%~9.9% (default setting is 1.0%).

⚠ Note：
Position precision setting cannot be less than the setting value of control deadband (figure 21).

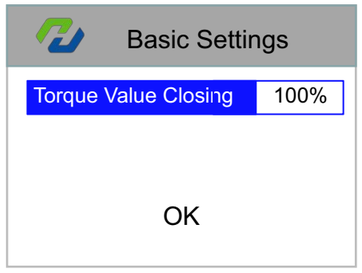


Figure 16: Torque Value Closing

[**Torque Value Closing**] The protection torque of the closing direction is expressed as a percentage of the rated torque.When the torque value of the actuator in the process of closing direction exceeds the set protection torque value,it will automatically shut down and display the alarm information.Setting range of protection torque of turn-off direction is: 40%~120% (default: 100%).

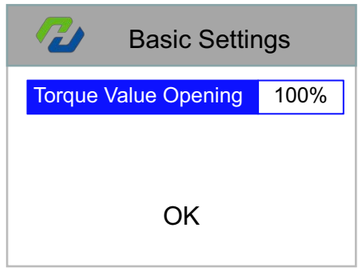


Figure 17:Torque Value Opening

[**Torque Value Opening**] The protection torque of the opening direction is expressed as a percentage of the rated torque. When the torque value of the actuator in the process of opening direction exceeds the set protection torque value,it will automatically shut down and display the alarm information.Setting range of protection torque of turn-on direction is: 40%~120% (default: 100%).

【Parameters】→【Advanced settings】

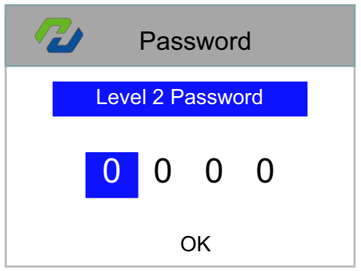


Figure 18: Password

To enter [**Advanced Settings**],you need to input the password. Default: 2018. presses the up and down key on the remote control, selecting the number, press enter key to enter the setting interface.

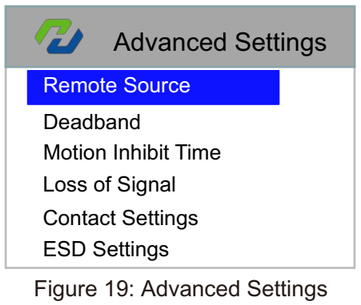


Figure 19: Advanced Settings

[**Advanced settings**] systematic parameter setting of the actuator,including Remote Source,Deadband, Motion Inhibit Time, Loss of Signal,Contact Settings,Direction to Close, Close Action, Open Action,ESD settings,Alarm Bypass setting and Analog Signal Adjustment,etc.

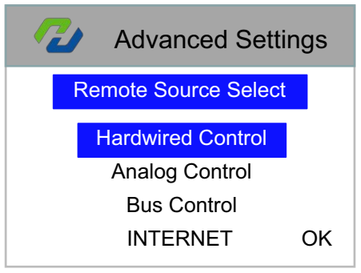


Figure 20: Remote Source

[**Remote Source**] Set actuator control signal source: Hardwired Control, Analog Control,Bus Control and INTERNET.Combined with terminals 4,5,33,34,35 and 36,remote on-off control can be realized. This setting should be "Hardwired Control".The analog control can be realized by combining the terminal 26 and 27, which should be set as "Analog Control'".The bus control can be realized by combining the terminals of 45,46,47, which needs to be set as " Bus Control".

INTERNET is an optional selection,support by GPRS module.

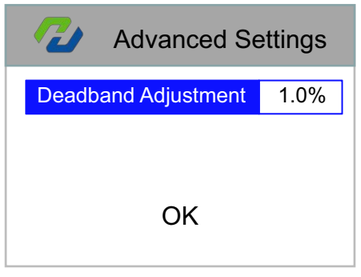


Figure 21: Remote Source

[**Deadband**] The so-called control deadband refers to certain travel positioning errors which is inevitably caused by the inertia of motor rotation when the actuator is controlled by remote analog signal.This unavoidable positioning error is called control deadband. In order to prevent the actuator from repeatedly oscillating back and forth and entering the dead cycle due to the control deadband problem,a reasonable control deadband range should be set to cover the inevitable travel positioning error. Control deadband setting range of 0.1%~9.9%(default is 1.0%).

【Parameters】→【Advanced settings】

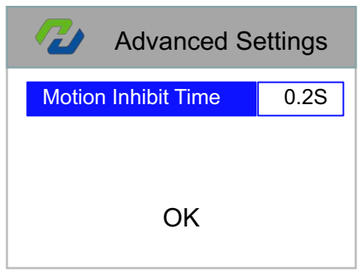


Figure 22: Motion Inhibit Time

[**Motion Inhibit Time**] set the response delay of the actuator to the remote control signal.

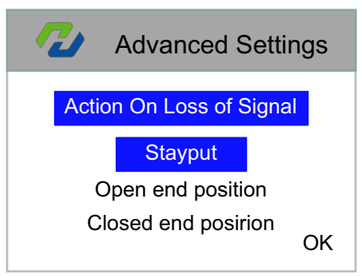


Figure 23: Loss of Signal

[**Loss of Signal**] set the valve operation to be performed by the actuator in remote analog control mode when remote analog signal is lost.

This setting has three options: Stayput,Open end position,Closed end position.

Stayput: when the actuator loses a given signal,it maintains the current valve position and does not perform any operation.

Open end position: when the actuator loses a given signal,it automatically runs to the full open position.

Closed end position: when the actuator is lost at the given signal, it automatically runs to the full closed position.

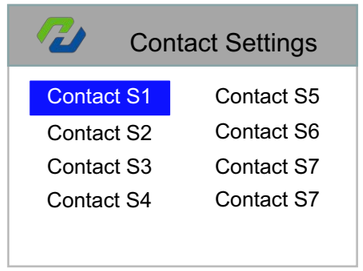


Figure 24: Contact Settings

[**Contact settings**] The actuator program has a total of 8 groups of contacts by default, with the standard configuration of contact 1~4 and optional additional configuration of contact 5~8. According to the configuration of actual parameters of the actuator,select specific contact and enter the sub-menu ↳ to customize the function of contact and the normality of contact.

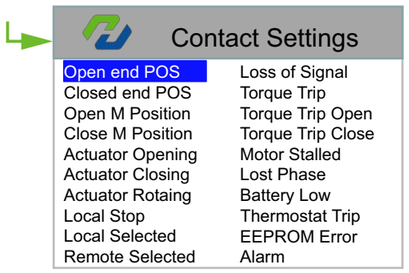


Figure 25: Selection of Contact Functions

[**Selection of contact functions**] Contact function can be set to:Open end POS,Closed end POS,Open M Position,Close M Position, Actuator Opening,Actuator Closing,Actuator Rotating,Local Stop,Local Selected, Remote Selected, Loss of Signal, Torque Trip, Torque Trip Open, Torque Trip Close,Motor Stalled, Lost Phase, Thermostat Trip, EEPROM Error and Alarm. This setting selects specific functions to bind to the contacts being set.

【Parameters】→【Advanced settings】

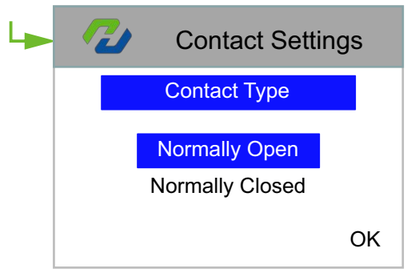


Figure 26: Contact Type

[**Contact Type**] Contact Type can be set to normally open or normally closed.

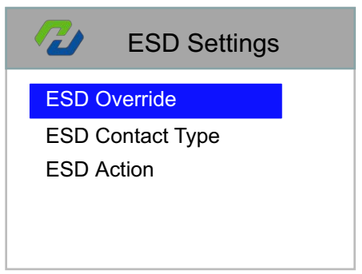


Figure 27: ESD Settings

[**ESD Settings**] ESD setting includes ESD Override,ESD Contact Type and ESD Action.Please enter to the sub-menu ↳ for detailed settings.

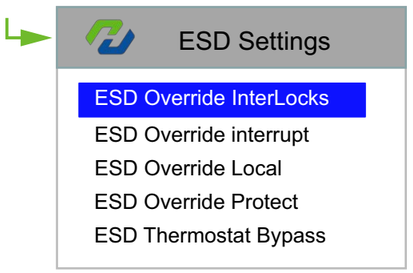


Figure 28: ESD Override

[**ESD Override**] Override Setting options for ESD event signals include: ESD Override Interlocks,ESD Override Interrupt,ESD Override Local,ESD Override Potect and ESD Thermostat Bypass.The default settings are all forbade.After the setting is used,the ESD signal can override the original protection and alarm settings of the device,thus giving priority to the ESD protection operation.

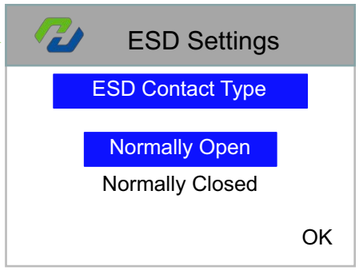


Figure 29: ESD Contact Type

[**ESD contact Type**] ESD contact type can be set as normally open or normally closed,and the default setting is normally open.

【Parameters】→【Advanced settings】

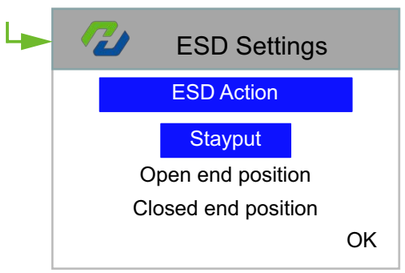


Figure 30: ESD Action

[**ESD Action**] sets the ESD protection action to be performed by the actuator when the ESD event is triggered:Stayput(default),Open end position or Closed end position.

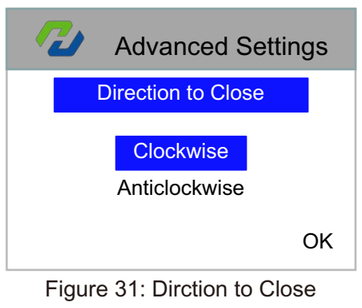


Figure 31: Dirction to Close

[**Direction to Close**] The actuator can be set to close the valve clockwise or Anticlockwise.Manually operate the actuator and valve to confirm the correct closing direction.The default closing direction of the actuator is clockwise.

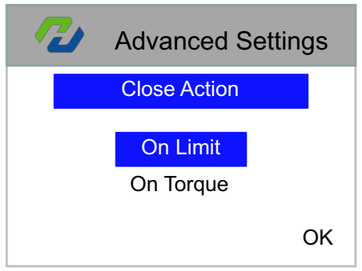


Figure 32: Close Action

[**Close Action**] Set the specific reference signal type of the actuator when closing the valve.The signal type can be divided into two types:On Limit or On Torque (set as On Limit by default).

On Limit: when the system detects that the travel reaches full close,the actuator will stop running;

On Torque: when the system detects that the torque signal reaches the set protection torque value in the closed direction,the actuator stops running.

⚠If not for special condition,it is not recommended to use On Torque mode.

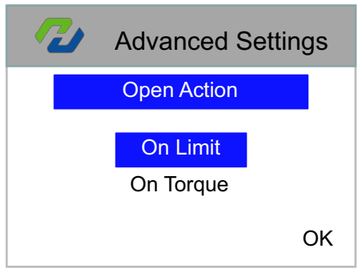


Figure 33: Open Action

[**Open Action**] Set the specific reference signal type of the actuator when opening the valve.The signal type can be divided into two types:On Limit or On Torque (set as On Limit by default).

On Limit: when the system detects that the travel reaches full close,the actuator will stop running;

On Torque: when the system detects that the torque signal reaches the set protection torque value in the closed direction,the actuator stops running.

⚠If not for special condition,it is not recommended to use On Torque mode.

【Parameters】→【Advanced settings】

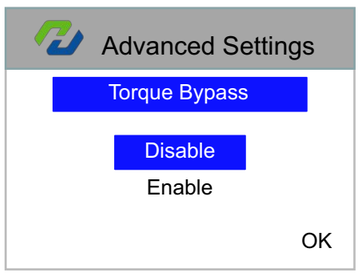


Figure 34: Torque Bypass

[**Torque Bypass**] can be set to Disable or Enable,and the default setting is Disable.When set to Enable,the actuator output torque exceeds the set protection torque,it will automatically ignore the torque alarm and continue to operate normally.

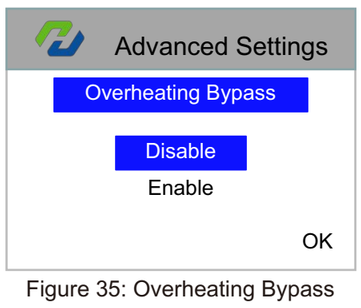


Figure 35: Overheating Bypass

[**Overheating Bypass**] can be set to Disable or Enable,and the default setting is Disable.When set to Enable,the actuator motor thermal protection will automatically ignore the thermal protection alarm and continue normal operation.

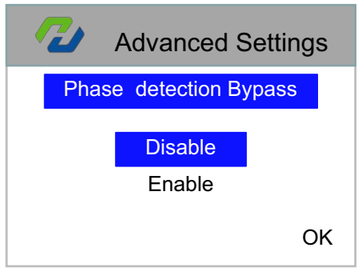


Figure 36: Phase Detection Bypass

[**Phase detection Bypass**] can be set to Disable or Enable, and the default setting is Disable.When set to Enable,the actuator power supply will automatically ignore the phase-loss alarm and continue normal operation.

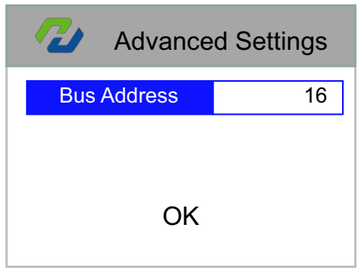


Figure 37: Bus Address

[**Bus Address**] set the actuator fieldbus address,When the actuator field fieldbus is configured,the address in the same fieldbus cannot be repeated.

【Parameters】→【Advanced settings】

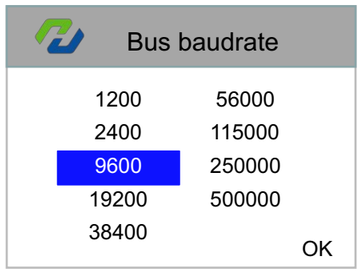


Figure 38: Bus Baudrate

[**Bus Baudrate**] set the communication rate of the actuator FIELDBUS(when the actuator is connected to the FIELDBUS,it shall be configured in accordance with the communication parameters of the FIELDBUS).

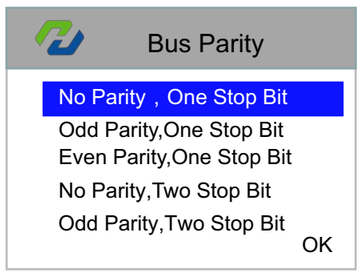


Figure 39: Bus Parity

[**Bus Parity**] set the check mode of actuator FIELDBUS communication (when the actuator is connected to the FIELDBUS, it shall be configured and the configuration shall conform to the communication parameters of the FIELDBUS.

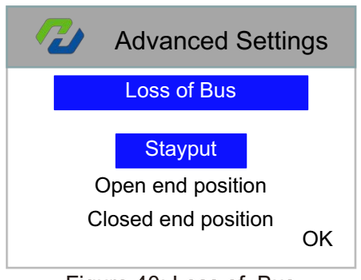


Figure 40: Loss of Bus

[**Loss of Bus**] The valve operation that needs to be performed when the bus signal is lost when the remote control source of the actuator is Bus Control.

This item has three options:Stayput,Open end position and Closed end position.

Stayput:when the actuator bus signal is lost, the current valve position is maintained and no operation is performed.

Open end position:when the actuator bus signal is lost,it will automatically run to the full open position of the valve.

Closed end position:when the actuator bus signal is lost,it will automatically run to the full close position of the valve.

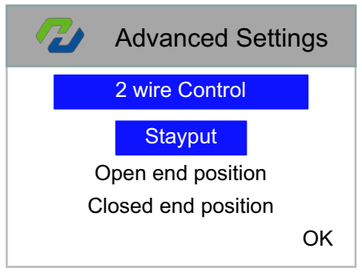


Figure 41: 2 Wire Control

[**2 wire Control**] Set priority operation when connecting two wires.Use the 2 wire control diagram for configuration.

【Parameters】→【Advanced settings】

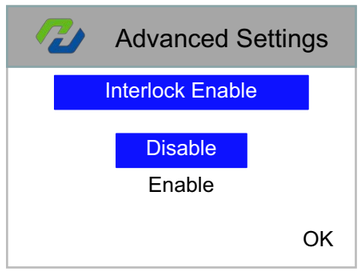


Figure 42: Interlock

[**Interlock Enable**] setting enable or disable external wiring interlock.

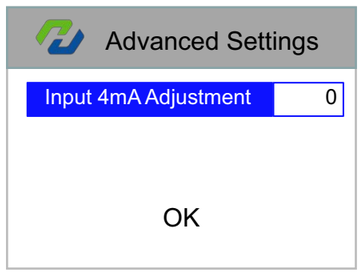


Figure 43: Input 4mA Adjustment

[**Input 4mA Adjustment**] calibrates the current signal at the full close position (calibrate 4mA given signal).On the current setting interface,when 4mA is set by signal generator,press the remote controller key ↵ to save it. It will not be modified by default.It needs to be adjusted when the 4mA given signal is biased.

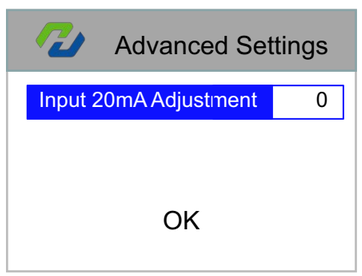


Figure 44: Input 20mA Adjustment

[**Input 20mA Adjustment**] calibrates the current signal at the full open position (calibrate 20mA given signal).On the current setting interface,when 20mA is set by signal generator, press the remote controller key ↵ to save it. It will not be modified by default. It needs to be adjusted when the 20mA given signal is biased.

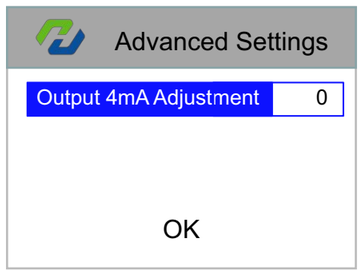


Figure 45: Output 4mA Adjustment

[**Output 4mA Adjustment**] calibrates the feedback signal at the full close position (calibrate 4mA given feedback signal). When the actuator is at the full close valve position,use the remote controller ⇧ or ⇩ key to modify the current value until the feedback is 4mA. Press the key ↵ to confirm and save. It will not be modified by default,it needs to be adjusted when the 4mA given signal is biased.

【Parameters】→【Advanced settings】

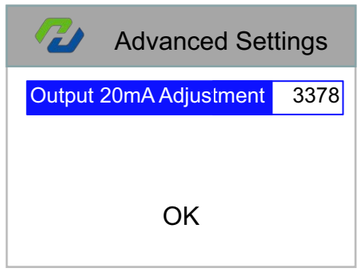


Figure 46: Output 20mA Adjustment

[**Output 20mA Adjustment**] alibrates the feedback signal at the full open position (calibrate 20mA given feedback signal). When the actuator is at the full open valve position, use the remote controller ⇩ or ⇧ key to modify the current value until the feedback is 20mA. Press the key ⏎ to confirm and save. It will not be modified by default, it needs to be adjusted when the 20mA given signal is biased.

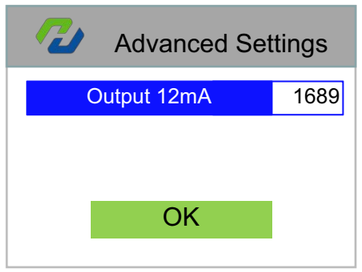


Figure 47: Output 12mA Adjustment

[**Output 12mA**] Make the feedback signal output 12mA.

【Parameters】→【Factory settings】

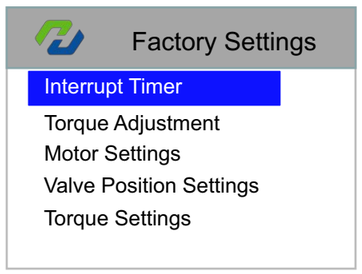


Figure 48: Factory Settings

[**Factory settings**] It is used when the manufacturer sets it as the actuator manufacturer's debugging setting,and the user can use it normally without setting it.

7.Equipment commissioning and initial setting

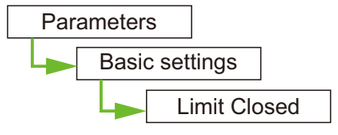
The system parameters of the HITORK® actuator are initially set by default according to Hankun standard. If you need to change, please specify it when you place an order.When the actuator is installed on site,the default setting does not match the on-site valve position and operation condition. Therefore,the default setting should be carefully used with caution on site for the sake of operation safety.After the actuator is installed on site,a series of initial settings and debugging are required. The actuator can be put into use only after it meets the requirements of on-site operating conditions and process control system.

The commissioning and setting of HITORK® actuator mainly involves several contents of the system program (basic settings), including: limit close, limit open,deadband setting,loss of signal, torque value closing,torque value opening and maintained local control.

The equipment commissioning in this chapter assumes that the actuator has been installed correctly and powered on,and the system program has entered the parameter setting interface.

7.1 Set Limit Closed

Following the path of the menu:



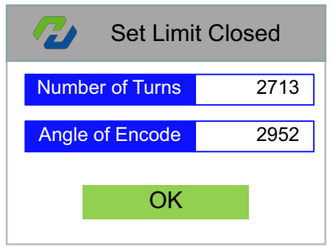


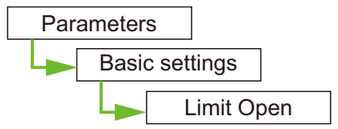
Figure 49: Set Limit Closed

Navigate to the interface of set limit closed according to the menu path, manually turn the valve to full closing,press the remote controller key ⏎ to confirm and save parameters, and the system saves the stroke encoder value corresponding to the full closing position of the valve. Sometimes the manual force is too large and the valve position is over closed and lead to the torque alarm,then the handwheel can be properly rotated in the direction of valve opening (generally no more than one circle),and when the torque alarm disappears,then press the remote controller key ⏎ to confirm and save parameters.

Then,press the remote controller ↩ key to back to the status indicating interface,which display the symbol of full close valve positions (see figure 5).

7.2 Set Limit Open

Following the path of the menu:



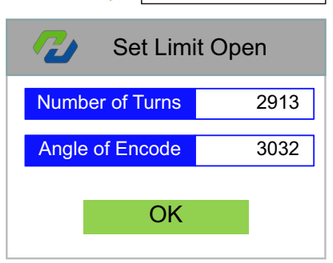


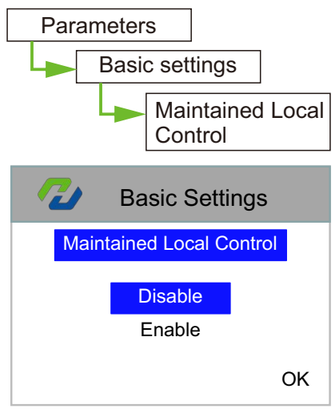
Figure 50:Set Limit Open

Navigate to the interface of set limit open according to the menu path,manually turn the valve to the full open position, press the remote controller ⏎ key,confirm and save parameters,and the system saves the recorded stroke encoder value corresponding to the full open position of the valve. Sometimes the manual force is too large and the valve position is over open and lead to the torque alarm, then the handwheel can be properly rotated in the direction of valve closing (generally no more than 1 circle),when the torque alarm disappears,then press the remote controller ⏎ key to confirm save parameters.

Then,press the remote controller ↩ key and return to the status indicating interface, which display the symbol of fully open valve position (see figure 4).

7.3 Set Maintained Local Control

Following the path of the menu:

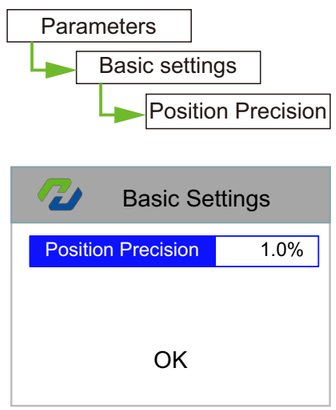


Navigate to the interface of maintained local control according to the menu path,use the remote controller key ⇧ or ⇩ ,choose to Disable or Enable the function,press the ⏎ to confirm and save the parameter setting.The default setting for maintained local control is Disable.The local-remote knob and the remote control mode for valve opening and closing are the mode of inching.After using this function,the valve opening and closing in the local knob and remote control mode are maintained.

Figure 51:Set Maintained Local Control

7.4 Set Position Precision

Following the path of the menu:

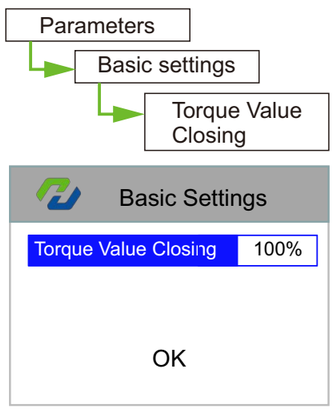


Navigate to the position precision setting interface according to the menu path. Adjust the percentage parameters of the position precision by pressing the remote controller keys ⇧ or ⇩ . After adjusting to the value you want, press the ⏎ key to confirm and save the parameters. Positioning accuracy shall not be set less than the deadband of the actuator.

Figure 52: Set Position Precision

7.5 Set Torque Value Closing

Following the path of the menu:

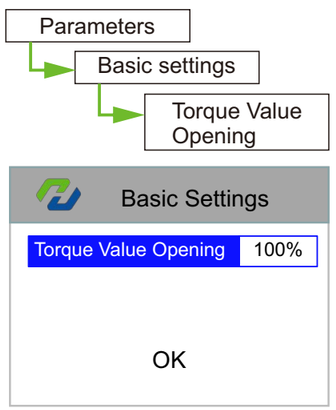


Navigate to the interface of torque value closing according to the menu path,press the remote controller keys ⇧ or ⇩ to adjust the value of torque protection in the closing direction (the percentage of rated torque). After the adjustment,press the ⏎ to confirm and save the parameters.No special torque protection requirements,generally just follow the default settings,no need to change.

Figure. 53: Set Torque Value Closing

7.6 Set Torque Value Opening

Following the path of the menu:



Navigate to the interface of torque value opening according to the menu path,press the remote controller keys ⇧ or ⇩ to adjust the value of torque protection in the opening direction (the percentage of rated torque).After the adjustment,press the ⏎ to confirm and save the parameters. No special torque protection requirements,generally just follow the default settings,no need to change.

Figure.54: Set Torque Value Opening

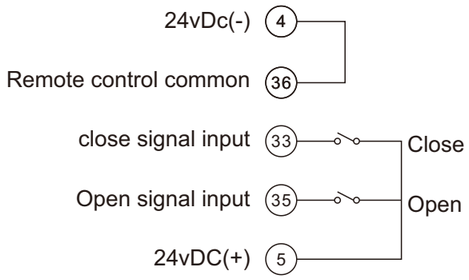
8. Electrical connection

8.1 The definition of terminal function

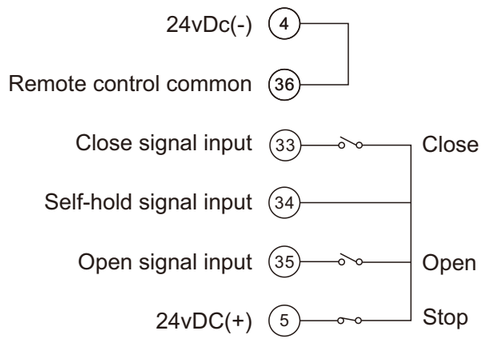
Terminal No.	The definition of terminal function	Terminal No.	The definition of terminal function
U1	3phase-U/1phase-L	24	Standby, vacant
V1	3phase-V/1phase-N	25	ESD
W1	3phase-W	26	4~20mA Analog input (+)
E	GND	27	4~20mA Analog input (-)
1	Standby, vacant	28	Standby, vacant
2	Standby, vacant	29	Standby, vacant
3	Standby, vacant	30	Standby, vacant
4	Non-stable voltage 24VDC power supply negative (-)	31	ESD, open, close interlock function 24VDC common terminal
5	Non-stable voltage 24VDC power supply positive	32	Standby, vacant
6	OUT1 output relay contact 1	33	Close signal input
7	OUT1 output relay contact 2	34	Self-hold signal input
8	OUT2 output relay contact 1	35	Open signal input
9	OUT2 output relay contact 2	36	Remote control common
10	OUT3 output relay contact 1	37	Standby, vacant
11	OUT3 output relay contact 2	38	Standby, vacant
12	OUT4 output relay contact 1	39	auto-control signal input
13	OUT4 output relay contact 2	40	Standby, vacant
14	OUT5 output relay contact 1	41	Manual/automatic common
15	OUT5 output relay contact 2	42	Alarm output relay contact common terminal
16	OUT6 output relay contact 1	43	Alarm output relay contact common terminal
17	OUT6 output relay contact 2	44	Alarm output relay contact common terminal
18	OUT7 output relay contact 1	45	RS485 B
19	OUT7 output relay contact 2	46	RS485 A
20	OUT8 output relay contact 1	47	RS485 GND
21	OUT8 output relay contact 2	48	Standby, vacant
22	Valve position feedback (+)	49	Standby, vacant
23	Valve position feedback (-)	50	Standby, vacant

8.2 Common electrical connections diagram

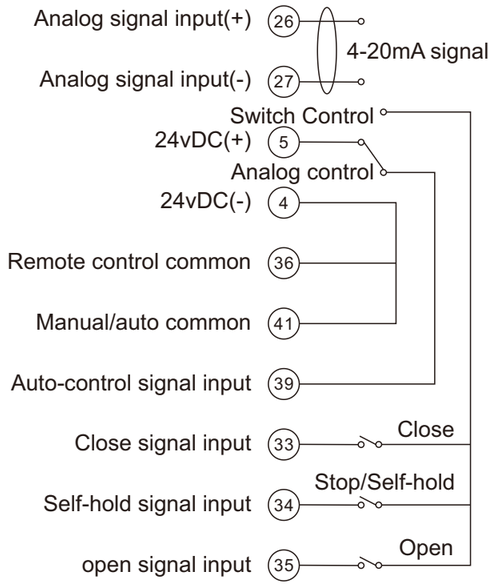
Inching control



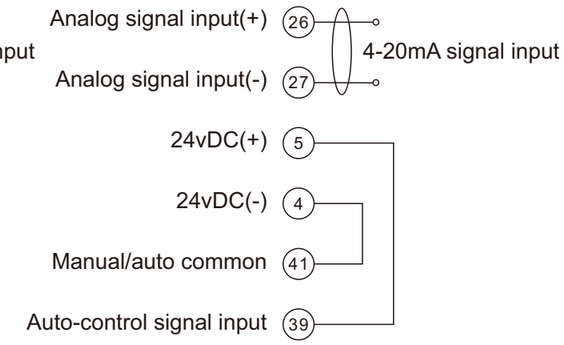
Maintained control



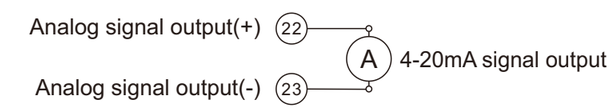
Both analog & digital control



Only analog control

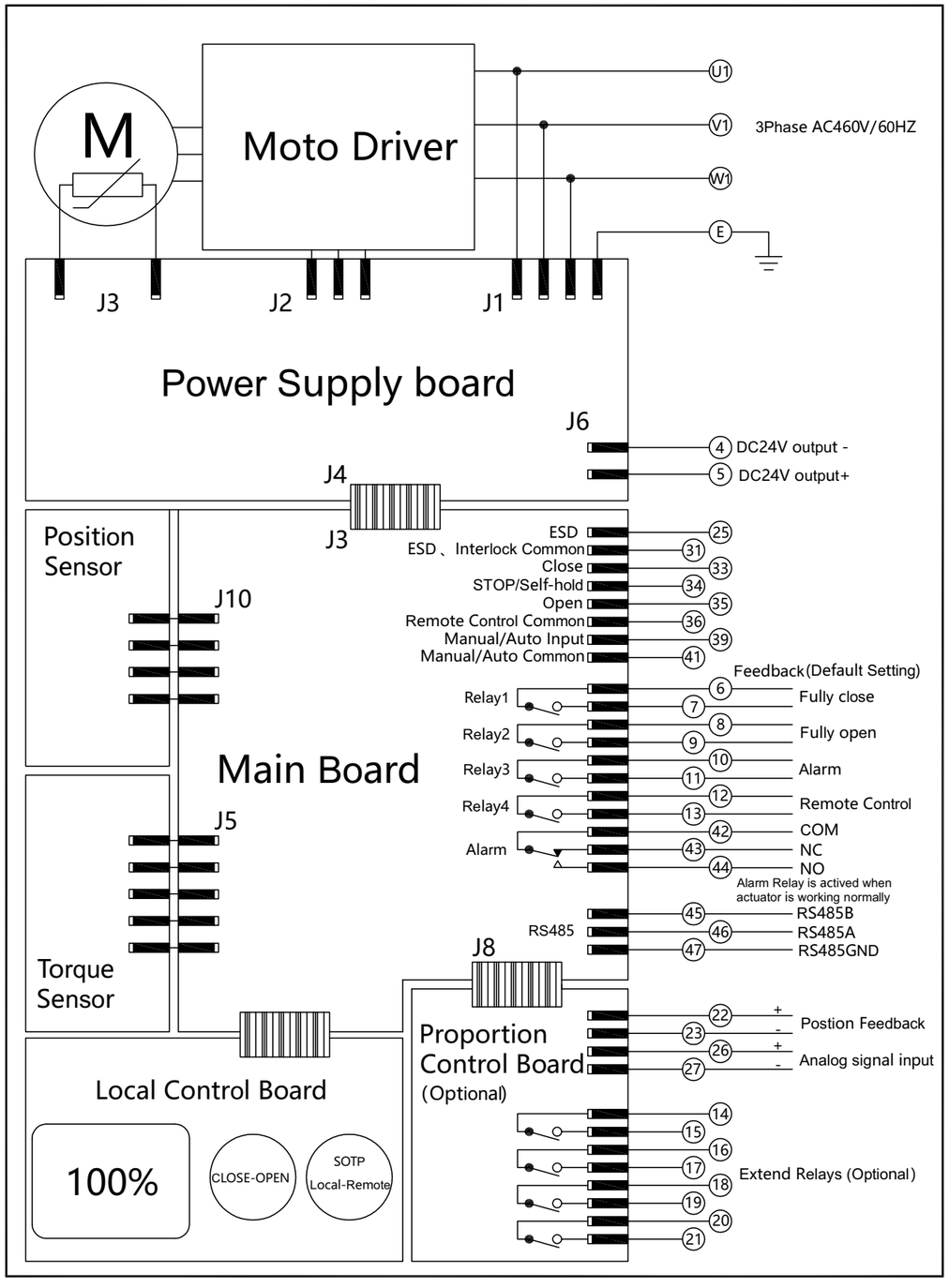


Position feedback



Attached: HITORK® HKM. 2 series actuator basic wiring diagram

Note: This wiring diagram is only the wiring diagram of the 380V AC conventional actuator. For customized models, please refer to the attached wiring diagram of the device.



HITORK®

2.0