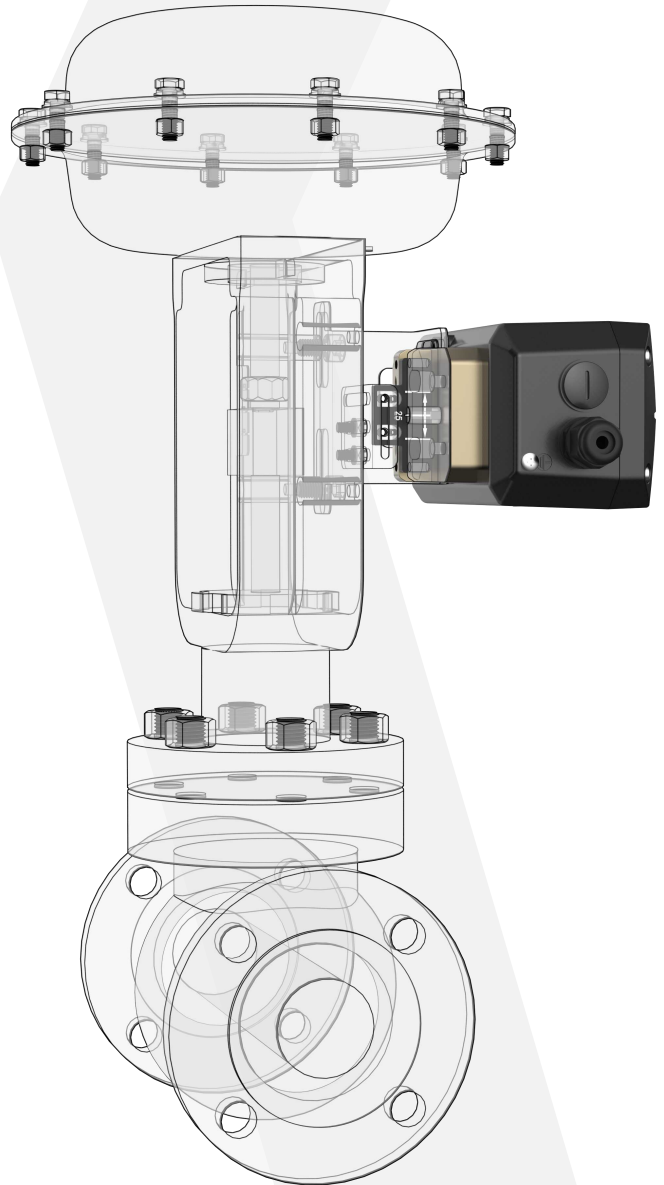




IP7000 Series Intelligent Valve Positioner

Brief Introduction

Times New Roman

01

Technical Description



IP7000 Series Intelligent Valve Positioner

IP7000 intelligent valve positioner is mounted on pneumatic control valves. It's used to control air intake and exhaust of the pneumatic actuators to drive the valve position to the set point by calculating both data from 4-20mA DC signal and feedback position.

> Enclosure Material

- Aluminum alloy, powder coating

> Pressure Gauge Block Material

- Aluminum, anodized

> Input Signal

- Current: 4-20mA DC
- No-load Voltage: 15-24V DC
- Input Resistance: 120Ω

> Output Signal

- 2-wire 4-20mA signal

> Digital Communication Protocol

- HART 7

> Minimum Operating Current

- 3.8mA

> Steady State Air Consumption

- ≤ 0.4 L/min

> Stroke Range

- Default Linear Type: 10-110mm
- Default Rotary Type: 80-100°

> Pneumatic Data

- Air quality meets ISO 8573-1 standard
- Pressure range: 1.4-7 bar (20.3-101.5psi)
- Solid Particle Size and Density: Class 3
- Pressure Dew Point: Class 3 (minimum 20K (36° F) lower than the ambient temperature)
- Oil Content: Class 3

> Flow Rate

- Intake :

2 bar	4.8 Nm ³ /h
4 bar	8.0 Nm ³ /h
6 bar	11.2 Nm ³ /h
- Exhaust (fail-safe) :

2 bar	5.9 Nm ³ /h
4 bar	9.8 Nm ³ /h
6 bar	13.7 Nm ³ /h
- Exhaust (fail-freeze) :

2 bar	6.6 Nm ³ /h
4 bar	11.1 Nm ³ /h
6 bar	15.6 Nm ³ /h

> Electrical Connection

- NPT 1/2 (default)
- M20 × 1.5

> Pneumatical Connection

- NPT 1/4 (default)
- G 1/4

> Protection Class

- IP66

> Vibration Resistance

- 0.15 mm, 10 Hz-60 Hz, 20 cycle/axis
- 20 m/s², 60 Hz-500 Hz, 20 cycle/axis
- Recommended range for control valve ≤ 20 m/s², no resonance peak

> Linearity & Hysteresis

- Linearity: ≤ 1.0%
- Hysteresis: ≤ 1.0%

> Ambient Temperature

- Normal Version for Non-explosion-proof:
 - 20°C ~ + 80°C
- Low Temperature for Non-explosion-proof:
 - 40°C ~ + 80°C
- Ex ia Default Type:
 - 20°C ~ + 80°C (T4/T200 135°C)
 - 20°C ~ + 40°C (T6/T₂₀₀ 85°C)
- Ex ia Low Temperature Type:
 - 40°C ~ + 80°C (T4/T200 135°C)
 - 40°C ~ + 40°C (T6/T₂₀₀ 85°C)

> Explosion-proof Grade

- Intrinsic Safety:
 - Ex ia IIC T4/T6 Ga
 - Ex ia IIIC T₂₀₀ 135°C/T₂₀₀ 85°C Da

> Intrinsically Safe Type Electrical Parameters

Circuit Name	Max Input Voltage Ui (v)	Max Input Current Ii (mA)	Max Input Power Pi (W)	Max Internal Equivalent Parameters	
				Ci (nF)	Li (mH)
4-20 mA Input	28	93	0.66	≈ 0	≈ 0
4-20 mA Output	28	93	0.66	≈ 0	≈ 0

> Summary of Electromagnetic Compatibility Results

Object	Description	Standard	Test Level	Result
Ex ia Type	Electrostatic Discharge Immunity	GB/T 17626.2	± 4kV Contact, ± 8Kv Air	Pass
Ex ia Type	Radio Frequency Electromagnetic Field Radiation Immunity	GB/T 17626.3	3V/m, 80%AM (1kHz) , 80MHz-1000MHz	Pass
Ex ia Type	Power Frequency Magnetic Field Immunity	GB/T 17626.8	50Hz, 100A/m	Pass
Ex ia Type	Electrical Fast Transient Pulse Group Immunity	GB/T 17626.4	± 1.0 kV	Pass

> Rated Conditions-height

- 2000m above sea level
- At locations above 2000m above sea level, please use a suitable power supply

> Rated Conditions-installation Position

- Anywhere
- In a humid environment, the pneumatic connector and exhaust port are not facing upwards, please install correctly

> Position Feedback Module

For Position Feedback DC Output, 2-wire Connection

Current Output	Terminals OUT1 and OUT2
Output Rated Signal Range	4-20mA, short-circuit proof
Dynamic Range	3.8-20.5mA
External Load $R_B[k\Omega]$	$\leq (U_{Aux}[V]-12V) I [mA]$
Transmission Error	$\leq 0.5\%$
Temperature Effect	$\leq 0.1\%/10K (\leq 0.1\%/18^\circ F)$
Resolution	$\leq 0.1\%$
Effective Internal Capacitance	C_i =Approximately 0
Effective Internal Inductance	L_i =Approximately 0

02

Advantages & Applications

> Advantages

- Simple mounting and one-key automatic commissioning
- Mature and reliable piezo module, imported from Germany
- Simple operation and configuration of the device using 4 buttons and LCD local display
- Numerous functions can be activated(e.g. characteristic curves and limits)
- Negligible air consumption in stationary operation
- Tight closing function
- Fail-freeze function (Optional according to product selection chart)
- One device variant for linear and rotary actuators
- Excellent shock resistance
- On-site calibration of 4-20 mA input signal can be performed
- Non-contact displacement sensor

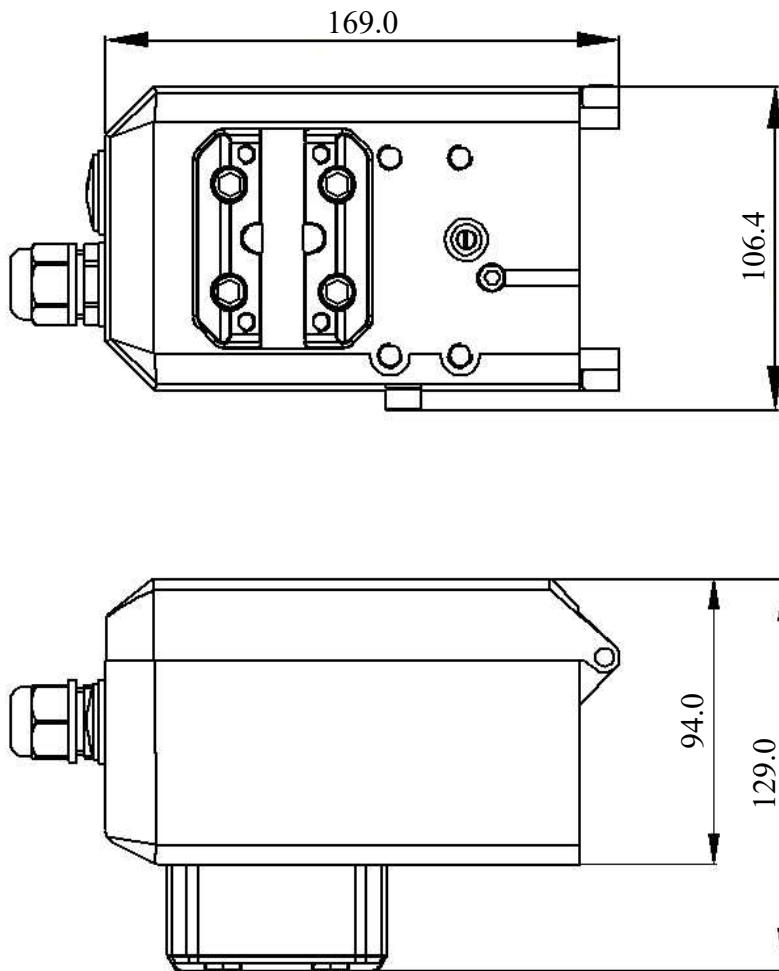
> Applications

- Refining / Petrochemical / Nuclear Power / Power Plant
- Paper and glass / water and wastewater industry
- Food & beverage, pharmaceutical industry
- Marine Industry

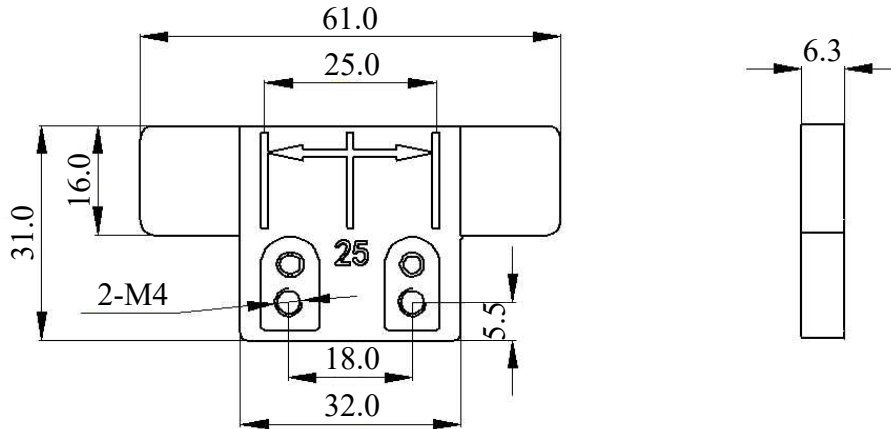
03

Mechanical Dimensions

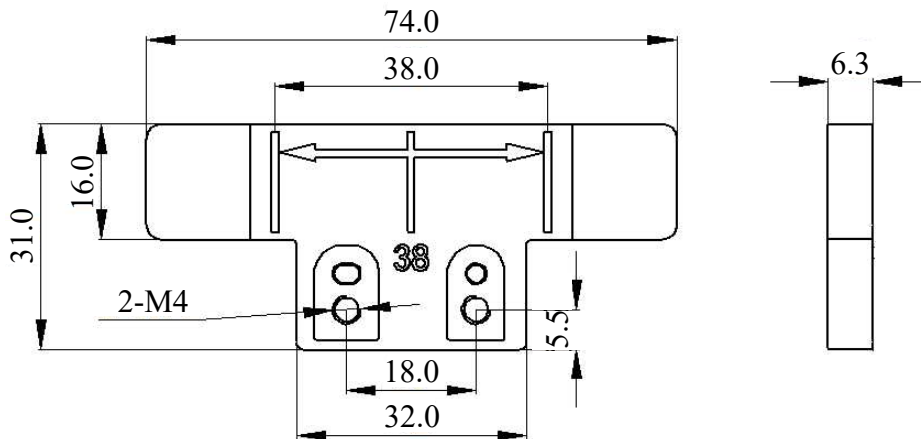
> IP7000 Series Intelligent Valve Positioner Mechanical Dimensions



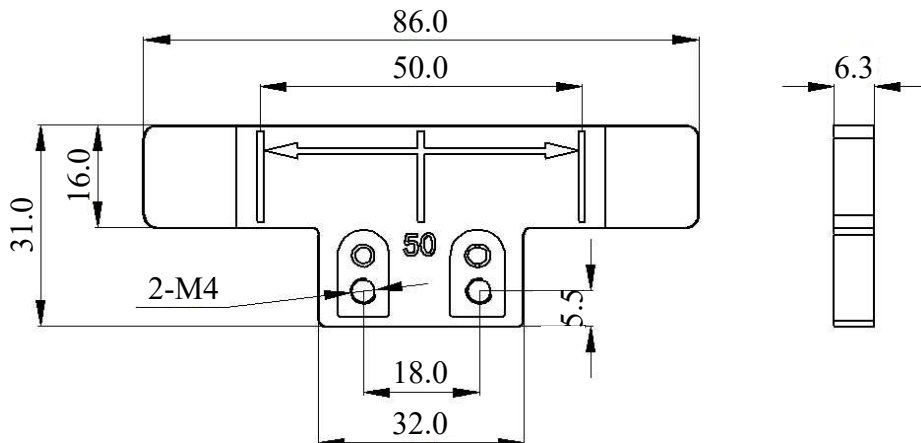
➤ **25mm Magnetic Strip (suitable for a stroke range of 10-25mm)**



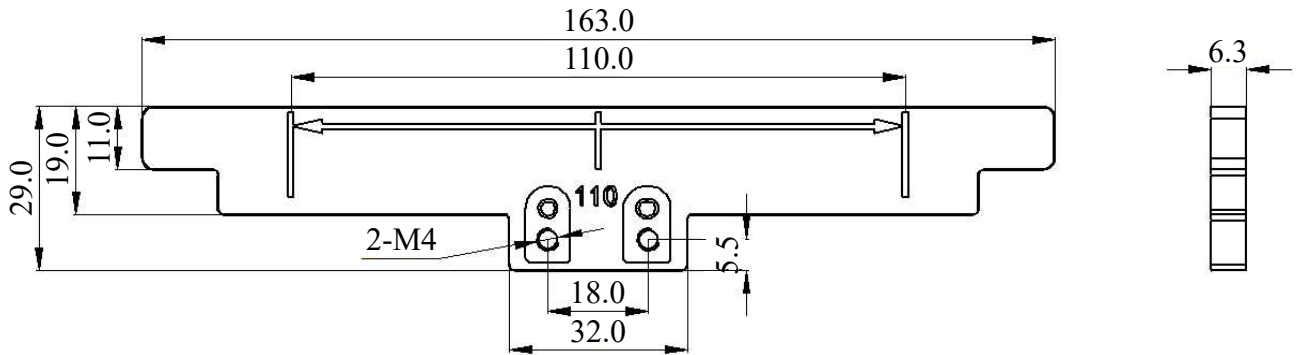
➤ **38mm Magnetic Strip (suitable for a stroke range of 25-38mm)**



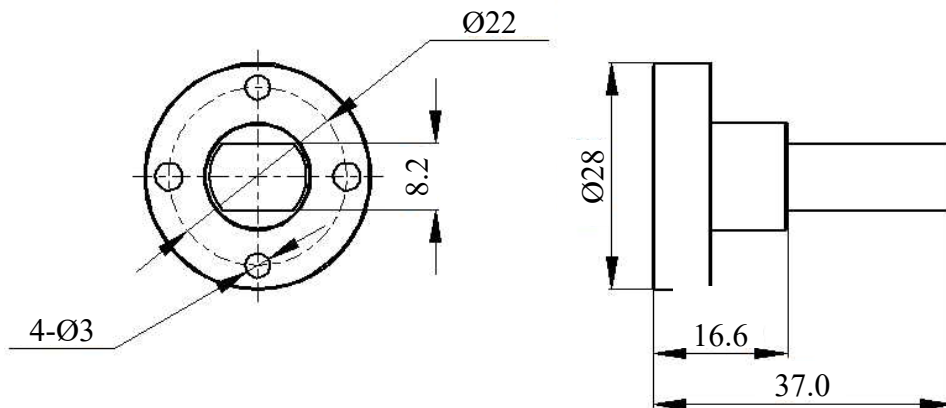
➤ **50mm Magnetic Strip (suitable for a stroke range of 38-50mm)**



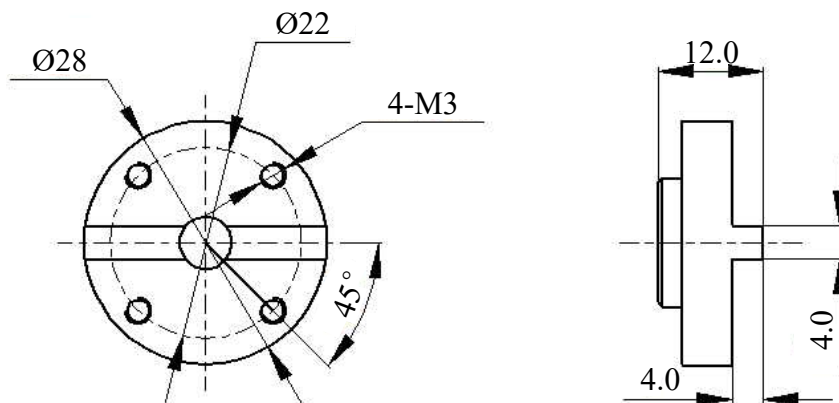
➤ **110mm Magnetic Strip (suitable for a stroke range of 50-110mm)**



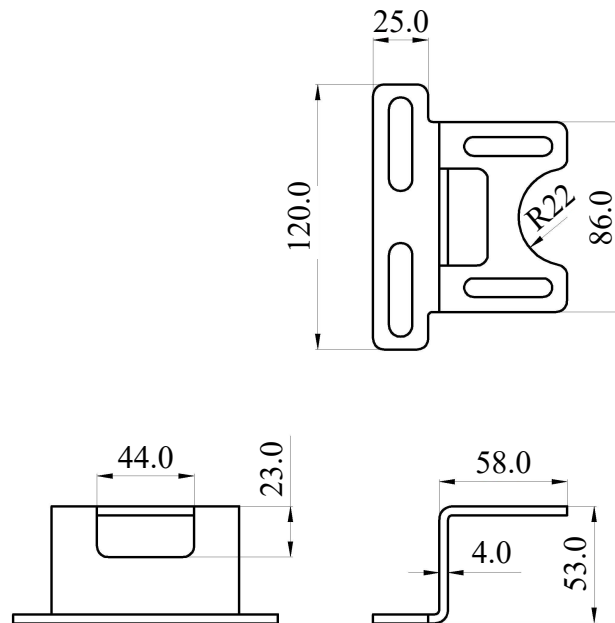
➤ **Outline Drawing of Rotary Magnetic Strip**



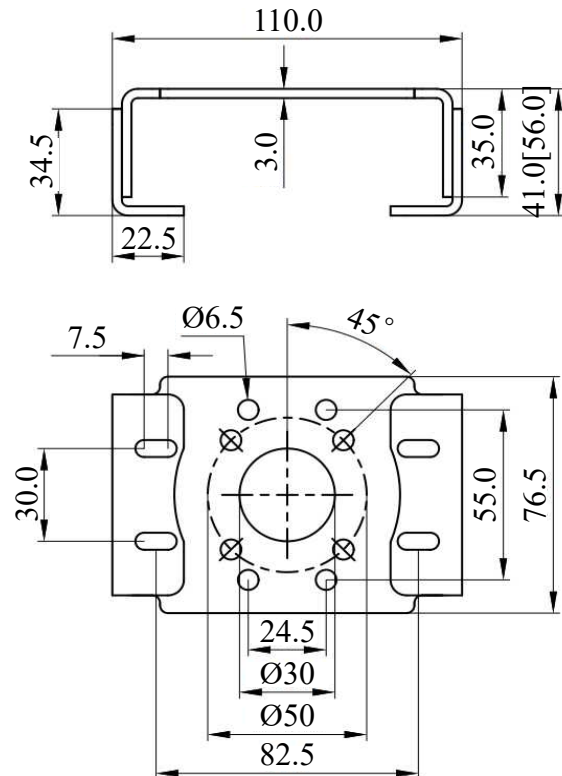
➤ **Rotary Magnetic Strip Connector**



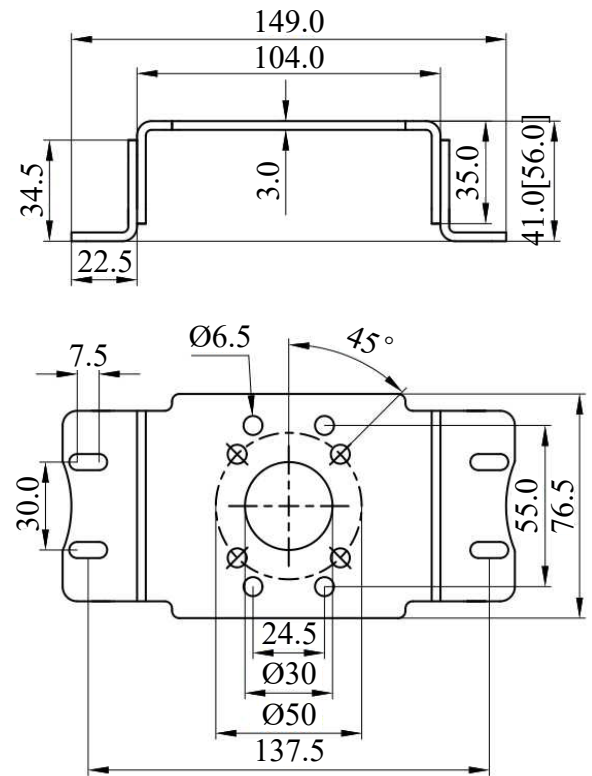
› Linear Mounting Bracket



› Rotary Mounting Bracket - Form 1

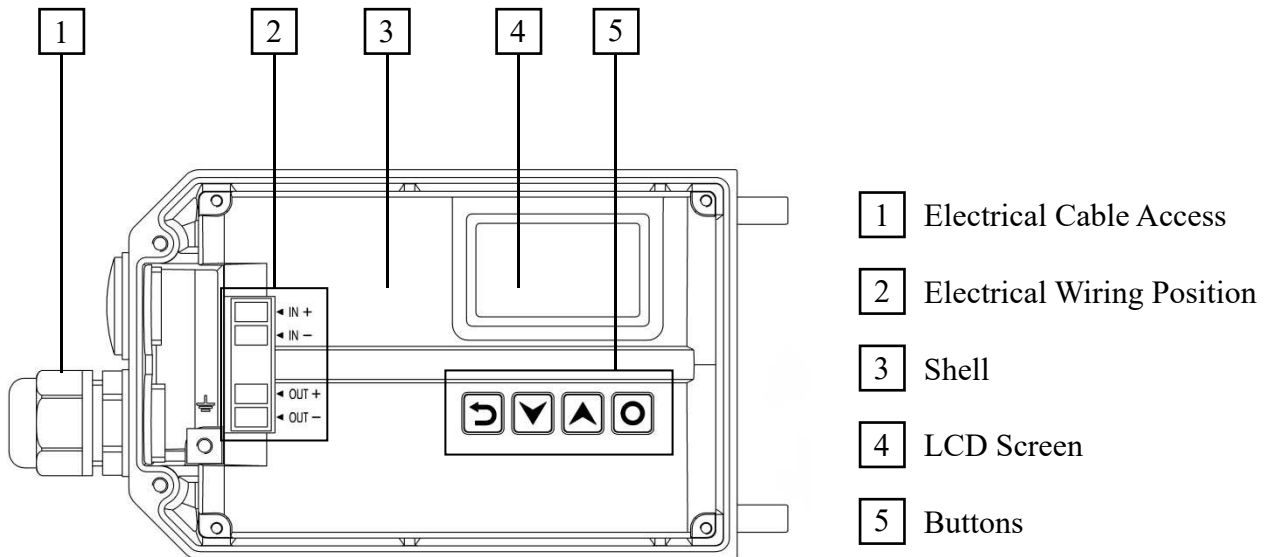


› Rotary Mounting Bracket - Form 2



04 Product Structure

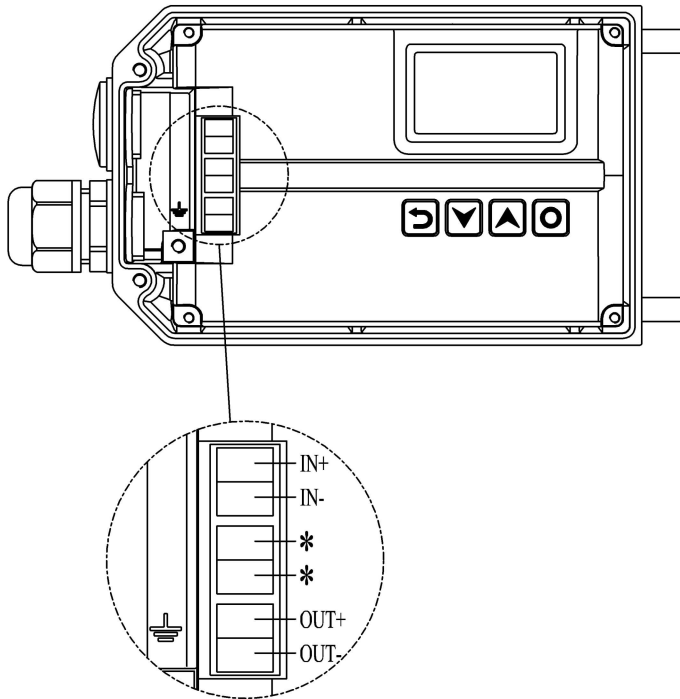
> IP7000 Series Intelligent Valve Positioner Product Structure



05

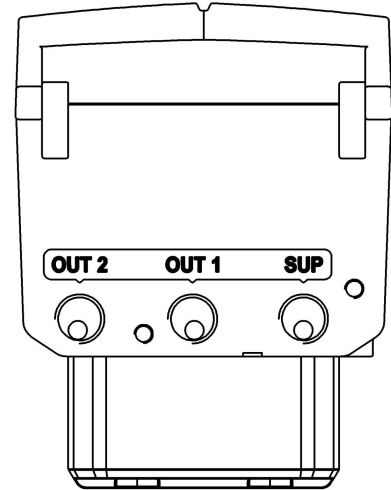
Electrical & Pneumatic Connections, Wiring Diagram

> Electrical Connections



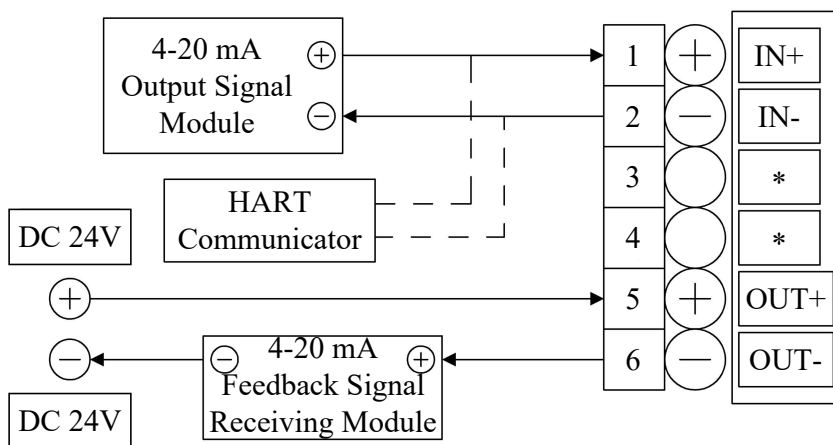
- IN+: 4-20 mA input signal +
- IN-: 4-20 mA input signal -
- OUT+: Feedback signal module 18-30 V DC +
- OUT-: Feedback signal module 4-20mA output
- *: The two interfaces are connected with each other, and the device is in low impedance mode

> Pneumatic Connections



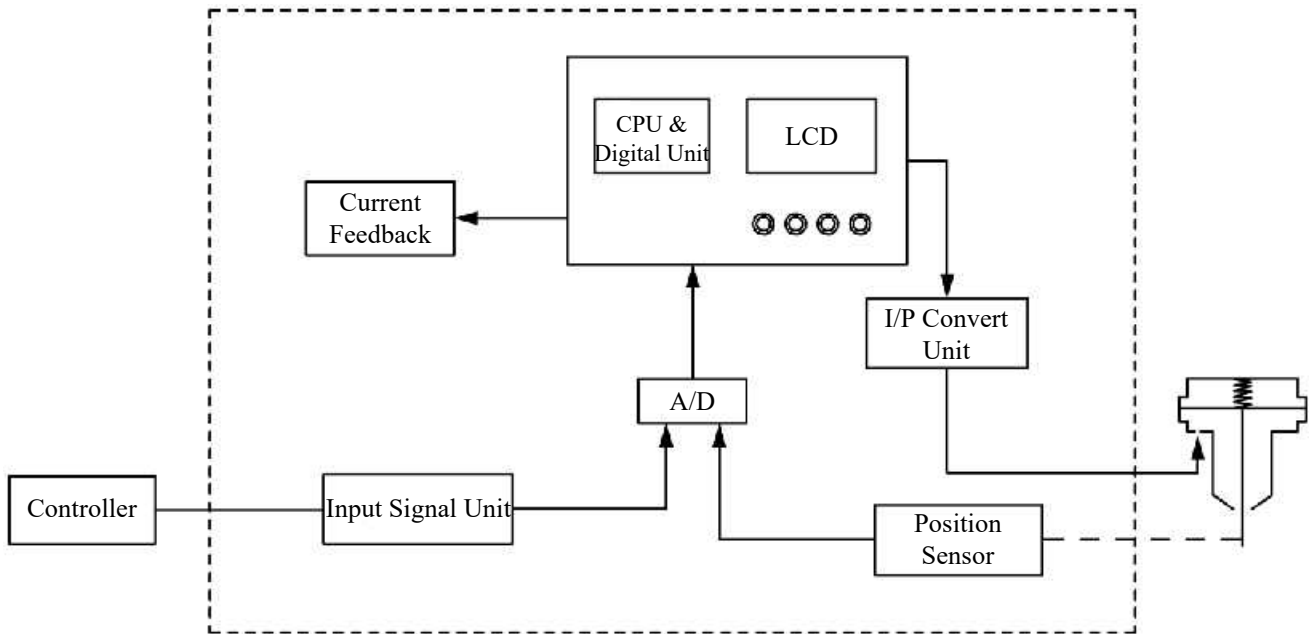
- SUP: Air supply enter
- OUT1: Pilot air outlet 1
- OUT2: Pilot air outlet 2, used for double acting type

> Wiring Diagram



06

Principle Block Diagram



> Additional Software Functions

- Calibrating the input signal
- Calibrating the set-point signal
- Tight closing function
- Stroke limit function
- Characteristic curve selection and settings
- Selection of signal direction.
- Selection of stroke direction.
- Reset function

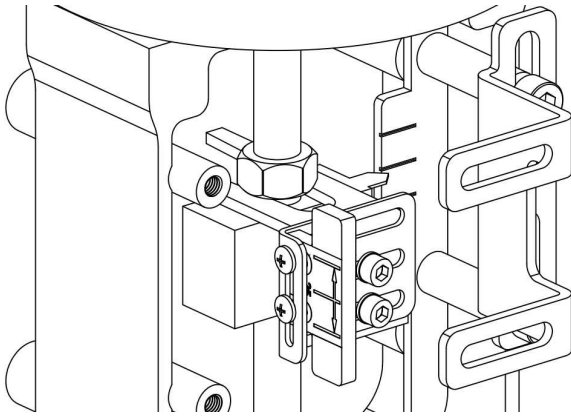
> Advantages

- The IP7000 intelligent valve positioner uses a microprocessor and advanced piezo valve instead of the conventional nozzle-baffle system to control output pressure. It processes input and position feedback signals via CPU for accurate valve control. The lightweight piezo valve generates short control pulses for high precision, and consumes air only when a valve deviation occurs and adjustment is performed, ensuring low air consumption. Additionally, the non-contact displacement sensor eliminates rod wear, corrosion and damage caused by severe vibration in traditional linkage feedback positioners.

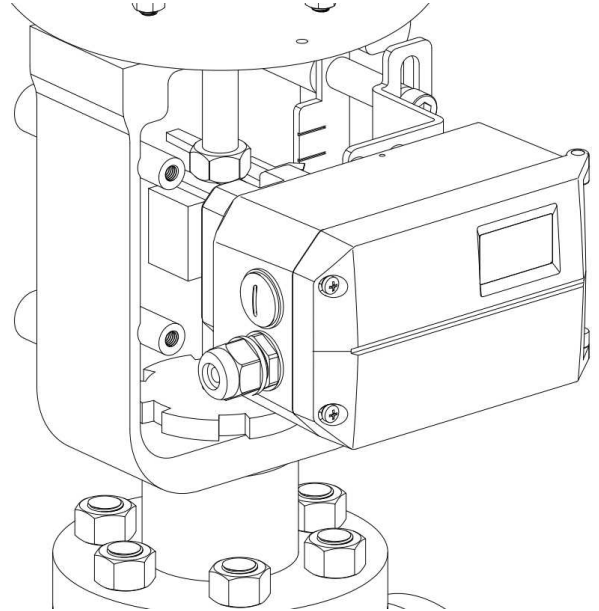
07

Mounting Components

> Linear Actuator Mounting Components

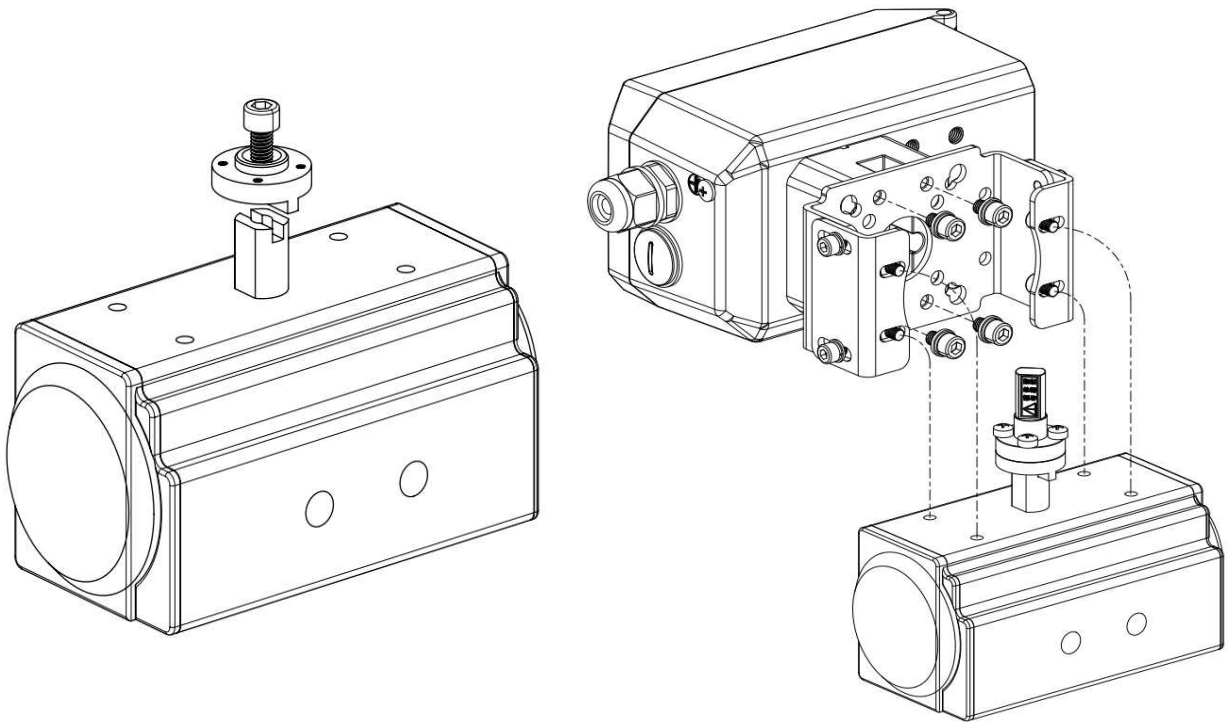


- Non-contact Magnetic Strip *1
- Magnetic Strip Mounting Bracket *1
- M6 Hexagon Socket Screw *2
- M6 Spring Washer *2
- M4 Cross Recessed Screw *2



- M4 Spring Washer *2
- Linear Mounting Bracket *1
- M8 Hexagon Head Bolt *2
- M8 Spring Washer *2
- M8 Flat Washer *2

> Rotary Actuator Mounting Components



- Rotary Connector *1
- Rotary Magnetic Strip *1
- Rotary Mounting Bracket *1
- M6 Flat Washer *4
- M6 Spring Washer *4

- M6 Hexagon Socket Screw *5
- M5 Hexagon Socket Screw *4
- M5 Spring Washer *4
- M5 Flat Washer *4
- M4 Cross Recessed Screw *4

08

Selection and Ordering Data

	L R	Linear Rotary									Stroke Type
		S D	Single Acting Double Acting							Acting Mode	
			n i	No Explosion Ex ia IIC T4/T6 Ga; Ex ia IIIC T ₂₀₀ 135°C/T ₂₀₀ 85°C Da						Explosion Signs	
				0 1	No Yes					Feedback Signal	
					0 1	No Yes				HART	
						0 1 2	No Linear Bracket Rotary Bracket			Mounting Bracket	
							0 1	No Yes		Pressure Gauge	
								S F	Safe Freeze	Power Off State	
									N L	-20°C -40°C Lowest Ambient Temperature	
IP7000	L	S	n	0	0	0	0	S	N		