BR-P126-00EN

FM1000

FM1000

Digital Valve Positioner with Integrated Air Set

FLOWMAX

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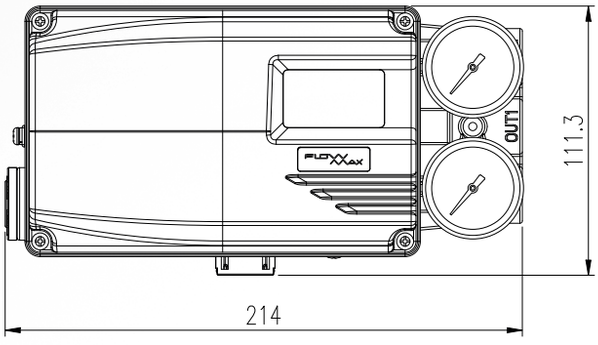
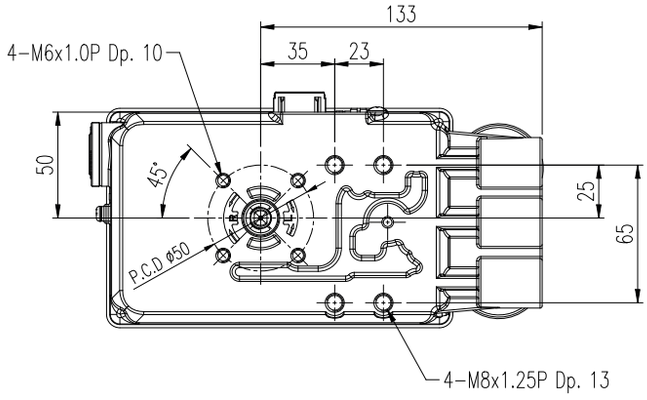
FM1000 – Digital Valve Positioner with Integrated Air Set

The FM1000 is a digital display positioner with feedback and an integrated filter regulator. It senses signals from the control system (e.g., 4–20 mA) to automatically adjust the air pressure going to the actuator, keeping the valve precisely at the desired stroke/position. Thanks to the digital screen, setpoint, actual position, and status information can be easily monitored. It ensures stable and repeatable positioning by continuously controlling via feedback . The integrated filter regulator cleans and stabilizes the supply air, supporting safer and longer-lasting system operation. Consequently, more accurate control, less hunting , and higher efficiency are achieved in processes.

- Easy monitoring and adjustment with digital screen
- More stable operation (reduces hunting)
- Local control with LCD and 4 buttons
- Modularization of internal parts
- Fast and easy calibration
- IP66 / NEMA4X

- Precise and repeatable positioning
- Reliable air supply with integrated air set
- PST and alarm function
- Improved valve control speed using a large-flow pilot valve
- Auto/Manual toggle switch included
- High vibration and shock resistance





Technical Parameters

Item		L8A-100L		L8A-100R	
		Single	Double	Single	Double
Input Signal		4~20mA DC			
Impedance		250±15Ω (non-feedback model)			
Supply Pressure		1.4~7.0 kgf/cm² (20~100 psi)			
Stroke		10~150mm		0~90°	
Air Interface Connection Size		PT(NPT) 1/4			
Pressure Gauge Connection Size		PT(NPT) 1/8			
Supply Connection Size		PF 1/2 (G 1/2)			
Protection Level		IP66			
Ambient Temp	Operating Temp.	Standard: -20 ~ 70°C Low Temp: -40 ~ 70°C (No display below -20°C)			
	Explosion Proof	-20 ~ 60°C			
Linearity		±1.0% F.S			
Hysteresis		1.0% F.S			
Sensitivity		±0.2% F.S	±0.5% F.S	±0.2% F.S	±0.5% F.S
Repeatability		±0.5% F.S			
Air Consumption		3 LPM (Sup=1.4 kgf/cm², 20 psi)			
Flow		80 LPM (Sup=1.4 kgf/cm², 20 psi)			
Material		Aluminum Die-casting			
Weight		2.5 kg		2.5 kg	
Model with Indicator and Feedback					
Input Signal		4~20 mA DC (two-wire system)			
Input Load Voltage		Maximum 15V			
Feedback Signal		4~20 mA DC (two-wire system)			
Feedback Signal Power		DC 24V±15%			

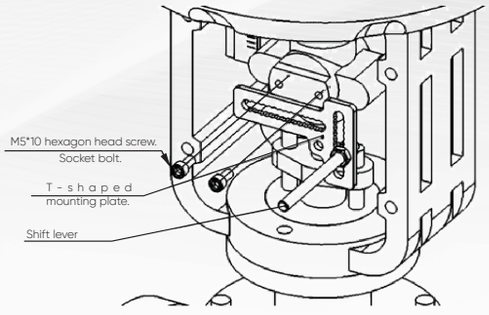
Installation

Mechanical Connection Precautions

Before installation, the input signal and air supply to the valve, actuator, and other accessories must be disconnected.

If the control (regulation) valve is already mounted on the pipeline, necessary precautions must be taken to isolate the valve from the line.

Mounting on Linear Motion Actuators

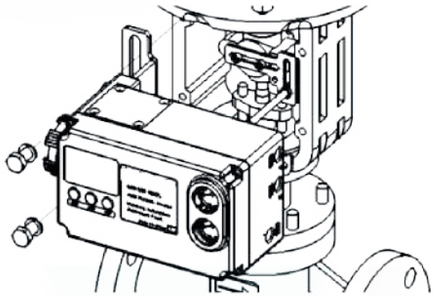


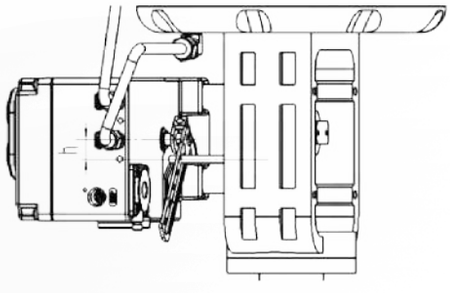
Installation of Mounting Accessories

1- Remove the positioner and mounting accessories from their packaging.
2- As shown in the left drawing, secure the "kidney-shaped" plate to the valve stem using two M8 bolts.
3- Secure the shift lever to the "T" plate channel using the two provided nuts.

Mounting the Positioner

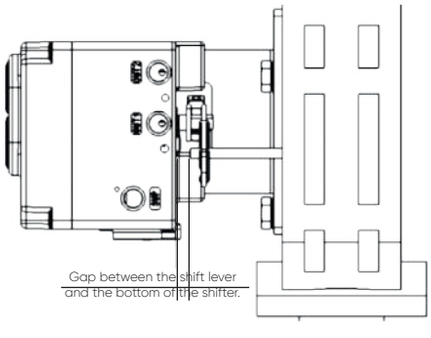
1- Place the positioner onto the valve along with the mounting plate. Align the kidney-shaped channel on the mounting plate with the two bolt holes on the valve mounting chassis and secure with two M10 external hex bolts. Ensure the bolts are at the correct height before tightening them completely. Tighten the bolts after the adjustment is complete.

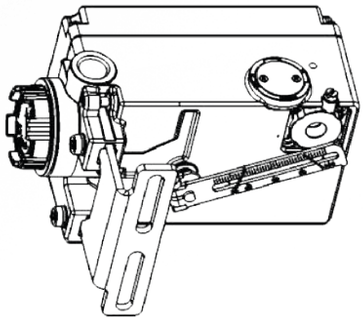




2- Place the shift lever into the feedback shaft channel of the positioner. The distance between the shift lever and the bottom surface of the positioner should not be less than 5 mm.

3- Adjust the relative position of the mounting plate and the shift lever according to the stroke value (linear motion).
The vertical distance should be adjusted so that the actuator stroke is approximately half of the shift lever movement. Tighten the nuts after the adjustment is complete.

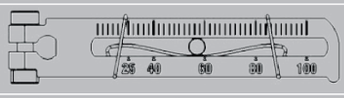
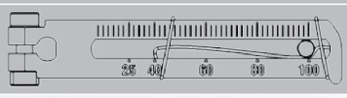




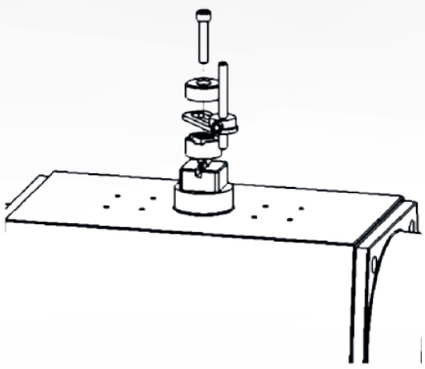
NOTE

To increase positioning accuracy, refer to the table for the shift lever position in the feedback shaft channel.

In linear motion actuators, the relative position of the feedback lever can be adjusted by sliding the "T" plate to the right or left and by mounting the plate in the reverse direction.

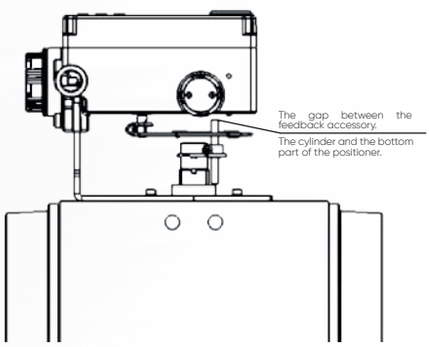
Actuator Stroke	Shift lever position in the feedback shaft channel
Below 25 mm	 Set the shift lever to the 25 scale.
25 ~ 100	 Set the shift lever to the 25~100 scale.
100 mm and above	 Set the shift lever to the 100 scale.

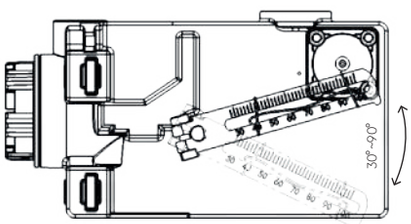
Mounting on Rotary Motion Actuators

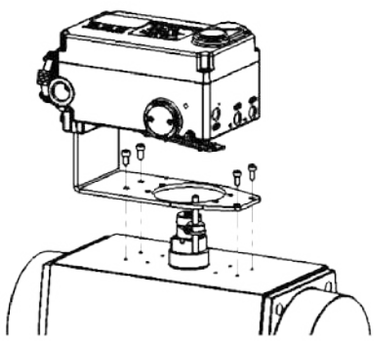


1- Fix the mounting accessories to the cylinder.
2- Place the positioner onto the air cylinder along with the mounting plate. Mount it as shown in the figure and insert the shift lever into the feedback shaft channel.
3- Adjust the height of the shift lever so that it remains at least 5 mm away from the bottom surface of the positioner. By adjusting the horizontal extension length of the "8" shaped plate belonging to the fixed shift lever, bring the shift lever closer to the center of the feedback shaft channel.
4- Tighten all mounting screws. 30°~90°

For the best performance, the oscillation angle of the feedback shaft should be between 30°~90° when the valve is in the fully open position







Electrical Connection

Warnings

The nominal operating voltage of the positioner is 24V, and the maximum operating voltage is 26V. Operating it above the nominal voltage for extended periods...

When the positioner does not receive a signal, the feedback signal is in an unstable state. Do not use the feedback signal as an interlock signal.

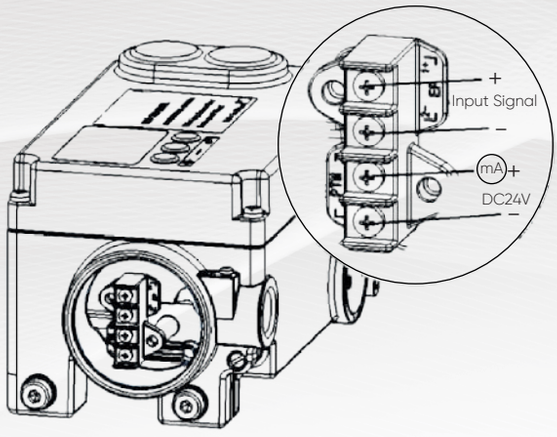
Signal Line and Feedback Line Connection Method

Signal Line Connection

1- The EP "+" terminal is connected to the positive pole of the PLC (DCS) 4–20 mA output signal. The EP "–" terminal is connected to the negative pole of the output signal.
2- Using a cable of 0.5 ~ 1.5 mm² is suitable.

Feedback Line Connection

1- Two PTM terminals are connected to the positive and negative poles of the feedback signal circuit. The polarity of the terminals is not important.
2- Using a cable of 0.5 ~ 1.5 mm² is suitable.



Pneumatic Installation

- After completing the pipeline connection, ensure that you turn on the compressed air source to prevent accidents.
- When the compressed air source is opened, the regulating valve may operate. Verify the safety of the field and the pipeline before opening the gas source.
- Dried, oil-free, and dust-free compressed air must be used.

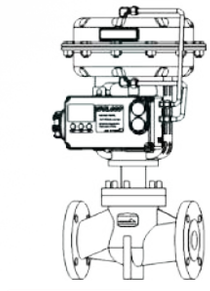
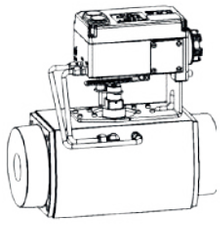
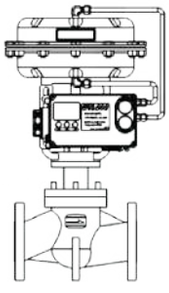
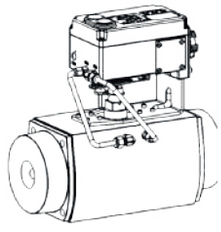
The positioner is set by default for air-to-open (reverse acting) valve types.

- When mounted on an air-to-open valve, it is connected directly to the air line.
- When mounted on an air-to-close valve, the cam must be reversed according to the air-to-close column in "Table 3".

Air Connection Between Positioner and Actuator

1- For single-acting actuator installation, connect the actuator to the "OUT1" port and close the "OUT2" port with a plug.
2- For double-acting actuator installation, use "OUT1" and "OUT2" ports to connect both inlet ports of the actuator.
3- The "SUP" port is connected to the air supply inlet.

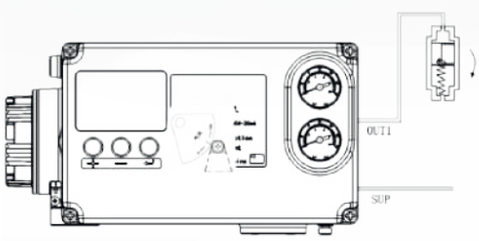
Actuator Air Connection Diagram

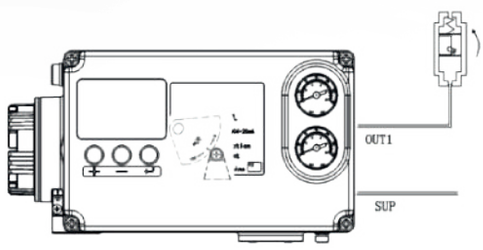
Air-to-open (reverse acting)		Air-to-open (reverse acting)	
Air-to-close (direct acting)		Air-to-close (direct acting)	

Determining the Cam Surface According to the Actuator Operating Mode

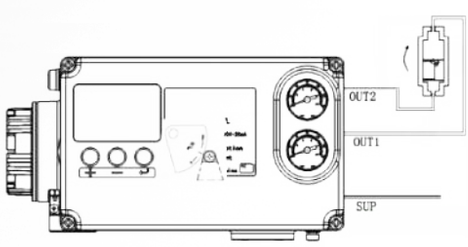
After the positioner is mounted on the actuator:
• TIn a single-acting actuator, the "air off" or "air on" surface of the cam is determined according to the rotation direction of the feedback shaft while the positioner's "OUT1" output is active.
• In a double-acting actuator, the cam surface is also determined according to the rotation direction of the feedback shaft while the "OUT1" output is active.

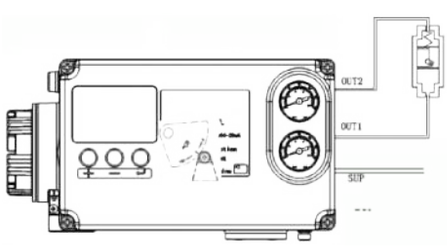
Air-to-Close (Direct Acting)





Air-to-Open (Reverse Acting)





L8A-100L Model Code Explanation

L8A-100L	1	2	3	4	5	6	7

1	Operating Type	S: Single Acting D: Double Acting
1	Explosion Proofing	N : Not explosion proof M : Flameproof enclosure & encapsulation (Ex d IIC T6) I : Intrinsically safe (Ex ia IIC T6)
1	Lever Type	1 : 25–100 mm 2 : Lever Type
1	Orifice Type	1 : Ø1 mm 2 : Ø2 mm 3 : None 4 : Ø0.7 mm
1	Electrical Conduit – Air Connection Type	1 : G 1/2 – PT 1/4 2 : G 1/2 – 1/4 NPT 4 : M20 – 1/4 NPT 5 : NPT 1/2 – NPT 1/4 6 : NPT 1/2 – PT 1/4 7 : M20 – 1/4 PT
1	Operating Temperature	S : -20 ~ 70°C (-4 ~ 158°F)
1	Feedback	0 : None 8 : Digital Display

Maximum Reliability in Flow Control!

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