

Baumann

BP Smart Valve Positioner

(7000 Series)

User Manual



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1 Notice to Users

Be sure to read this instruction manual first!

These instructions provide information on the safe handling, installation, commissioning, operation, problem solving, maintenance, and replacement of the Smart Valve Positioner. This information does not contain all the details of every possible aspect of installation, operation or maintenance.

If you are unsure about the use of the base stations or whether the base stations are suitable for your purpose or whether you need additional assistance, please contact the manufacturer or a representative of the manufacturer.

The address and telephone number are on the back cover.

Please keep the instructions in a safe place for future use!

Do not install, operate, or maintain a smart valve positioner without adequate training to install, operate, and maintain valves, actuators, and accessories. To avoid injury to persons or damage to property, it is important that you carefully read, understand and follow all of this User Guide, including all safety precautions and warnings. It is also important to obtain authorization from the plant operator before operating the intelligent valve control.

Note that there are additional safety regulations related to the facility and/or hazardous areas. This part is not included in this manual.

1.1 Security icon

In order for you to better apply this instruction and to ensure your safety when commissioning, operating and servicing this instrument, please note the use of the following symbols:



A warning means that if an operation or process is not performed properly, it will result in personal injury or safety incident. Please strictly follow the norms and operate with caution.

 Notice

If an operation or process is not performed properly, it will result in equipment operation failure or equipment damage. Please strictly follow the specifications.

prompt

If an action or process is not performed properly, it can indirectly affect the operation of the device or trigger an unexpected response from some part of the device..

1.2 Safety Precautions

Prompt

- 1、 This equipment is designed to meet advanced safety requirements, has passed factory testing, and is safe and effective to operate when leaving the factory.
- 2、 This device complies with relevant regulations and standards.
- 3、 The manufacturer of this device reserves the right to modify the technical parameters without prior notice.
- 4、 Permissible storage, transport and operating temperatures must be observed.
- 5、 The equipment must be wired in accordance with the provisions of the connection diagram.
- 6、 The information contained in the warning signs, nameplates, and wiring diagrams that come with the appliance must be followed.
- 7、 Equipment that can be used in hazardous areas is marked accordingly on the nameplate. When operating equipment in hazardous areas, the relevant national regulations must be observed. The installation specifications, connection parameters and safety instructions provided in this Ex Proof document must be observed.

1.3 Scope of application

Notice

- 1、 Except for the scope of application specified in this manual, any other application scope will pose a threat to the safety of personnel and the entire equipment system, and the use of it is prohibited.
- 2、 The manufacturer is not liable for damages caused by improper operation or for purposes not intended for use.

1.4 Installation and commissioning operations

Notice

- 1、 This equipment should only be installed, connected, commissioned, and maintained by trained, authorized and qualified professionals who fully comply with the guidelines of the User Manual, relevant application specifications, legal and regulatory requirements, and have the appropriate qualification certificates (related to the application conditions).
- 2、 Before installing this equipment, the installer must read the "User Manual" and understand and comply with the provisions therein.
- 3、 When installing this equipment, it should be done in a power-off state and when there is no external load or stress.

2 Overview

BP intelligent valve positioner is an intelligent two-wire field instrument, as a control accessory of pneumatic control valve, widely used in automatic control systems in electric power, chemical industry, petroleum, metallurgy, light industry, new energy and other fields.

BP intelligent valve positioner receives the 4~20mA input signal from the control system and the position sensor to get the actual valve position feedback signal, the signal conditioning part amplifies the input signal and the valve position feedback signal, and obtains the digital signal through A/D conversion, and controls the action of the pneumatic actuator after the calculation and processing of the microprocessor software, and drives the valve to the position specified by the input signal.

BP Smart Valve Positioners comply with GB 3836.1-2010 Explosive atmospheres – Part 1: General requirements for equipment and GB 3836.1-2010 "Explosive atmospheres - Part 1: General requirements for equipment" and GB 3836.42010 "Explosive atmospheres - Part 4: Equipment protected by intrinsically safe type "i", the explosion-proof mark is Exia IICT4~T6 Ga, which is suitable for Zone 0, Zone 1 or Zone 2 environments formed by combustible gases or explosive mixtures formed by vapor and air in the factory with Class IIA~IIC, T1~T6 group.

2.1 Function introduction

Adaptive features:

Automatically find the zero point and measuring range of the valve, optimize the valve control parameters, and improve the control accuracy

Configuration functions:

You can set the mode of operation, dead zone, tight closing, etc

Communication features:

HART protocol communication function

Feedback function:

4~20mADC valve position feedback signal

2.2 Features

Reliable, stable design .

Installation and commissioning are simple and fast.

High positioning accuracy of 0.5%F.S.

The structure is simple, the size is small, and it can be installed on a small actuator.

Automatic tuning, automatic diagnosis, valve characteristic curve can be configured and set Fewer mechanical parts, good anti-vibration performance.

Low power consumption, low air consumption, low operating cost The main control circuit is completely sealed.



3 Technical parameters

3.1 General parameters

Suitable for use with linear and quarter-turn valves.

Connect actuators according to VDI/VDE 3845 and IEC 60534-6.

Adaptable actuators: single-acting, double-acting

Stroke range: linear stroke 10~100mm;

Angular travel 30~110°

Shell material: aluminum alloy Weight: 2.0 kg

Size: 199 × 104 × 93 mm (basic type)

Protection level: IP65

3.2 Environmental impact

Non-intrinsically safe ambient temperature: (-30~80)°C

Intrinsically safe ambient temperature: T6 :(-30~40)°C,

T5 : (-30~60)°C,

T4: (-30~80)°C

Ambient humidity: 5~95%RH

Vibration resistance: 15 ~150Hz@2g

3.3 Gas parameters

Air pressure: 0.14~0.7 MPa

Steady-state air consumption: < 36L/H

Compressed air quality requirements: in accordance with ISO8573-1

- Solid particles: grade 4
- Oil content: 4 grades
- Humidity: The dew point of the working gas source is at least 10K lower than the minimum ambient temperature;

3.4 Electrical parameters

3.4.1 Current input

Current Input: Loop power supply, 4 ~ 20mA DC

Minimum operating current : 3.8mA DC;

Current maximum: 93mA

Signal line size: 0.5~2.5mm²(14-20 AWG)

3.4.2 Position feedback output (optional)



Output signal: 4~20mA DC

Power supply voltage: 12~30V DC

Linearity: <0.1% FS

Temperature Effect: < 0.35% FS

3.5 Control performance

Dead zone: 0.1~10% adjustable

Linearity: 0.5% FS

Sensitivity: 0.1% FS

Repeatability: 0.2% FS

3.6 Explosion proof

Explosion-proof signs: Ex ia IIC T4~T6 Ga

3.7 communication

Supports HART rev 7 protocol (optional)



4 Transportation and storage

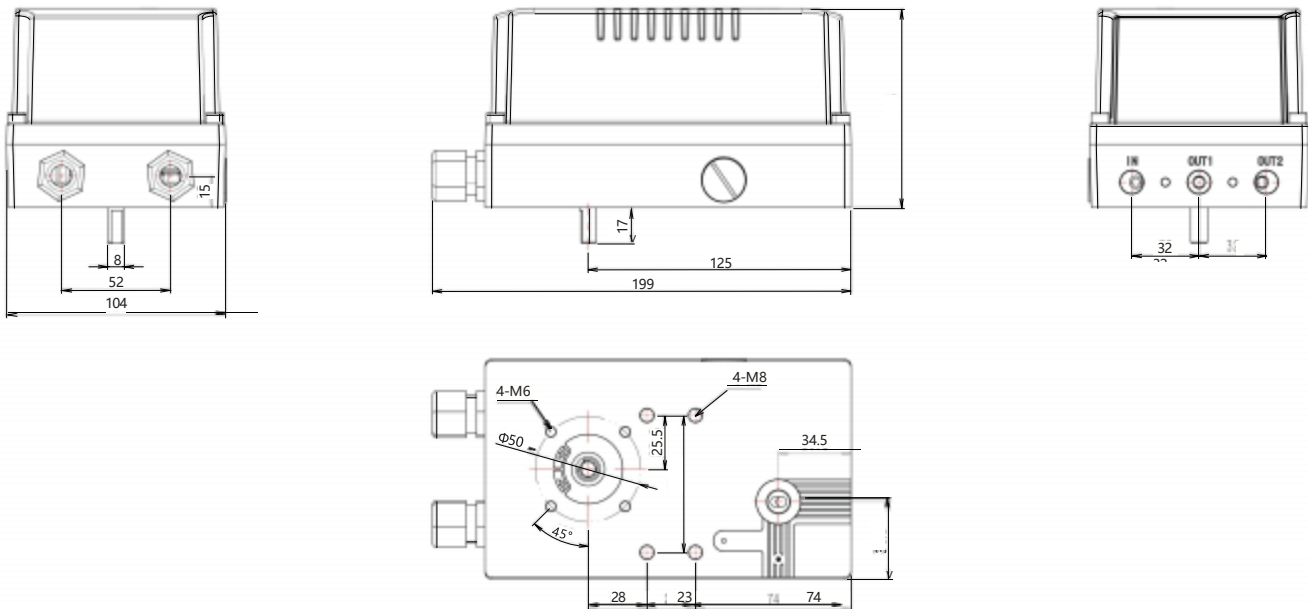
A valve positioner is a complex piece of equipment and should be handled with care. Check whether the product is complete and complete, and whether the packing box is firm before shipping. The product must be stored in an environment where the temperature is -30~80°C, the relative humidity is not more than 75%, there is no condensation, and the air does not contain harmful impurities that corrode the instrument.

- 1) Check if the locator has been damaged during transportation.
- 2) It is best to store the base stations that are not installed indoors to keep them away from rain and dust.
- 3) Do not unpack the device before installation.
- 4) Do not drop or collide with the base station.
- 5) Keep the flow aperture and cable connector plugged before installation.
- 6) Follow the instructions in this manual.

5 Installation instructions

5.1 Exterior Dimension Drawing

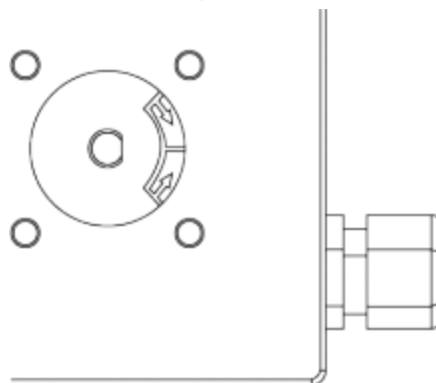
unit: mm



5.2 Installation

5.2.1 Feedback lever corner range

The following figure is a schematic diagram of the working angle range of the positioner, when the feedback rod is horizontal, the sensor angle display state display angle is 0° left and right. The working angle is centered at 0° and plus or minus 55° Range..

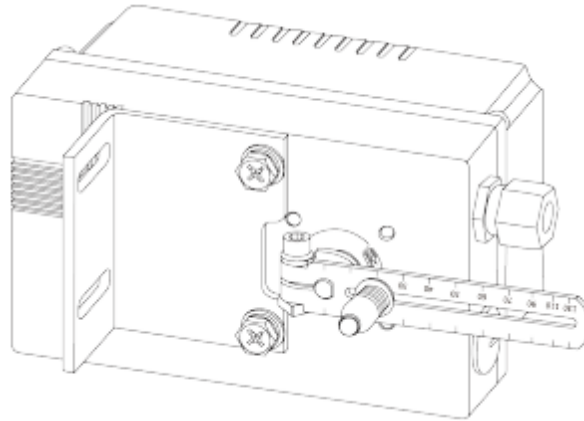


5.2.2 Linear positioner mounting connection

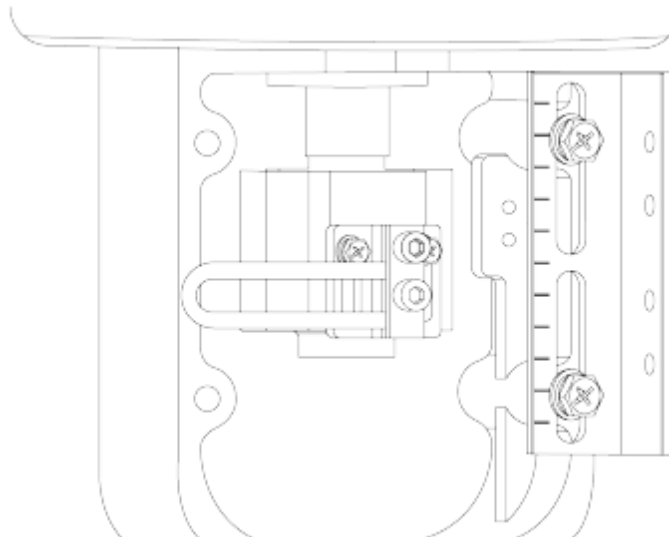
1. According to the valve stroke, lock the sliding pin to the position of the corresponding scale of the feedback lever.



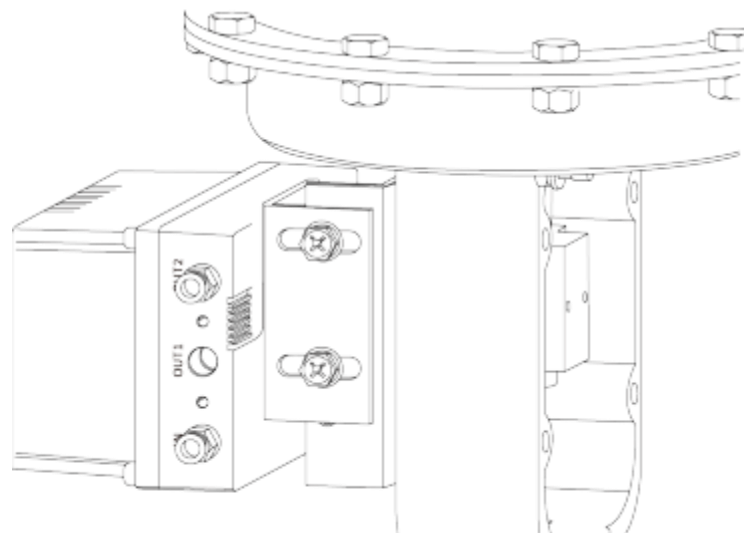
2. Fix the positioner side bracket to the bottom of the positioner; Fix the graduated feedback rod to the positioner feedback shaft.



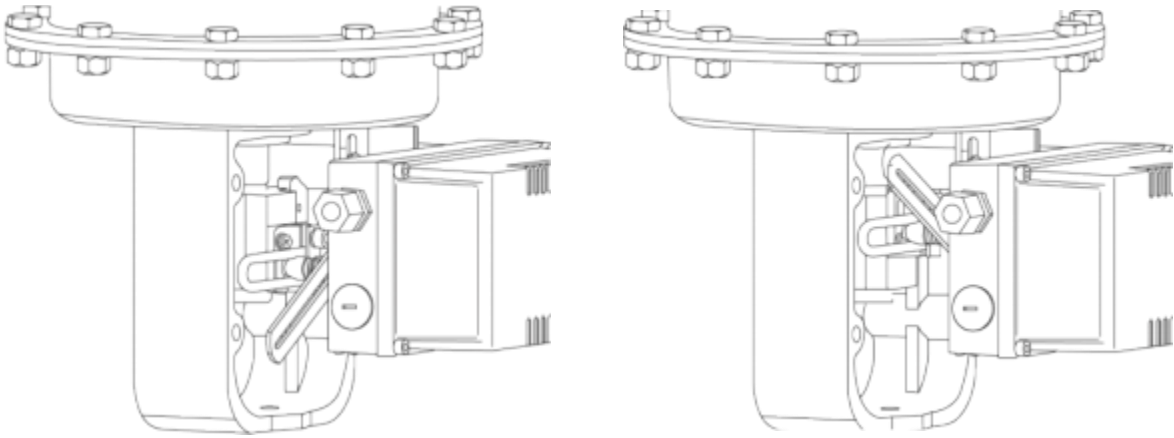
3. Secure the actuator side bracket and U-feedback slide bar to the actuator.



4. Fix the positioner to the actuator.



5. After installation, check whether the angle of the feedback rod is appropriate (the angle with the horizontal plane is about 30 degrees), for the lower inlet regulating valve, the feedback rod is shown in the left figure below; For the upper intake control valve, the feedback lever is shown in the figure on the right below.

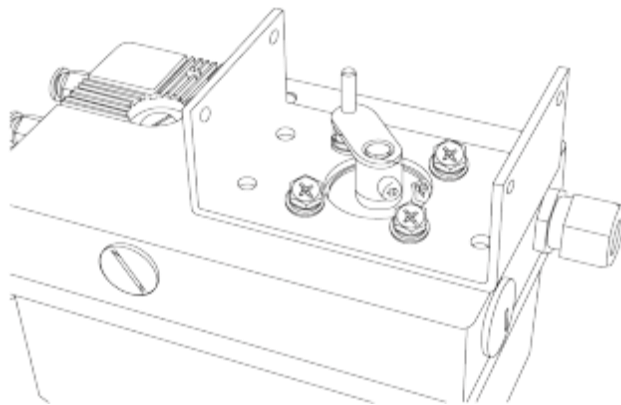


Prompt

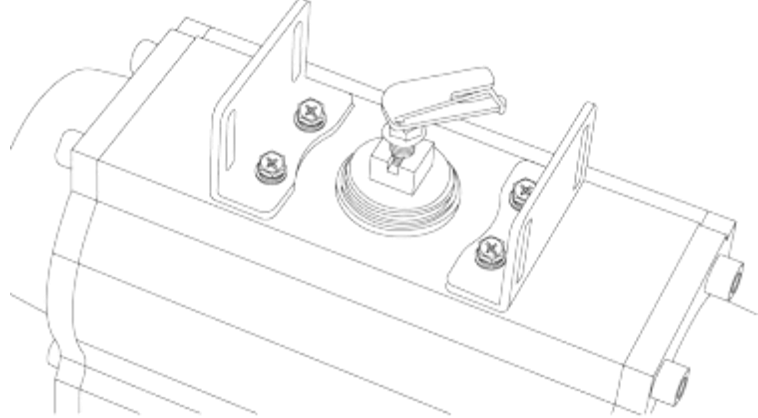
- 1、 The feedback lever rotation angle shall meet the requirements described in Section 5.1.1.
- 2、 When the linear valve is 50% open, the feedback lever should be horizontal (or perpendicular to the regulator actuator).

5.2.3 Quarter-turn positioner mounting connection

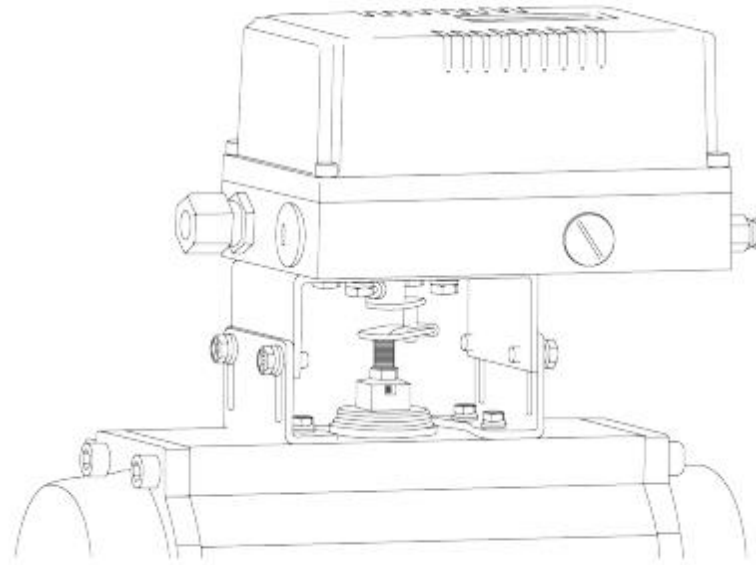
1. The positioner is fixed to the C-bracket and the feedback rod is mounted to the positioner feedback shaft and secured with screws.



2. Attach 2 L-brackets to the actuator; The hexagon nut is screwed to the root of the fork feedback rod screw, and then the fork feedback rod is installed on the actuator shaft.



3. Adjust the positioner installation height, fix the positioner on the actuator, and the cylindrical pin on the feedback rod is correctly inserted into the slot of the fork feedback rod. After determining the angle of the feedback lever, lock the hex nut.



Prompt

- 1、The feedback lever rotation angle shall meet the requirements described in Section 5.1.1.

5.3 Pneumatic connection

The positioner is available in G1/4 and 1/4NPT versions, and the user needs to select the correct pipe fitting. IN: Air source inlet

OUT1: Double-acting output port 1

OUT2: Double-acting output 2 or single-acting output.

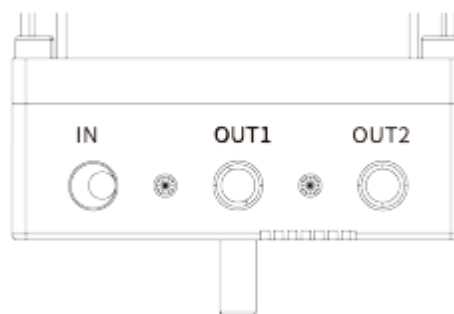


Figure 5.4

The output port of the positioner is connected to the input port of the pneumatic actuator according to Figure 5.4.

The IN port of the positioner is connected to the air supply. Compressed air entering the positioner must be filtered and pressure-stabilized by an air filtration pressure reducing valve.

Prompt

Check the joint for air leakage.



5.4 Air supply requirements

- 1.The air pressure must be between 0.14~0.7MPa;
- 2.The air source should be clean and dry air, and there should be no obvious oil vapor, oil and other liquids;
- 3.The gas source should be free of obvious corrosive gases, vapors and solvents;
- 4.The maximum particle size and density contained in the air supply is class 3, and the oil content is class 3;
- 5.The dew point of the source gas is at least 10K below the minimum ambient temperature;

6 Electrical connections

6.1 Electrical connection requirements

The electrical connection should be carried out in strict accordance with the connection diagram, and should be reliably fixed and not loosened;

The cable gland is a standard waterproof connector, and the outer diameter of the signal cable should be $\geq 8\text{mm}$ and the connector cover should be locked during installation to avoid reducing the IP protection level of this product;

Connecting cable cross-section: $0.5\sim 2.5\text{mm}^2$ (14-20 AWG).

6.2 Positioner wiring

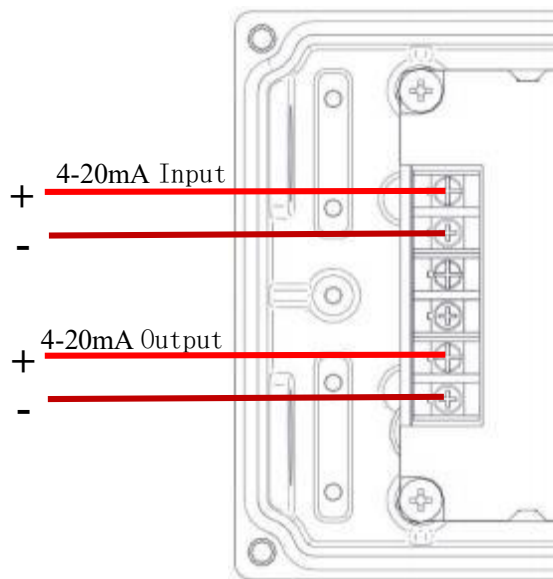


Figure 6.1 Electrical Connection Diagram

6.3 Electrical parameters

6.3.1 4~20mA signal current input

Type: two-wire system

Input signal: 4~20mA DC Minimum

working current: 3.8mA DC

Input impedance: 460Ω @20mA (without

HART) 580Ω @20mA (HART

type)

6.3.2 Valve position feedback module output

Feedback signal type: two-wire system, 4~20mA DC

Temperature drift: $\leq 100\text{ppm}/^\circ\text{C}$

Working range: 3.6 ~ 20.5 mA DC

Accuracy: $\leq 0.1\%$

Port supply voltage: 12~30V DC valve position feedback is an optional function.

7 Debugging operations

7.1 Operator interface



Figure 7.1 Operation Interface Diagram

7.2 Key Description

	Normal operation	User menu
MODE	1. Switch between automatic control, manual control, and sensor angle status 2. Press and hold for 5 seconds to enter the user menu	1. Parameter selection/modification status switching 2. Press and hold for 5 seconds to exit the user menu 3. When the parameter selection interface, short press to enter the parameter modification interface 4. When the parameter modification interface, short press the parameter modification to determine
▼	1. When manual control, press this button, and the valve position feedback value decreases; 2. Press and hold this key, and then press and hold the ▲ key, and the feedback value will decrease quickly	1. When selecting a parameter, select the previous parameter 2. When the parameter is modified, the parameter value decreases
▲	1. When manual control, press this button, the valve position feedback value increases; 2. Press and hold this key, and then press and hold the ▼ key, the valve position feedback value is fast	1. When selecting a parameter, select the latter parameter 2. When the parameter is modified, the parameter value increases

7.3 Displays description

	Normal operation	User menu
First line	Display of valve position feedback (percentage or angle)	Parameter value
Second line	Operating status (A or M) Valve position setpoint	1. When selecting a parameter, select the previous parameter 2. When the parameter is modified, the parameter value decreases

Prompt

When the ambient temperature of the base station is lower than -15°C, the LCD display will refresh slowly, which is a normal phenomenon.

Prompt

1. Automatic control status: the operating status code of the second line of the LCD is "A"
2. Manual control status: the operating status code of the second line of the LCD is "M"
3. Sensor angle display status: LCD line 2 shows "SENSE"

7.4 Parameter settings

7.4.1 Go to the user menu

In the normal working interface, press and hold the MODE key, and after 5 seconds, you will enter the user menu.

7.4.2 Parameter selection

Press the ▲ key, the parameter is turned forward, and the parameter serial number is increased;

Press the ▼ button to flip the parameter backwards and decrease the parameter number;

7.4.3 Parameter modification

Press the MODE key to enter the parameter modification state, and the parameter name flashes on the screen. For numeric parameters:

Press the ▲ key to increase the parameter value, and press and hold the ▲ key to increase the parameter value rapidly;

Press the ▼ key to decrease the parameter value, and press and hold the ▼ button to quickly decrease the parameter value. For character parameters

Press the ▲ button to select the parameter value forward; Press the ▼ key to select a parameter value backwards.

7.4.4 Parameter reset

- 1) Go to the PRST parameter
- 2) Press the MODE key to enter the parameter modification state, and the PRST displayed in the second row will flash;
- 3) Press and hold the ▲ button, the first line of the LCD will display the progress bar "STRT", and the reset will be completed after holding for 5S.

7.4.5 Exit the user menu

Prompt

1. After the parameter is modified, you must press the MODE key to return to the normal operation state, the parameter
2. In the user menu state, if there is no operation for 1 minute, it will automatically return to the running state

7.5 Tuning

After the installation of the smart valve positioner is complete, it must be tuned.

This product provides two tuning methods: automatic tuning and manual tuning.

7.5.1 Check before tuning

Make sure that the angle of rotation of the feedback lever is correct (refer to the installation section);

Check that the pipeline connection between the positioner and the actuator is correct;

The air source pressure should meet the process requirements;

Check the current operating conditions and see if tuning is allowed;

Press the MODE button to switch to the position sensor angle display state, and press the ▲ button or ▼ key to make the valve move.

Press the ▲ key or ▼ key to control the valve to reach the full open position of the valve and the full closed position of the valve, and the feedback connection of the positioner should not interfere with other objects.

Notice

The valve will automatically open and close when setting.

Notice

Before the tuning command can be executed, it must be manually run back and forth from the fully open valve to the fully closed valve to confirm that the installation and feedback components are correct before the tuning operation can be performed.

7.5.2 Automatic tuning

- 1) In the normal operation state, press and hold the MODE button, and after 5 seconds, enter the user parameters;
- 2) Press the MODE key, the INIA displayed in the second row flashes and enters the parameter modification state;
- 3) Press and hold the ▲ button, the progress bar "STRT" will be displayed on the first line of the LCD, and it will enter the auto-tuning state after holding for 5 seconds
- 4) The setting procedure begins to be adjusted;
- 5) When the setting is complete, the LCD displays "FINISH"
- 6) After 10S, it will automatically return to normal operation.

prompt

- 1、 Press the MODE key during the tuning process to exit the tuning state and enter the normal operation state..

7.5.3 Manual tuning

- 1) In the normal operation state, press and hold the MODE button, and enter the user parameters after 5 seconds;
- 2) Press the ▲ key to select the INIM parameter, and the second line will display "INIM";
- 3) Press the MODE key, the INIM displayed in the second row flashes and enters the parameter modification state;
- 4) Press and hold the ▲ button, the first line of the LCD will display the progress bar "STRT", hold for 5 seconds and enter the manual tuning state
- 5) When "ZERO" is displayed in the 2nd row, press the ▲ or ▼ button to set the fully closed position of the valve;
- 6) After pressing the MODE key to confirm the zero point, the 2nd line will display "SPAN";

- 7) Press the ▲ or ▼ button to select the fully open position of the valve;
- 8) Press the MODE button to confirm the full open position of the valve;
- 9) the locator executes the automatic tuning procedure;
- 10) After the tuning is completed, the LCD displays "FINISH"

Prompt

Press the MODE key during the tuning process to exit the tuning state and enter the normal operation state.

8 List of parameters

Number	Parameter Name	Function	Content/Scope	Default Value	Unit
00	INIA	Automatic tuning	-----	-----	-----
01	INIM	Manual tuning	-----	-----	-----
02	PRST	The parameters are restored to their default values	-----	-----	-----
03	YFCT	Actuator Type: Linear Stroke/Angular Stroke	WAY/TURN	TURN	-----
04	DEBA	Controller dead zone	0.1 ~ 10.0	1.5	%
05	SDIR	The input signal is positive and negative	RISE/FALL	RISE	-----
06	YDIR	Valve position positive and negative	RISE/FALL	RISE	-----
07	YNRM	Valve position feedback value display mode	MPOS/FLOW	MPOS	-----
08	YA	Lower limit of valve position	0.0 ~ 100.0	0.0	%
09	YE	Upper limit of valve position	0.0 ~ 100.0	100.0	%
10	YCLS	Close the selection tightly	NO/UP/DN/UP DN	UP DN	-----
11	YCDN	The fully close position closes the value	0.0 ~ 49.9	0.5	%
12	YCUF	The fully open position closes the value	50.1 ~ 100.0	99.5	%

8.1 Parameter explanation

0) INIA

Automatic tuning

Refer to Section 7.5.2 for the automatic tuning process

1) INIM

Manual tuning

Refer to Section 7.5.3 for the manual tuning process

2) PRST

The parameters are restored to their default values

Prompt

Once the parameters are restored to their default values, the locator needs to be tuned before it can continue to work.

3) YFCT

Type of Actuator

Linear actuator is selected WAY ;

Angular stroke actuator
is selected TURN.

4) **DEBA**

Controller dead zone

Setting a proper dead zone can help avoid oscillation.

5) **SDIR**

The input signal is positive and negative.

At SDIR = RISE, 4mA corresponds to 0% of the valve position and 20mA to 100% of the valve position setting.

At SDIR = FALL, 4mA corresponds to 100% of the valve position setpoint and 20mA corresponds to 0% of the valve position setpoint.

6) **YDIR**

Valve position positive and negative

YDIR=RISE, when the positioner feedback axis rotates clockwise, the feedback value increases

YDIR=FALL, and when the positioner feedback axis rotates clockwise, the feedback value decreases

7) **YNRM**

Valve position feedback value display mode.

YNRM=MPOS, after modifying YA and YE, the correspondence between the actual valve position and the feedback value displayed by the LCD does not change.

YNRM=FLOW, after modifying YA and YE, the actual valve position corresponding to YA is displayed as 0% on the LCD; The actual valve position corresponding to the YE is displayed at 100% on the LCD.

8) **YA**

Lower limit of valve position.

9) **YE**

Upper limit of valve position.

By setting YA and YE, the range of motion of the valve can be limited. YE must be greater than the YA setpoint.

YA does not work when YCDN is not OFF and when YA is less than YCDN; YE does not work when YCUP is not OFF and when YE is greater than YCUP.

10) **YCLS**

Close the selection tightly

YCLS = NO, the tight shutdown function does not work

YCLS = UP, the YCUP parameter takes effect

YCLS =DN, the YCDN parameter takes effect

YCLS =UP DN, both the YCUP and YCDN parameters take effect.

11) YCDN

The fully close position closes the valve

When the valve position setting value is less than YCDN, the positioner makes the air chamber of the pneumatic actuator close to the air source pressure (or atmospheric pressure, depending on whether the air is open or the air close valve), so that the valve closes directly at a small opening, reducing the erosion of the valve core head by the high-speed flowing medium..

12) YCUP

The fully open position closes the valve



When the valve position setting value is greater than YCUP, the positioner makes the air chamber of the pneumatic actuator close to the air source pressure (or atmospheric pressure, depending on whether the air is open or the gas close valve), so that the valve is directly open at a large opening, reducing the erosion of the valve core head by the high-speed flowing medium.

13) SMIN

Calibration for a given current of 4mA.

When there is a deviation from the 4mA current of a given module at a valve position, the calibration is completed by passing the standard 4mA current and then pressing the MODE button to confirm.

14) SMAX

Calibration for a given current of 20mA.

When there is a deviation from the 20mA current of a given module at the valve position, pass the standard 20mA current and press the MODE button to confirm to complete the calibration.

15) AMIN

Calibration for a feedback current of 4mA.

When the 4mA current of the valve position feedback module is deviated, the calibration is completed by pressing the ▲ or ▼ button to change the parameter value to the actual current value, and then pressing the MODE button to confirm.

16) AMAX

Calibration for a feedback current of 20mA.

When the 20mA current of the valve position feedback module is deviated, the calibration is completed by pressing the ▲ or ▼ button to change the parameter value to the actual current value, and then pressing the MODE button to confirm.

17) HART

HART Setting

MONI: indicates that HART is only used to monitor the operation of the actuator and cannot be used to control the actuator;

CRTL: Indicates that HART can control and monitor the operation of the actuator at the same time;

18) ADIR

Feedback current positive and negative effects.

ADIR=RISE, the threshold value is 0% and 4mA, and 100% is 20mA. ADIR= 20mA at 0% and 4mA at 100%;

9 Abnormal use and maintenance

9.1 Error alarms

Error Code	Reason	Resolution
ERR01	The input signal current value < 3.5mA	● Check the input signal current value. ● Check if the loop impedance is too high, resulting in insufficient voltage at the input port.
ERR02	The input signal current value > 21mA	● Check the input signal current value. ● Detects if the 24V voltage of the valve position feedback module is connected to the current input terminal.
ERR03	The actuator stroke is too short	● Check that the feedback connection accessories are installed correctly according to the installation section of the manual. ● Fine-tune the position of the mounting bracket or the angle of the feedback connecting rod.
ERR04	The valve cannot be actuated to the specified position	● Check if the valve is stuck. ● Check whether the feedback connection mechanism is loose or falling off. ● Check whether the compressed air pressure is normal.
ERR05	The fully open valve position is smaller than the fully closed valve position	● Check that the feedback connection accessories are installed correctly according to the installation section of the manual. ● Check that the device is reversed.

9.2 Other abnormalities are excluded

If you have any of the following abnormalities when using the base station, follow the resolution to eliminate them. If you still can't solve the problem, please contact the supplier.

Anomaly characteristics	Reason	Resolution
Neither manual nor automatic action	Low compressed air pressure	Adjust the pressure of the air supply to the pressure required by the actuator
	The actuator is stuck	Solve the problem of the actuator being

		stuck
No action or slow action in automatic mode	Low compressed air pressure	Adjust the pressure of the air supply to the pressure required by the actuator
Cannot be fully close or fully open	Low compressed air pressure	Adjust the pressure of the air supply to the pressure required by the actuator
	The tuning data is abnormal	Retuning
	The user parameters are set incorrectly	Check the user parameters
Frequent replenishment	Air leakage	Detect air leaks in positioners and actuators
oscillating	The user parameters are set incorrectly	Increase the dead band range and increase the damping value
	The volume of the air chamber of the actuator is too small, and the return difference is large	Check that the mounting bracket or feedback connector meets the installation requirements and initialize if necessary
LCD has no display	The input current is too small (<3.0mA)	Check the input current
	The electrical connection terminal screws are loose	Tighten the terminal screws
	The motherboard is damaged	Replace the motherboard
The exhaust is not smooth	The exhaust hole is blocked	Clean the vents
There is no current in the valve position feedback output	The positive and negative poles of the external wiring are reversed	Rewire it properly

	There is no external power distribution, and there is no working voltage in the valve position feedback module	A 24V operating voltage is supplied to the valve position feedback output
	The valve position feedback module is faulty	Replace the motherboard
The valve position feedback current does not match the valve position displayed on the LCD	The valve position feedback is zero, and the range is deviated	With the user parameter AMIN, AMAX recalibrates the zero range
	The valve position feedback module is faulty	Replace the motherboard
The zero point displayed by the LCD, the range does not match the scale of the scale	The actual stroke of the control valve itself does not correspond to the scale	Manual tuning

9.3 Maintenance

The positioner is a field instrument and should be maintained and maintained regularly. The air supply of the positioner should be kept dry and clean. Regularly discharge water and sewage to the pressure regulating valve that is used in conjunction with the positioner, so as not to enter the positioner and affect the normal operation of the positioner.

The feedback connection accessories of the positioner may be loose due to long-term work, and the screws should be checked regularly for looseness. If looseness is found, it should be tightened immediately, and initialization should be determined according to the deviation between the zero point and the measuring range.

In order to observe whether the positioner is working properly, the air source and output pressure gauge should be kept clean.

The maintenance and maintenance of the explosion-proof part of the positioner shall be inspected and maintained in accordance with the relevant provisions of the state.

10 Product Selection Table

Product Selection Table	BP7000	☐ ☐ ☐ — ☐ ☐ ☐ — ☐ ☐ 0									
Mode of action	Conventional linear stroke	L									
	Remote transmission type linear stroke	FL									
	Conventional quarter-turn	R									
	Remote transmission type Remote transmission type	FR									
Mode of action	Single-acting	1									
	Double-acting	2									
Safe location	reposition	0									
	Holding	1									
Explosion proof	Not explosion-proof	0									
	CCC intrinsically safe	1									
Valve position feedback output	None	0									
	4~20mA Output	A									

Com muni cation	No ne	0			
	HART	H			
Electri cal interfa ce	M20x1.5	M			
	1/2NPT	N			
Pneum atic interfa ce	G1/4	0			
	G1/4 With pressure gauge	2			
	1/4NPT With pressure gauge	3			
Special require ments	No ne	0			



11 Notice to users

Product failures caused by the following reasons are not within the scope of the manufacturer's free warranty service:

1. The user does not follow the procedures listed in the "Product Manual" to carry out the correct operation;
2. The user repairs the product by himself or modifies the product without communicating with the manufacturer;
3. Abnormal aging or failure of product components due to poor user environment;
4. The user uses the product beyond the standard range of the product;
5. Product damage caused by force majeure such as earthquakes, fires, feng shui disasters, lightning strikes, abnormal voltages or other natural disasters;
6. The product is damaged due to human dropping and transportation after purchase.

12 Disclaimer

In no event shall the manufacturer and its suppliers and distributors be liable for any special, indirect or consequential damages arising out of the use of the equipment, whether in contract, warranty, negligence, tort, strict liability, or any other perspective. These include, but are not limited to:

1. loss of profits and revenues;
2. Loss of use of supplied equipment and related equipment, and expenditure of funds;
3. The cost of substitute equipment, tool fees and service fees;
4. Downtime costs and delays;
5. Losses to the purchaser's customers or any third party.

In addition, the Company and its suppliers will not be liable for certain allegations such as problems arising from the use of substandard raw materials, incorrect design, or non-standard production unless the user can provide strong evidence.

If you have questions about this product, please contact us or its offices. Technical data, information, and specifications are up-to-date at the time of publication, and the company reserves the right to change them without prior notice, and does not assume any responsibility for any damages caused thereby. The final interpretation right belongs to the company.