

ASD-5000 Series Smart Valve Positioner



ASD-5000 SERIES

ASD-5000 Positioner Series

ASD-5000 series positioner is a smart valve positioner that offers stable control processing performance and advanced self-diagnostics for control valves. ASD-5 series positioner has outstanding durability and the use of non-contact sensors provide improved control performance. The thin-film-transistor liquid-crystal display gives high-resolution and clear graphics.



Features

| Easy to Use

- Quick auto-calibration with a single button
- Detects RA (reverse acting) or DA (direct acting) automatically, regardless of wrong air connections
- By-pass (auto/manual screw)
- Logical trend and histogram collection
- Providing a mounting bracket to meet IEC 60534-6-1 for linear valves
- Supports NAMUR mounting pattern VDINDE3845 (IEC60534-6-2) and provides a multi-size mounting bracket for rotary valves

| Improved Display Performance

- Wide and multi-lingual full text graphical TFT LCD with high-resolution and clear graphic images
- Provides 3 steps to re-size information on LCD
- Shows a control history trend, a logical trend and histogram collection

| HART Communication

- HART (Ver. 7)
- FDI certified by FieldComm Group
- DTM certified by FDT Group

| Non-Contact Position Sensor

- Magnetic position sensor (MPS, non-contact)
- Resistant to vibration
- Excellent temperature characteristics

| Improved Durability

- Vibration and impact tolerant
- Resistant to dirty air and humidity

| Diagnostics

- Self-diagnostics
- Advanced diagnostics with 4 x pressure sensor
- Valve signature
- Valve step response
- Partial stroke test [PST]

Options

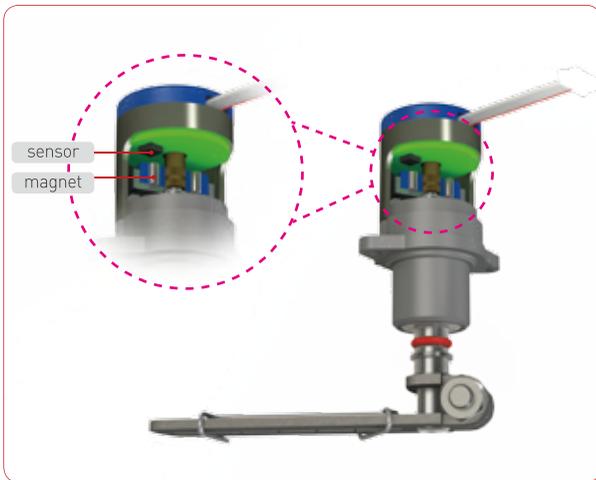
- Output position transmitter (4 - 20 mA)
- 2 x 24VDC software limit switch or 2 x SPDT mechanical limit switch
- Position indication beacon (dome)
- Stainless steel body (316SS)
- Intrinsically safe Ex ia IIC Gb & Ex ia IIIC Db
- HART communication (Ver. 7)
- Fail-freeze function (stay at last position)

| Solid Body Design

- Aluminum housing/ Epoxy-coated
- High corrosion-resistant stainless steel 316 body
- Protection class: IP66

| Non-Contact Sensor

- Higher durability than a feedback lever type
- Reduced hysteresis
- Provides a remarkable control performance under a harsh working environment with vibration

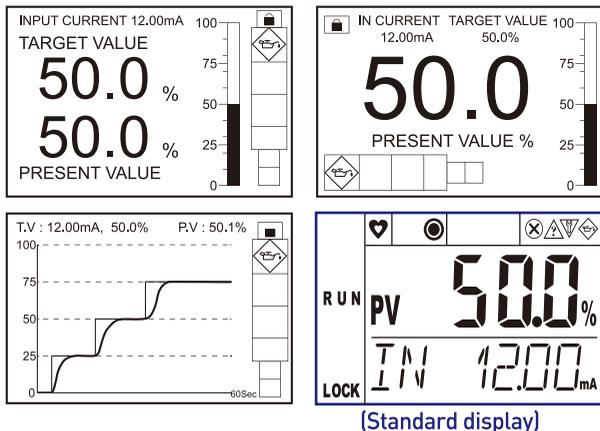


| Easy Auto-Calibration

- Quick auto-calibration by pushing one button provides optimal positioner setting easily and fast.

| Improved Display (Advanced Diagnostics Option)

- ASD positioner has a wide display with high visibility and it's possible to re-size information with 3 steps and available to show a control graph on LCD.



| Multi-Lingual Display (Advanced Diagnostics)

- English, Chinese and Korean are available on LCD and more languages are planned through a continuous update.

□ MODE ⊗ DISPLAY VARIABLE ⊗ MANUAL ⊗ MONITORING ⊗ AUTO TUNE ⊗ PARAMETERS ⊗ TEST	□ 모드 ⊗ 표시 변수 ⊗ 수동 제어 ⊗ 모니터링 ⊗ 오토 튠 ⊗ 파라미터 ⊗ 테스트
□ 模式 ⊗ 显示设置 ⊗ 手动模式 ⊗ 监测模式 ⊗ 自动模式 ⊗ 参数 ⊗ 测试	□ PЖM ⊗ O.3HAЧ ⊗ P.PЖM ⊗ MOH ⊗ ABTO ⊗ ПPM ⊗ ПPOBEPKИ

| Self-Diagnostics

- Advanced self-diagnostics are performed with pressure sensors installed inside, and results from self-diagnostics can be shown on LCD or transmitted over communication according to NAMUR NE107 standards.



Failure

- Loop current failure
- Loop voltage failure
- Supply air failure
- Auto calibration failure



Out of Specification

- Position high / low limit
- Temperature high / low limit
- Supply air high / low limit



Maintenance Required

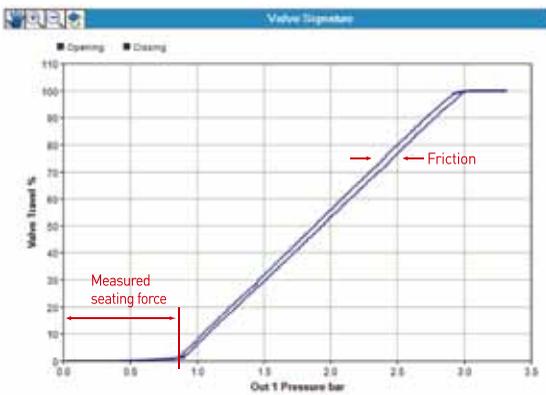
- Not calibrated
- Use small angle
- Deviation error
- TUNE-point adjust error



Check Function

- PST Failure
- Use SHAPE parameter
- Valve friction high
- Check EMI / RFI

Online Diagnostics



| Valve Signature

Valve signature records air pressure change and valve position according to ramp input signals. The following values about performance of valve control are obtained from this valve signature and it's possible to confirm a current valve status (integrity).

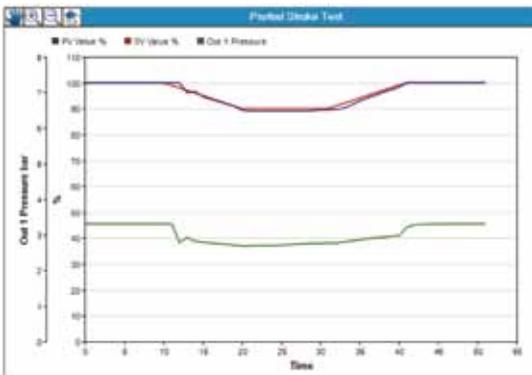
- Seating force
- Friction
- Spring range



| Valve Step Response

This is the result which shows a valve control status with on-off signals or on every 25% step.

- Full stroke test
- Normal step test
- Large step test
- Small step test
- Trace test



| Partial Stroke Test

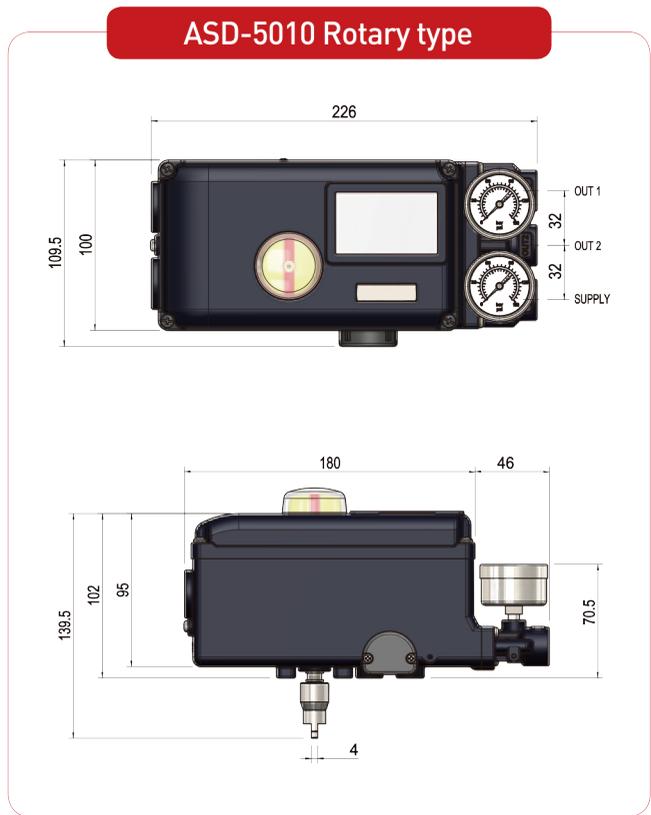
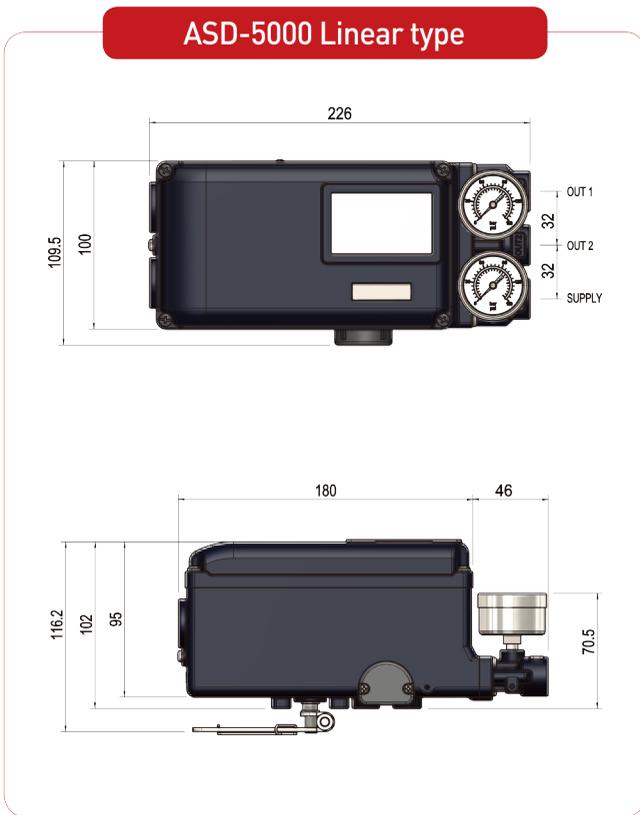
This is the function which records changes by operating the positioner with the set values automatically, without influencing system in an automatic control mode. It's possible to confirm a valve status (integrity) by comparing the past one with the present one.

Technical Specs

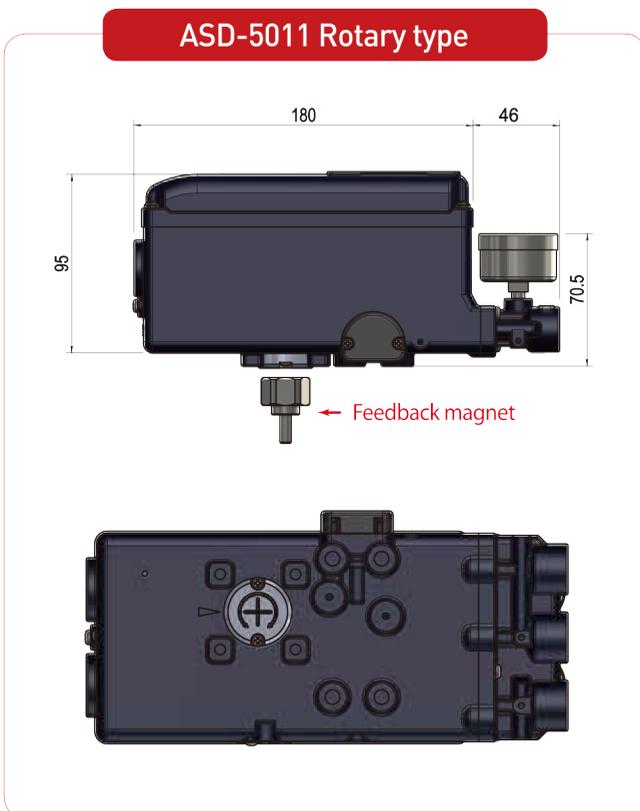
Input	
Standard	
Supply Power	4-20mA, Loop Powered
Max.	50mA
Min.	3.6mA
Load Voltage at 20mA	6.8V
Impedance at 20mA	340Ω
HART Communication Ver. 7	
Without Advanced Diagnostics	
Load Voltage at 20mA	7.8V
Impedance at 20mA	390Ω
HART Communication Ver. 7	
With Advanced Diagnostics (4 Pressure Sensors)	
Load Voltage at 20mA	7.8V
Impedance at 20mA	390Ω
Fail Freeze Option	
Fail Freeze Mode	Input Signal < 3.6mA
Standard	8.3V, 415Ω @ 20mA
HART Communication	9.3V, 465Ω @ 20mA
-HART + Adv. Diagnostics	11V, 550Ω @ 20mA
Output	
Range	0-100 psi (0-7 bar)
Air Consumption	0.09 scfm (2.5 LPM)
	At 20 psi (1.4 bar) Supply
	0.11 scfm (3.0 LPM)
	At 90 psi (6 bar) Supply
Air Capacity	8.8 scfm (250 LPM)
	At 20 psi (1.4 bar) Supply
	10.6 scfm (300 LPM)
	At 90 psi (6 bar) Supply
Air Supply	
Instrument Air	Free of oil, water and dust per DIN/ISO 8573-1 pollution and oil content according to Class 3
Supply Pressure	20 - 100 psi (1.4 - 7 bar)
Applicable Actuators	
Operation Type	Linear, Rotary, Remote
Action Type	Single, Double
Action	Direct action (DA), Reverse action (RA)
Linkage Type	
Travel Range	Linear: 0.39"-4.7" (10-120 mm)
	Rotary: 30°-150° Rotation Angle
	Remote: 3, 5, 10, 15, 20, 30m
Linkage-Less Type	
Travel Range	Linear: 0.39"-4.7" (10-120 mm)
	Rotary: 30°-150° Rotation Angle
Characteristics	
Linearity	< ±0.5% FS
Sensitivity	< ±0.3% FS
Hysteresis	< ±0.3% FS
Repeatability	< ±0.2% FS
Performance Characteristic	Linear, Equal Percentage, Quick, User Defined

Enclosure	
Material	Aluminum die-cast, Epoxy-coated
	316 Stainless Steel Housing
Protection Class	IP66
Pneumatic Connections	1/4 PT
	1/4 NPT
Electrical Connections	1/2 PF
	1/2 NPT
	M20x1.5
Weight	5.3 lb (2.4 kg) – Aluminum
	9.9 lb (4.5 kg) – 316 SST
Hazardous Area Approvals	
IECEX	Intrinsically Safe, Ex ia IIC T6/T5 Gb Ex ia IIIC T85°C/T100°C Db
ATEX	
KCs	
CCC/EAC	
Environmental Influences	
Ambient Temperature	Standard: -22°F to 176°F (-30°C to 80°C)
	Low Temp.: -40°F to 176°F (-40°C to 80°C)
LCD Operating Temperature	-22°F to 176°F (-30°C to 80°C)
Vibration	2G, 5 - 400 Hz
Humidity	The dewpoint should be at least 18°F (10°C) lower than the device temperature.
Feedback Options	
Position Transmitter (Output Signal)	
Output Signal	4-20mA 2-wire
Supply Voltage	12-30 VDC
Load Limit	0-1000Ω (Normally 650Ω at 24VDC)
Linearity	< ±0.5% FS
Limit Switches - Software Programmable	
Type	2x Software Limit Switch
Rating	24VDC
Limit Switches - Micro Switches	
Type	2x SPDT
Rating	5A @ 220VAC
Contact	Silver Alloy
Ambient Temperature	-22°F to 176°F (-30°C to 80°C)
Limit Switches - Proximity Sensors	
Type	NAMUR NC or NO
Supply Voltage	Nominal 8.2VDC (5-11 VDC)
Current Consumption	Target Not Detected: >3mA
	Target Detected: <1mA
Ambient Temperature	-40°F to 176°F (-40°C to 80°C)
Mounting Brackets	
Linear Type	IEC 60534-6-1
Rotary Type	IEC 60534-6-2

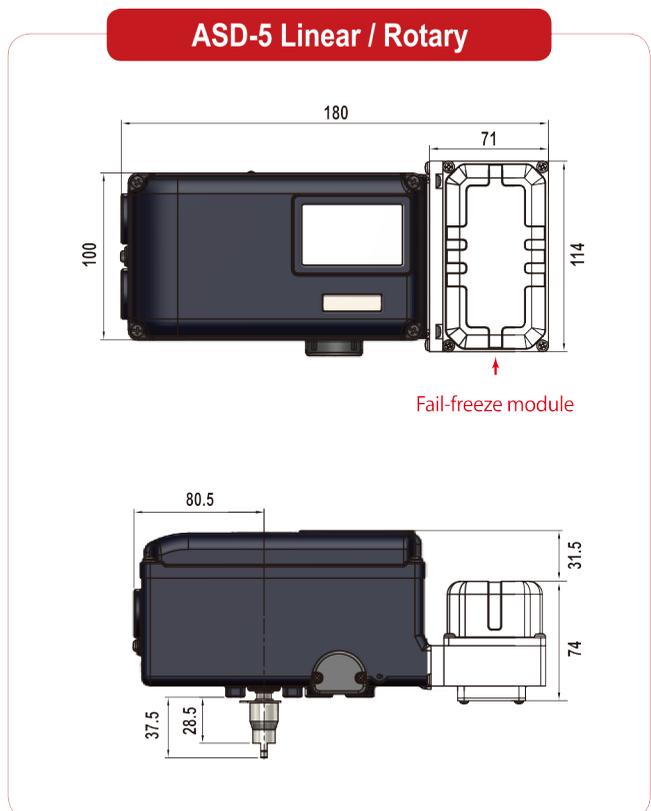
▪ Linkage Type Dimensions



▪ Linkage-Less Type Dimensions



▪ Fail Freeze Type Dimensions



How to Order

		①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮			
ASD-5000 Series positioner		ASD - 5	X	X	X	-	X	X	X	X	X	X	X	X	-	X	X	X	
1. Body material	Aluminum die-cast		0																
	Stainless steel 316		1																
2. Actuator operation	Linear			0															
	Rotary			1															
3. Feedback type	Linkage type																		
	Linkage-less type (Only for Rotary)																		
	Remote type																		
4. Hazardous area & Protection	Intrinsically Safe, Ex ia IIC																		
	Ex ia IIIC T85 C,T100 C Weatherproof to IP66																		
5. Feedback size	Linkage type	Linear type (ASD-5x00, 5x02)	Stroke 10 – 60mm Stroke 10 - 120mm *Others on request																
		Rotary type (ASD-5x10, 5x12)	Fork lever NAMUR shaft																
	Linkage-less type	Rotary type (ASD-5x11, 5x12)	M6 Connector M8 Connector																
6. Gauge (Out1, Out2 gauge)	6 bar (90 psi)																		
	10bar (150 psi)																		
7. Beacon indicator	None																		
	Beacon indicator (90°) (Not available with remote type)																		
8. Position feedback	None																		
	Position transmitter (4-20mA)																		
	Advanced diagnostics + position transmitter																		
9. Limit switches	None																		
	2 x 24VDC software limit switch																		
	2 x micro switch (SPDT)																		
	2 x proximity sensor																		
10. Communication	None																		
	HART communication																		
11. Connection threads (pneumatic – electrical)	PT(Rc) 1/4 – PF(G) 1/2	-----																	
	NPT 1/4 – NPT 1/2	-----																	
	PT(Rc) 1/4 – M20x1.5	-----																	
	NPT 1/4 – M20x1.5	-----																	
	PF(G) 1/4 – M20x1.5	-----																	
	PF(G) 1/4 – PF(G) 1/2	-----																	
	NPT 1/4 – PF(G) 1/2	-----																	
	※ Others on request																		
12. Mounting bracket	None																		
	Linear type / IEC 60534-6-1																		
	Linear type / IEC 60534-6-1 & Feedback pin guide lever set																		
	Rotary type / IEC 60534-6-2																		
13. Remote cable (only for ASD-5002)	3, 5, 10, 20, 30m																		
14. Temperature	Standard (-30 - +80 °C)																		
	Low temperature (-40 - +80 °C), EAC certified type (-60 - +80 °C)																		
15. Fail position	Fail Safe (Standard)																		
	Fail Freeze (Stay at last position)																		

Other Positioner Options

Siemens



Series PS-2 (Call for complete part numbers)

Digital Electro-Pneumatic with Hart Protocol

Profibus PA

Foundation Fieldbus

FM & CSA Approved

- Explosion Proof
- Class I, Division 1, Groups A, B, C & D

ATEX Approved

- II 2 G Ex d IIC, T4, T5, T6 Gb

Series 760 FM & CSA Approved

(not pictured)

- Explosion Proof
- Class I, Division 2
- Group A, B, C & D

ABB



ABB TZID (Call for complete part numbers)

Digital Electro-Pneumatic with Hart Protocol

Profibus PA

Foundation Fieldbus

FM & CSA Approved

- Explosion Proof
- Class I, Division 1, Groups A, B, C & D

ATEX Approved

- Ex d IIC, T4, T5, T6

YT Series



FM Class I, Div 1 Grps C & D
(20°C to 60°C)

YT-1000R-FM



FM Class I, Div 1 Grps A, B, C & D T5/T6
(-40°C to 80°C)

YT-3400

FM Approved Explosion Proof Electro-Pneumatic

Other Control Accessories

- Single and Dual Lockup Valves
- Filter Regulators (required with all positioners)
- Flow Controls and Speed Controls
- Volume Boosters



A-T Controls, Inc.