

# KROM<sup>®</sup>



## >>KRB Series Smart Valve Positioner



SO9001 Certification



ISO14001 Certification



CE Certification



## We are Germany KROM Group>>

KROM was founded in 1948. After more than 70 years of efforts, KROM has become a world's leader for producing actuators. As one of the world's most famous manufacturers of valve actuators, we have such products as electric actuators, pneumatic actuators, valve positioners, limit switches, electromagnetic valves, etc. With excellent performance and good performance-price ratio, the products are widely applied in chemical systems, electric systems, oil and gas systems and other related industries, enjoying a high reputation while helping users to establish a 100% leakage-free system.



## Our Principle >>

### ■ Capacity and diversity

Germany KROM Group is successfully engaged in product development, design and manufacturing of system solutions that meet special needs of customers and providing satisfactory after-sales services.



### ■ Innovation and quality

While frequently and specially developing high-quality standard solutions and providing the best solutions, KROM Group has sufficient reasons to provide more for demanding customers.



### ■ Professional skills and cooperation relationships

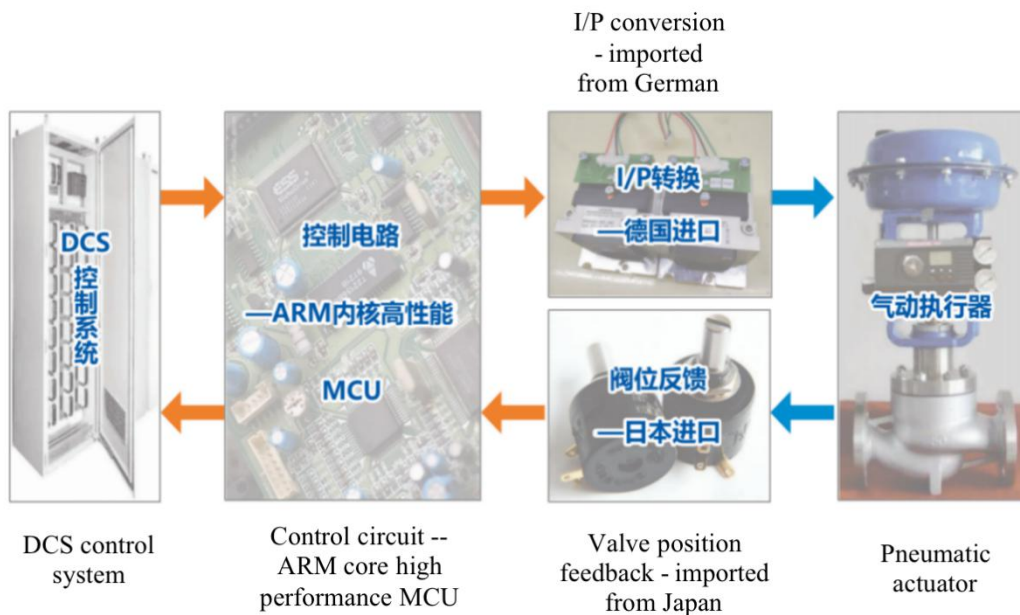
No matter who wants to finish a job with high quality, he always needs a professional partner who has reliable capacity and a sense of quality. Germany KROM Group is such a partner. With our DIN EN ISO 9001: 2000 certified quality assurance system, we can guarantee safe and stable operation to the utmost extent. Our installation personnel have received professional training and the spare parts are supplied within 24 hours.



## Product Features >>

### ■ Working Principle

According to the deviation of the 4~20mA control signal and the valve position feedback, the MPU sends a switch command to the electrical conversion module to change the output air flow and drive the valve to change the opening. When the opening reaches the required position, the piezoelectric valve becomes no output, making the valve stable at this position.



**The fundamental diagram of KRB**

### ■ “Three-off” Insurance and Cost Saving

- KRB comes with “Three off” Insurance function

KRB can realize valve position self-protection output or the switching of switch value chain without external accessories such as solenoid valve and lock valve, which can avoid the hidden danger of production caused by the failure of regulating valve action.



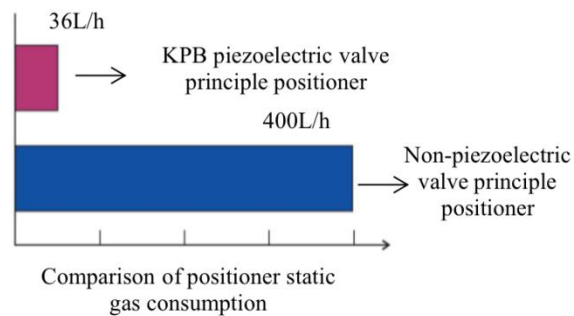
## ■ Core Technology: Electrical Conversion Technology with Ultra-low Gas Consumption

### ● Derived from German piezoelectric valve technology

KRB adopts the world's most advanced electrical conversion technology of piezoelectric valve principle, and also uses the electrical conversion module imported from Germany. KRB is characterized by ultra-low power consumption, trouble-free switching of up to 2 billion times, and steady air consumption of less than 36L/h, far less than the 400L/h of conventional positioners.



Piezoelectric valve



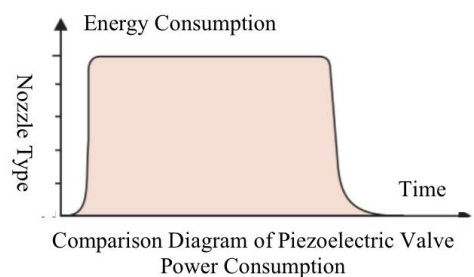
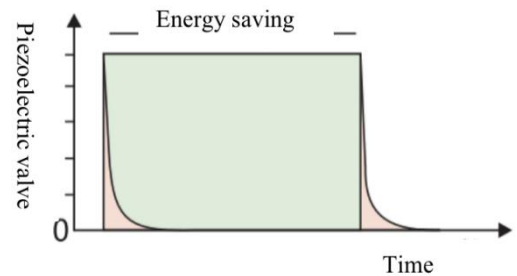
### ● Customer Value

- ✧ **Operation cost saving:** Air saving of a KRB positioner for one year =  $(0.4-0.036) \times 24 \text{ hours} \times 365 \text{ days} = 3200$  standard squares. Thus, energy saving for one year =  $3200 \text{ standard square meters} \times 0.44 \text{ kWh of electricity per standard square meter} = 1408 \text{ kWh of electricity}$  (equivalent to 128 kg of standard oil, 160 kg of standard coal), and one-year cost savings =  $3200 \times 0.44 \times \text{¥}1 = \text{¥}1408$ .

**Note:** The above calculation is based on the national standard for petrochemical energy consumption.

1. The energy consumption for producing 1 standard square meter wind is 0.44 kWh = 0.04 kg of standard oil = 0.05 kg of standard coal.
2. The cost of 1 kWh of electricity is calculated by ¥1.

Energy consumption



- ✧ **Energy saving and environmental protection:** ultra-low power consumption and static air consumption are more in line with national energy-saving requirements and industry trends; piezoelectric valves are made of high-tech polymer materials, meeting the technical requirements of environmental protection.



Energy Saving



## ■ Core Technology: Ultra-high Durability, Reliability and Dynamics

### ● Derived from German core components

#### Digital Module Design

KRB adopts imported electrical conversion module, a new generation piezoelectric valve from Germany. Its pneumatic function is integrated in a compact module, which is simple, sturdy and reliable in design and application.



### ● Customer Value

#### ◆ Air interface

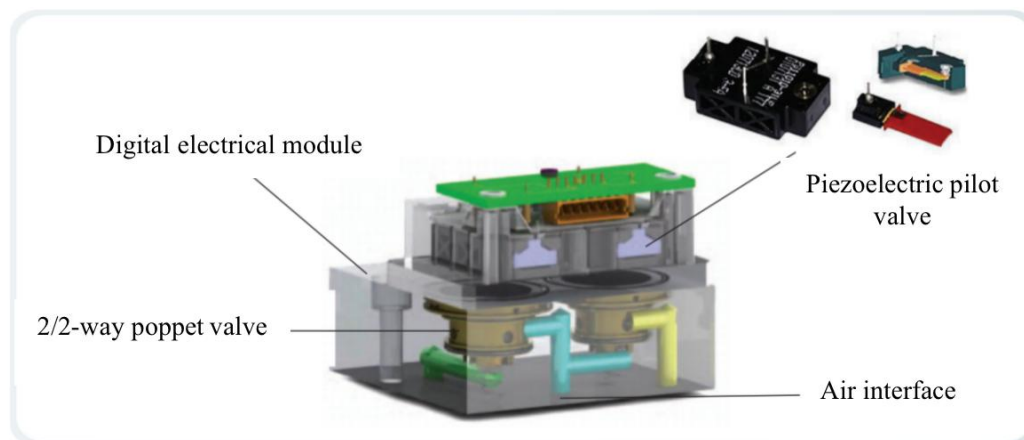
Gas molecular sieve and a new generation of piezoelectric valve greatly improve the ability to adapt to particulate matter in compressed air, reaching ISO8573-1 particulate matter grade 4, oil content grade 4 standard and dew point standard of 10K, which fully meets the standard of the nozzle baffle.

#### ◆ 2/2-way poppet valve design

With the characteristics of no leakage, high durability and short response time, KRB has a lifespan of 4 million times, a response time of 6ms, improved low temperature stability at -25°C, and optional modules at -40°C.

#### ◆ Piezoelectric pilot valve

KRB is equipped with extra diagnostic function reserve, reaching 13 types of self-diagnose functions.



## ■ Core Technology: Ultra-high-precision Control Algorithm

### ● **Precise valve algorithm control model**

#### **Joint German famous industrial control company**

Its built-in includes fuzzy control, robust control, PID control, and dynamic adaptive adjustment valve control parameters. 15 types of control algorithm models can adapt to various regulating valves with different characteristics.

### ● **Customer Value**

- ◆ KRB adopts neural network control algorithm, with stroke divided into n sections, to optimize more suitable compensation pulse, which is suitable for use under 1.4bar~7bar air source pressure.
- ◆ KRB adopts self-tuning mode for pneumatic actuators of different volumes, with configuration of different control parameters to adapt to pneumatic actuators of different volumes.
- ◆ Through experiments to record the changes of the control pulses at different temperatures, and to analyze the data, KRB fits the temperature-pulse correction formula, that is, the output value is the sum of the normal calculation value and the correction value. With the wide temperature characteristic electrical conversion module, it can adapt to different temperature conditions.
- ◆ A pre-judgment zone is added to KRB. When the control deviation enters the pre-judgment zone, KRB can monitor the deviation change rate, and start the reverse pulse in time, which is therefore suitable for valves with large inertia loads, such as chemical heating furnace dampers.
- ◆ KRB adopts initial pulse control, neural network control algorithm and stroke segmentation, so it adapts to high friction valves, such as oxygen valves.

Product Model Selection >>

**KPB8500 Series Exia**



The specific model of the product as follows:

Product Options		KRB85	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □															
Normal/Split	Normal type	0																
	Split type	5																
Secure Location	“Three-off” reset	0																
	“Three-off” insurance	1																
Manner of Execution	Straight stroke	L																
	Angular stroke	R																
Actuator	Single acting	1																
	Double acting	2																
Explosion-proof	None	0																
	Exia II CT4~T6	E																
Communication	None	0																
	HART communication	H																
Buttons	External buttons	K																
Valve Position Transmission	None	0																
Output	4~10mA current output	F																
Position Switch	None	0																
Output	Two-way electronic switch outputs	1																
Power/Air Supply Interface	M20×1.5 / G1/4															G		
	M20×1.5 / 1/1NPT															N		
	1/2NPT / 1/4NPT															M		
	1/2NPT / G1/4															P		
Pressure Gauge Assembly	None	0																
	Pressure gauge assembly	1																
	Stainless steel pressure gauge assembly	2																
Additional Options	None	0																
	Stainless steel shell	S																
	No pipeline	N																
	Lightning protection	1																
	Lightning protection + stainless steel shell	T																
	Lightning protection + no pipeline	M																
	Stainless steel shell + no pipeline	P																
	Lightning protection + stainless steel shell + no pipeline	W																



KRB8600 Series    Exd



The specific model of the product as follows:

Product Options		KRB85	□ □ □ D □ K □ □ □ □ □											
Secure Location	“Three-off” reset	0												
	“Three-off” insurance	1												
Manner of Execution	Straight stroke	L												
	Angular stroke	R												
Actuator	Single acting	1												
	Double acting	2												
Explosion-proof	China Explosion Proof - Air explosion proof		D											
Communication	None					0								
	HART communication					H								
Valve Position Transmission Output	None						0							
	4~20mA current output						F							
Position Switch Output	None							0						
	Two-way electronic switch outputs							1						
Power/Air Supply Interface	M20×1.5/ G1/4								G					
	M20×1.5 / 1/4NPT								N					
	1/2NPT / 1/4NPT								M					
	1/2NPT / G1/4								P					
Pressure Gauge Assembly	None									0				
	Pressure gauge assembly									1				
	Stainless steel pressure gauge assembly									2				
Additional Options	None										0			
	Stainless steel shell										S			
	No pipeline										N			
	Lightning protection										1			
	Lightning protection + stainless steel shell										T			
	Lightning protection + no pipeline										M			
	Stainless steel shell + no pipeline										P			
	Lightning protection + stainless steel shell + no pipeline										W			

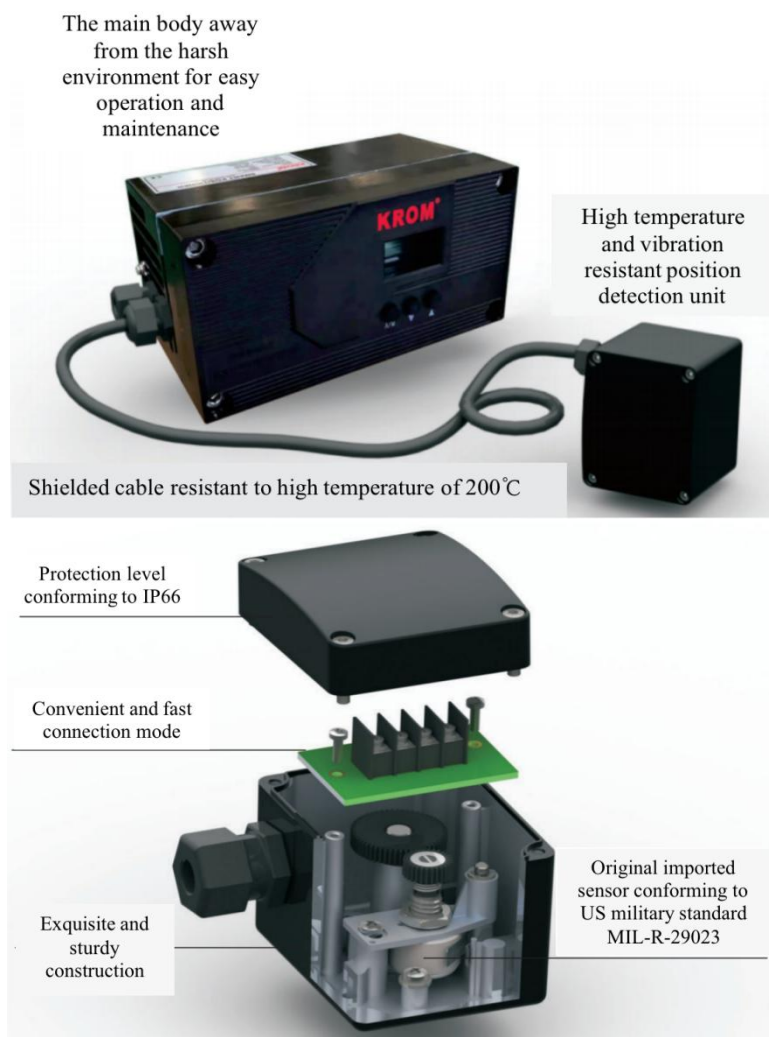
## KRB8550 Series

The split-type smart valve positioner refers to a special form in which the position sensor is placed separately from the main body. The reinforced position sensor can be installed on the valve body, which can withstand high temperature and strong vibration, while the main body containing the circuit board and precision pneumatic components is kept away from the hazardous environment so as to achieve better reliability.

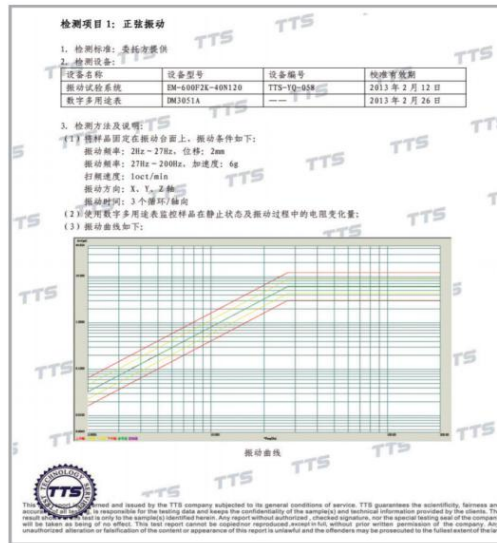
### Applicable Working Conditions

Position sensor: resistant to high temperature of 100°C, vibration and 6G acceleration

- For use with strong vibration control valve
- Paper mills: pulping machines
- Steel plant: heating furnace
- Thermal power plant: primary air\ secondary air damper baffle



## 6G acceleration vibration test report -- from a third party (TTS laboratory)



## The specific model of the product as follows:

Product Options		KRB855															
Secure Location	“Three-off” reset	0															
	“Three-off” insurance	1															
Manner of Execution	Straight stroke	L															
	Angular stroke	R															
Actuator	Single acting	1															
	Double acting	2															
Explosion-proof	None	0															
	China explosion proof-Air intrinsically safe proof	E															
Communication	None	0															
	HART communication	H															
Valve Position	None	0															
Transmission Output	4~20mA current output	F															
Position Switch Output	None	0															
Power/Air Supply Interface	M20×1.5/ G1/4														G		
	M20×1.5 / 1/4NPT														N		
	1/2NPT / 1/4NPT														M		
	1/2NPT / G1/4														P		
Mounting Brackets	None	0															
	Standard Mounting Brackets														M		
	Special Mounting Brackets														S		
Pressure Gauge Assembly	None	0															
	Pressure gauge assembly	G															
Additional Options	None	0															
	Lightning protection	1															
	Stainless steel shell	2															
	Split connecting line (10m)	3															

## Technical indicators >>

		KRB8500	KPB8600	KPB8550
Working Conditions	Explosion-proof level	Ex ia IIC T4~T4 Ga	Exd IIC T4~T6 Gb	None
	Vibration resistance	15~150Hz/2g		15~300Hz/6g
	Environment temperature	-20℃~+50℃	-20℃~+65℃	-30℃~+100℃
		-20℃~+65℃	-20℃~+70℃	
		-20℃~+00℃	-20℃~+80℃	
	Protection level	IP65/IP66 (optional)		
	Environment humidity	5~95%RH		
Air supply Indicators	Air supply pressure	0.14~0.7MPa		
	Air consumption at steady state	<36L/H		
	Air quality requirements	Comply with ISO8573-1		
		Maximum particle size and density: Grade 4		
		Oil content: Grade 4		
		Dew point: Class 4 or at least 10K below the minimum environment temperature		
Input/Output	Adaptive action mode	single acting/double acting		
	Travel Range	Straight stroke: 10~100mm; Angular stroke: 30~120°		
	Current input	4~20mA DC, minimum input current > 3.8mA; the start and end points of split-range control can be set.		
	Feedback output	4~20mA DC		
	Switch input	Dry contact		
	Switch output	2-way electronic switch		
	Output characteristic correction	Linear, 1:30, 30:1, user-defined 20-segment curve		
	Communication	HART communication		
Display Mode	LCD	2*7 digitals, dimension: 22×38mm		
	Rotation indication	Optional	None	None
	Pressure gauge indication	Optional		
Configuration Operation	Self-tuning	Self-tuning valve zero, span and minimum dead zone (auto value)		
	Self-diagnose	Display input current value, up/down travel time and Dead zone		
	Manual	3 keys on the front panel for quick manual valve operation on site		
Precision	Dead zone	0.1~10% adjustable		
	Linearity	0.5% FS		
	Sensitivity	0.1% FS		
	Repeatability	0.2% FS		
Lightning Protection (Optional)	Voltage protection level	Line-Line 65V; Line-Ground <700V		
	Response time	Line-Line 4ns; Line-Ground <20ns		
	Current surge peak	10KA		
	Voltage surge peak	20KV		

[www.krom-fc.de](http://www.krom-fc.de)

- Fluid control expert under severe conditions
- High performance and high reliability
- Fully complying with the latest international norms
- More applicable specifications and higher performance-price ratio
- Better industrial modeling, more suitable for a variety of application environments



Please scan the QR code and follow our WeChat official account for more products and services of KROM.

© 2022 KROM All Rights Reserved

KROM reserves the right to modify or change parameters without notice. The data in this version are subject to change and update, please feel free to visit our website ([www.krom-fc.de](http://www.krom-fc.de)) for the latest information.