POWER-GENEX®

All innovation on driving valve automation

HART® FIELD COMMUNICATIONS PROTOCOL

KOSHA

Worldwide Sales Network

We are working at the nearest places where you can get in touch with us easily

Contents

A solid workhorse you can depend on for consistent, reliable control

Certificates

ATEX Eex md IIB T5 (EPL, EPR)

Ex md IIB T6 (EPL, EPR)

Ex md IIC T6 (EPL, EPR)

Ex ia IIB T6 (EPL, EPR)

Ex d IIB T6 (SSL, SSR)

Ex d IIB T6 (SEL, SER)

Ex d IIC T6 (ESV)

Ex d IIC T6 (PTP)

EMC (EPL, EPR)

Certificates

HART Membership

HART DD Registration

ISO 9001

Promising Export Firm

Utility Model Registration

Utility Model Registration

Utility Model Registration

Utility Model Registration

Part Material Specialized Firm

Smart Valve Positioner

SSL

Smartest valve control device meeting a dynamic performance and a precise setting with a piezoelectric technology and an optimized auto-calibration program

Features

- Auto-Calibration for optimum conditions
- Precise control performance and high dynamic response
- Easy operation with four-key pads and full text graphical LCD
- Single and double acting
- Low air consumption due to piezo electric microvalve
- Pressure regulator built-in to eliminate variations in supply air pressure
- Problem-free characteristics on a small actuator
- High resistance against shock and vibration
- Mounting on linear actuators according to IEC 534

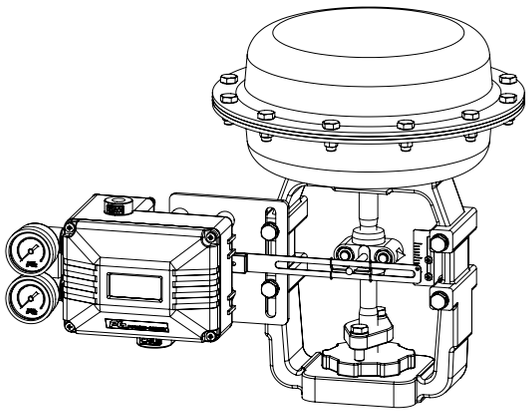
Options

- Position transmitter (4...20mA output signal)
- 2 ×alarm limit (Min., Max.)
- Explosion proof type (Exd ⅡB T6, Exia ⅡC T6)
- HART communication (FSK)

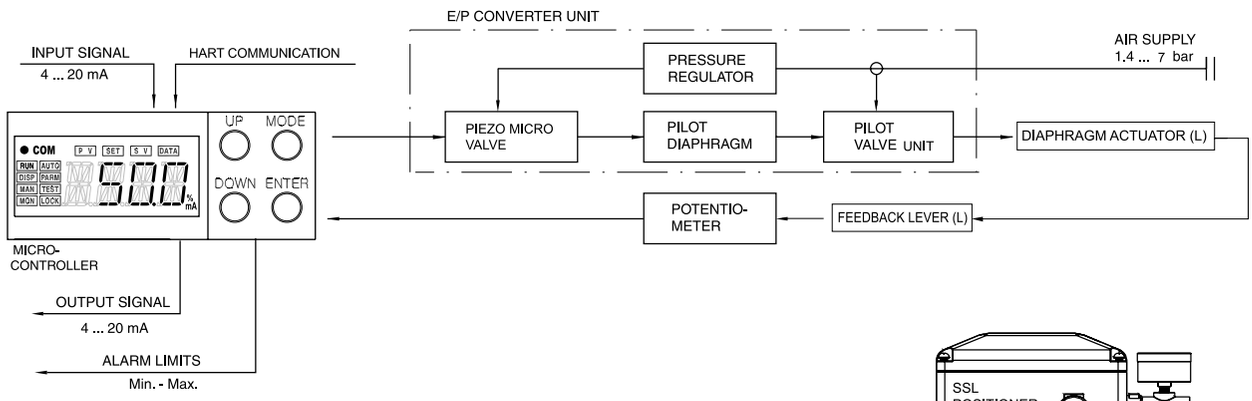
Specifications

Input Signal	4 - 20 mA @ 24 VDC
Voltage Drop	8.5 VDC @ 20 mA (425 Ω)
Min. / Max. Current	3.6 mA / 50 mA
Required Load Voltage (@ 20mA)	Without HART : 8.5V (≒425 Ω) With HART : 9.2V (≒460 Ω)
Air Supply Pressure	1.4 - 7.0 bar (20 - 100 psi) Filtered compressed dry and non-oiled air
Output Pressure	0 - 100% supply air pressure / single or double action
Shut-off Value	Range 0 - 5% of position signal
Air Capacity	80 LPM @ supply air of 1.4 bar (20psi)
Air Consumption	1.3 LPM ≒0.08 ㎥/h @ supply air of 1.5 bar (22psi)
Humidity Limits	< 90% RH, non-condensing
Stroke	5 - 80㎜ (Max. up to 150㎜)
Adjustable Speed	1 - 1000 (lowest 1, highest 1000)
LCD Indication	4-digit LCD indicator
Scan Time	2 ms
Valve Action	Position 0 - 100% / direct action (DA) / reverse action (RA)
Characteristic Curve	Linear, E.Q.% (1:25 or 1:50), Quick open Linearity < = 0.3% / sensitivity < = 0.2% / hysteresis < = 0.2%
Operating Temperature	-20 - +70℃
Protection Class	IP66, intrinsic safety (Exia), flameproof (Exd)
Body Material	Aluminum die-cast
Pneumatic Connections	Rc 1/4 or 1/4 NPT
Electrical Connections	2 ×G 1/2 or 1/2 NPT
Weight	2.5 kg

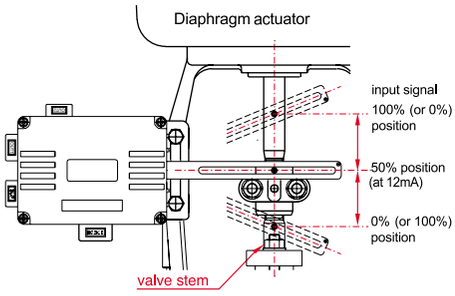
Explosion proof Type (Exd)



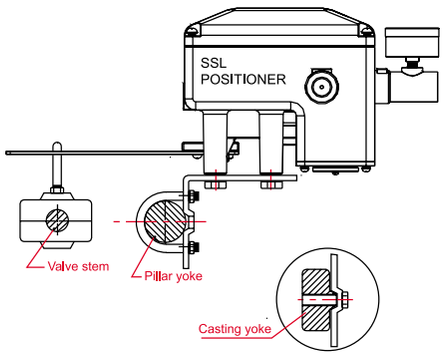
Principle of Operation



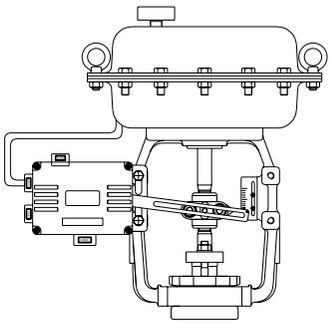
Mounting



Feedback Lever Installation

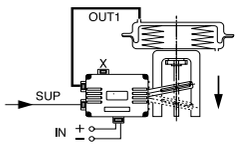
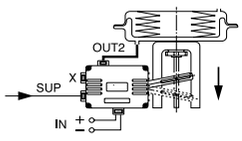
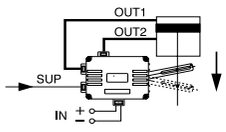


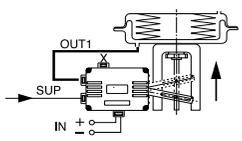
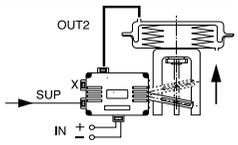
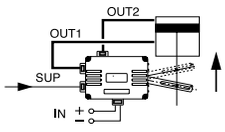
Mounting to Linear Actuator to IEC 534



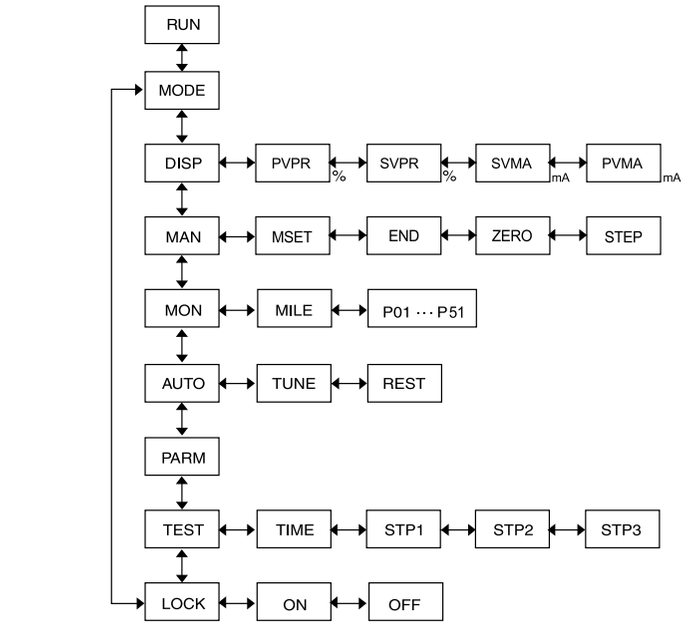
General Mounting to Linear Actuator

Air Connections

Direct Acting(DA)	
As the input signal increases, Valve stem moves downwards Actuator : DA	 OUT2 must be plugged
As the input signal increases, Valve stem moves downwards Actuator : DA	 OUT1 must be plugged
As the input signal increases, Valve stem moves downwards	

Reverse Acting(RA)	
As the input signal increases, Valve stem moves upwards Actuator : RA	 OUT2 must be plugged
As the input signal increases, Valve stem moves upwards Actuator : RA	 OUT1 must be plugged
As the input signal increases, Valve stem moves upwards	

Parameters Diagram



: Shows the operating situation of the positioner

: Changes the paramenters

: Decides LCD display mode either mA or %

: Converts to Manual Mode

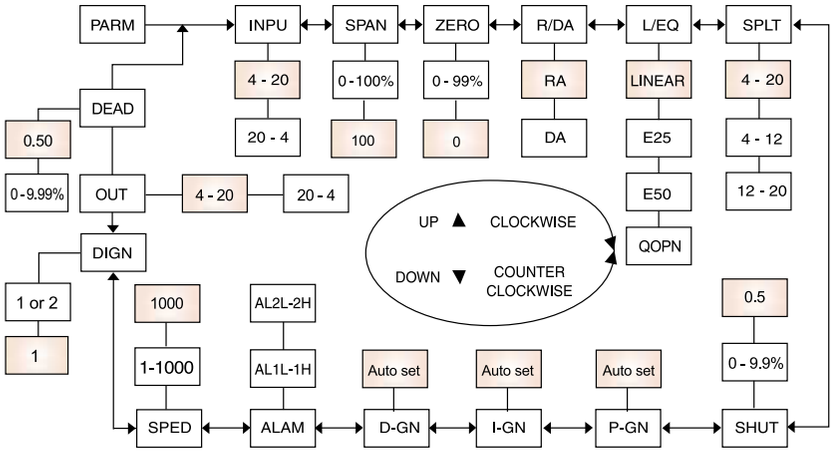
: Shows the selected parameters and the total valve runtime

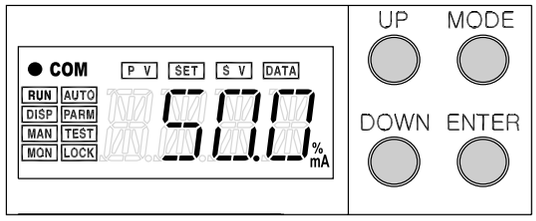
: Performs auto-calibration and resets all programmed values

: See the table below

: Tests in process of 2-step, 4-step, or 10... 100%

: Locks the set values





LCD Display

● COM : Hart Communication (FSK)

: Initial Parameter Values

Parameters	Descriptions	Functions	Initial value
INPU	Input signal	4 - 20mA or 20 - 4mA	4 - 20 mA
SPAN	Span range	0 - 100% span adjustment	100 %
ZERO	Zero-up	Position Zero up and down 0 - 99%	0 %
R / DA	RA / DA	Reverse or direct acting	RA
L / E.Q / QOPN	Linear / E.Q% / Quick open	Linear, E.Q%(1:25 or 1:50) , Quick open	Linear
SPLT	Split range	4 - 12mA or 12 - 20mA	4 -20 mA
SHUT	Shut-off	Valve shut off at 0 - 9.9 %	0.5 %
P-GN	P-Gain	Proportional gain value	Auto setting
I-GN	I-Gain	Integral gain value	Auto setting
D-GN	D-Gain	Differential gain value	Auto setting
ALAM	Alarm limit low, high	AL1L / AL1H, AL2L / AL2H	Low (0 - 10%), High (90 - 100%)
SPED	Speed control	1 - 1000	1000
DIGN	Display digit	Move to one or two decimal places	1
OUT	Output signal	4 - 20mA or 20 - 4mA	4 - 20 mA
DEAD	Dead zone	0 - 9.99%	0.5%

Electrical Connections

1 (+)
2 (-) — IN. 4-20mA input signal

3 (FG) — Frame Ground

4 (+)
5 (-) — OUT. 4-20mA output signal

6 (+)
7 (out)
8 (–) — LS1. (Low) Alarm limit 1

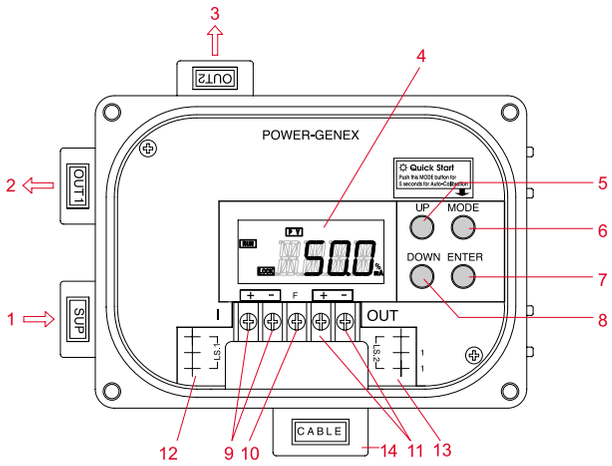
9 (+)
10 (out)
11 (–) — LS2. (High) Alarm limit 2

Auto - Calibration

① Push MODE button for more than 5 seconds, and Auto Calibration will start.
② The time required for this process may be different according to the actuator volume, but it generally takes about 2~3 minutes.

Checking Ambient Temperature

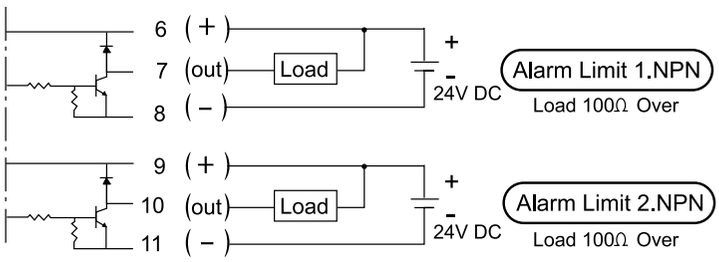
Push ENTER button, and the ambient temperature will be shown on the LCD.



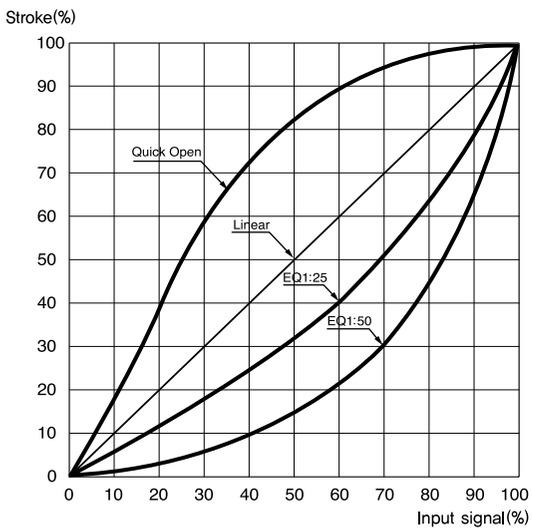
1 : Air supply
2 : Output 1
3 : Output 2
4 : Display LCD
5 : Up key
6 : Mode key
7 : Enter key
8 : Down key

9 : Input signal (+,-)
10 : Frame ground
11 : Ouput signal (+ -)
12 : Alarm limit 1
13 : Alarm limit 2
14 : Electrical connections

Measuring Alarm Limits



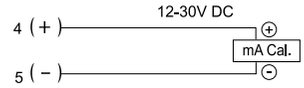
Characteristic Curves



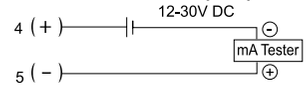
Measuring 4-20mA Output Signal

Note that the input signal should be provided for measurement of output signal.

① With mA loop calibrator



② With mulitimeter (mA)



ZERO / SPAN of position feedback will be automatically set after Auto Calibration.

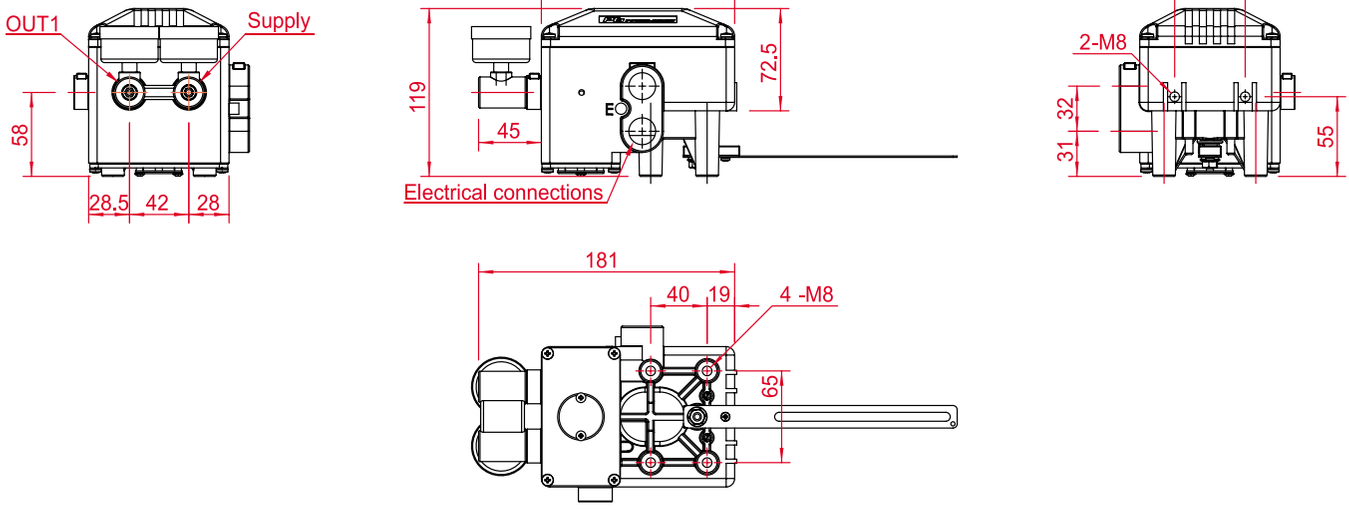
How to Order

SSL – | Prorection Class | Feedback Lever | Pressure Gauge Block | Position Feedback | HART Communi-cation | Connection Threads | Mounting Bracket |

Description	Code
Protection Class :	F : Flameproof (Exd ⅡB T6) I : Intrinsic safety (Exia ⅡC T6) W : Weatherproof to IP 66
Feedback Lever	A : Stroke (5 ~ 40 mm) B : Stroke (5 ~ 80 mm) C : Stroke (up to 150 mm)
Pressure Gauge Block :	N : None 1 : 6 bar (90 psi) 2 : 10 bar (150 psi)
Position Feedback :	N : None O : Position transmitter (4 ~ 20 mA output signal) L : 2 ×alarm limit M : O + L

Description	Code
HART Communication :	N : None H : HART Comm
Connection Threads: **(pneumatic - electrical)**	3 : Rc 1/4 - G 1/2 (standard) 4 : NPT 1/4 - NPT 1/2 5 : Rc 1/4 - M20 x 1.5
Mounting Bracket :	N : None L : DIN / IEC 534

Dimensions



Note : All specifications and characteristics are the same with SSL.

How to Order

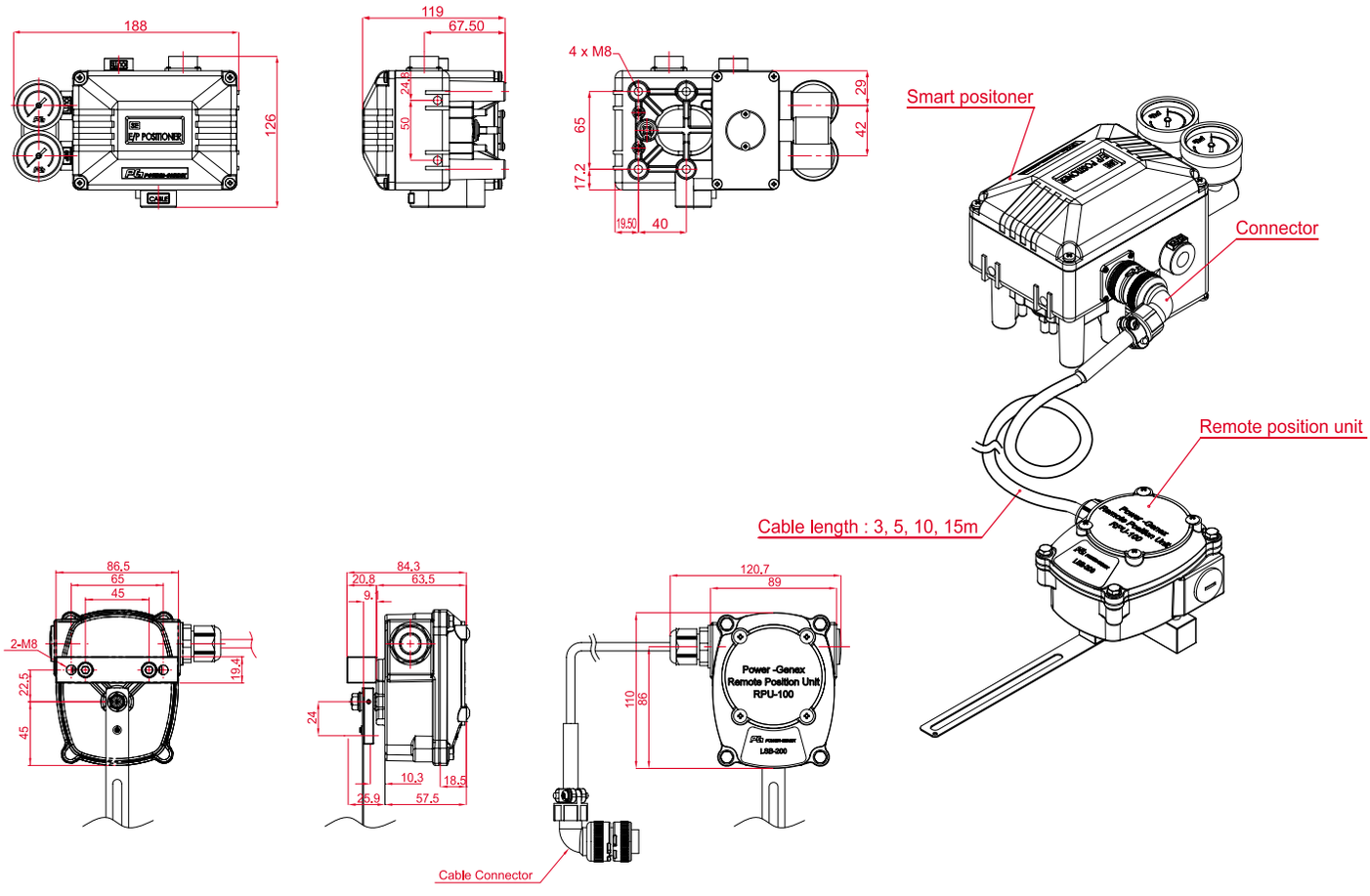
RSSL — Protection Class | Feedback Lever | Pressure Gauge | Position Feedback | Connection Threads | HART Comm. — Cable Length

Description	Code
Protection Class :	I : Intrinsic safety (Exia ⅡC T6) W : Weatherproof to IP 66
Feedback Lever :	A : Stroke (10 ~ 40mm) B : Stroke (10 ~ 80mm) C : Stroke (80 ~ 150mm)
Pressure Gauge :	1 : 6 bar (90 psi) 2 : 10 bar (150 psi)

Description	Code
Position Feedback :	N : None O : Position transmitter (4 ~ 20 mA output signal)
Connection Threads : **(pneumatic - electrical)**	3 : Rc 1/4 - G 1/2 4 : NPT 1/4 - NPT 1/2 5 : Rc 1/4 - M20 ×1.5
HART Communication :	N : None H : HART Communicatrion
Cable Length :	3, 5, 10, 15m Other : On request

Ex) RSSL-WA1O3H-3 (weatherproof, feedback lever 10 - 40mm stroke, 6 bar pressure gauges, position transmitter, Rc 1/4 - G 1/2, HART communication, cable 3m)

Dimensions



Smart Valve Positioner

SSR

Smartest valve control device meeting a dynamic performance and a precise setting with a piezoelectric technology and an optimized auto-calibration program

Features

- Auto-Calibration for optimum conditions
- Precise control performance and high dynamic response
- Easy operation with four-key pads and full text graphical LCD
- Single and double acting
- Low air consumption due to piezo electric microvalve
- Pressure regulator built-in to eliminate variations in supply air pressure
- Problem-free characteristics on a small actuator
- High resistance against shock and vibration
- Mounting on rotary actuators according to VDI/VDE 3845

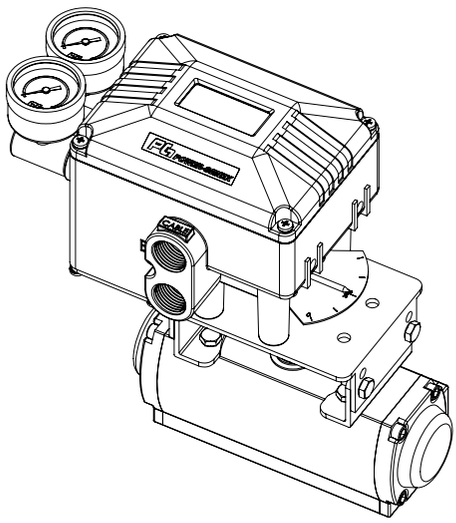
Options

- Position transmitter (4...20mA output signal)
- 2 ×alarm limit (Min., Max.)
- Explosion proof type (Exd ⅡB T6, Exia ⅡC T6)
- HART communication (FSK)

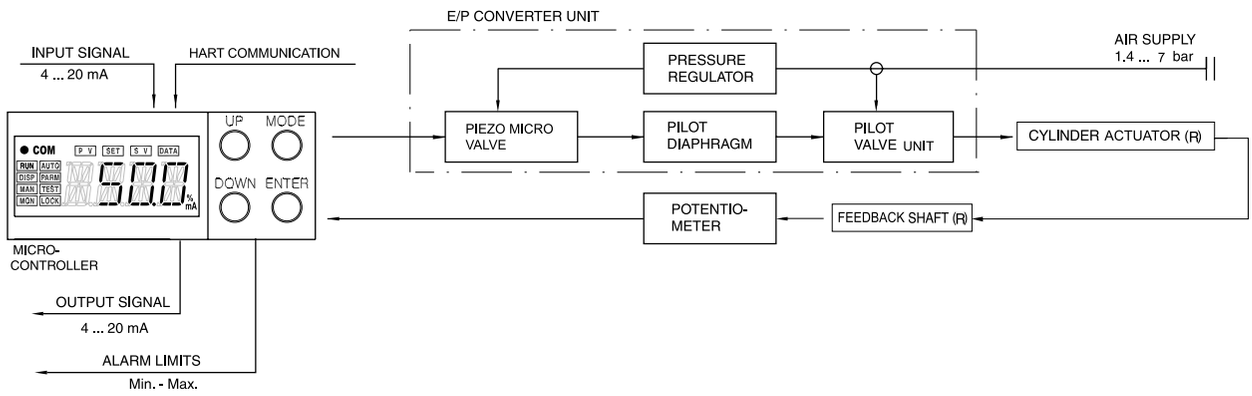
Specifications

Input Signal	4 - 20 mA @ 24 VDC
Voltage Drop	8.5 VDC @ 20 mA (425 Ω)
Min. / Max. Current	3.6 mA / 50 mA
Required Load Voltage (@ 20mA)	Without HART : 8.5V (≒425 Ω) With HART : 9.2V (≒460 Ω)
Air Supply Pressure	1.4 - 7.0 bar (20 - 100 psi) Filtered compressed dry and non-oiled air
Output Pressure	0 - 100% supply air pressure / single or double action
Shut-off Value	Range 0 - 5% of position signal
Air Capacity	80 LPM @ supply air of 1.4 bar (20psi)
Air Consumption	1.3 LPM ≒0.08 ㎥/h @ supply air of 1.5 bar (22psi)
Humidity Limits	< 90% RH, non-condensing
Stroke / Angle	40 - 90°(max.up to 100°)
Adjustable Speed	1 - 1000 (lowest 1, highest 1000)
LCD Indication	4-digit LCD indicator
Scan Time	2ms
Valve Action	Position 0 - 100% / direct action (DA) / reverse action (RA)
Characteristic curve	Linear, E.Q. % (1:25 or 1:50), Quick open Linearity < = 0.3% / sensitivity < = 0.2% / hysteresis < = 0.2%
Operating Temperature	-20 - +70℃
Protection Class	IP66, intrinsic safety (Exia), flameproof (Exd)
Body Material	Aluminum die-cast
Pneumatic Connections	Rc 1/4 or 1/4 NPT
Electrical Connections	2 ×G 1/2 or 1/2 NPT
Weight	2.5 kg

Explosion proof Type (Exd)

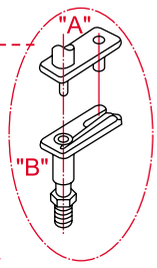


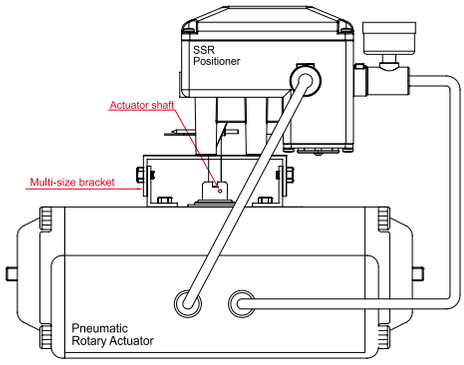
Principle of Operation



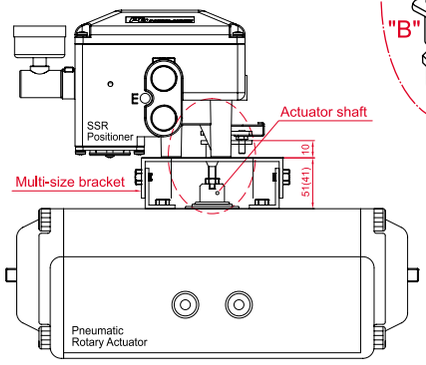
Mounting

Note that feedback lever shaft “A” should be placed in the orifice of fork lever “B” and they should be in perfect alignment with a rotary actuator output shaft





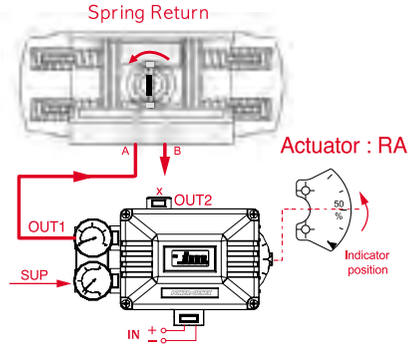
NAMUR Type Mounting

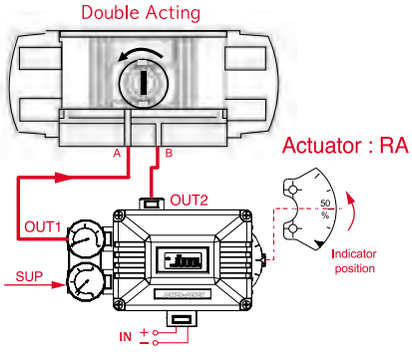


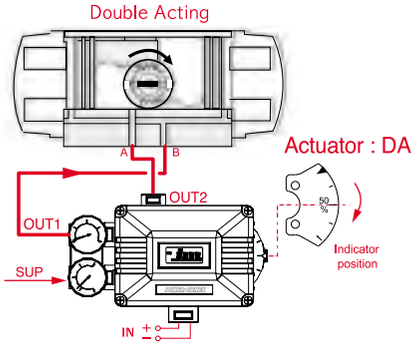
Fork Lever Type Mounting

Air Connections

Confirm the rotating direction of the actuator and connect the air lines as below

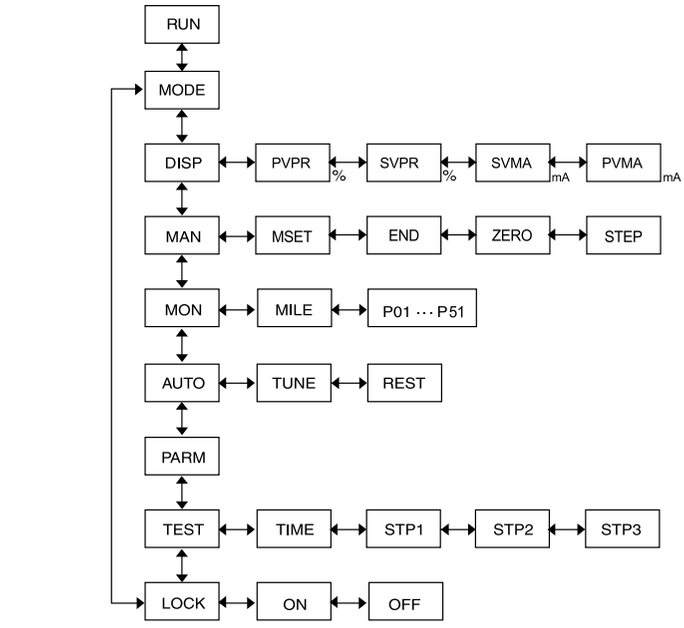






	Spring Return	Double Acting
Reverse Acting	Out1 : piped, Out2 : plugged	Out1 : piped to Actuator port A, Out2 : piped to Actuator port B
Direct Acting	Out1 : plugged, Out2 : piped	Out1 : piped to Actuator port B, Out2 : piped to Actuator port A

Parameters Diagram



: Shows the operating situation of the positioner

: Changes the paramenters

: Decides LCD display mode either mA or %

: Converts to Manual Mode

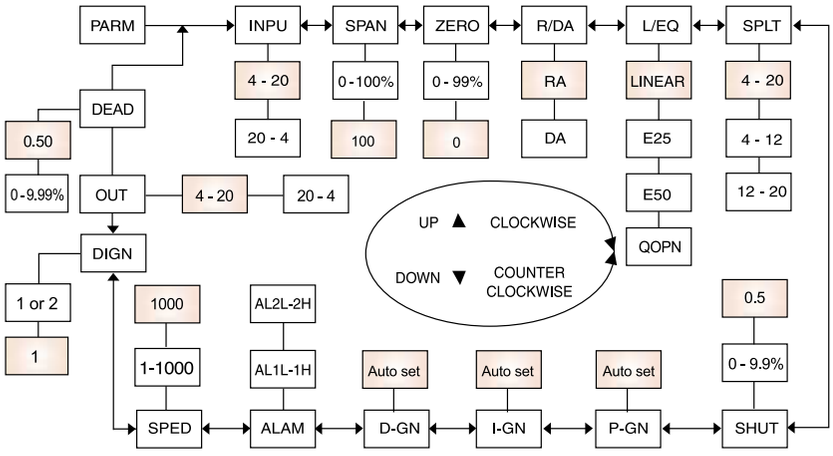
: Shows the selected parameters and the total valve runtime

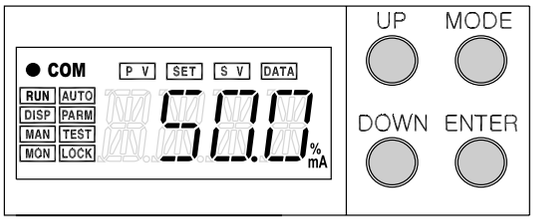
: Performs auto-calibration and resets all programmed values

: See the table below

: Tests in process of 2-step, 4-step, or 10... 100%

: Locks the set values





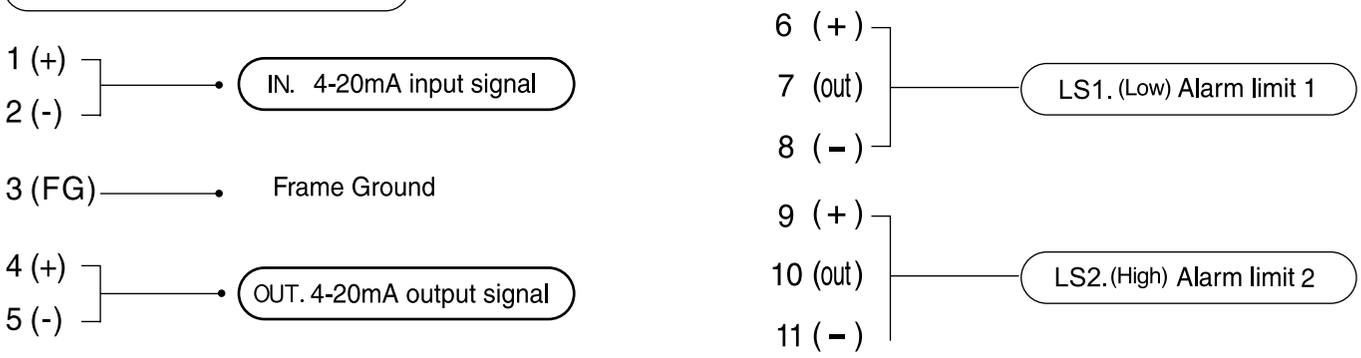
LCD Display

● COM : Hart Communication (FSK)

: Initial Parameter Values

Parameters	Descriptions	Functions	Initial value
INPU	Input signal	4 - 20mA or 20 - 4mA	4 - 20 mA
SPAN	Span range	0 - 100% span adjustment	100 %
ZERO	Zero-up	Position Zero up and down 0 - 99%	0 %
R / DA	RA / DA	Reverse or direct acting	RA
L / E.Q / QOPN	Linear / E.Q% / Quick open	Linear, E.Q%(1:25 or 1:50) , Quick open	Linear
SPLT	Split range	4 - 12mA or 12 - 20mA	4 -20 mA
SHUT	Shut-off	Valve shut off at 0 - 9.9 %	0.5 %
P-GN	P-Gain	Proportional gain value	Auto setting
I-GN	I-Gain	Integral gain value	Auto setting
D-GN	D-Gain	Differential gain value	Auto setting
ALAM	Alarm limit low, high	AL1L / AL1H, AL2L / AL2H	Low (0 - 10%), High (90 - 100%)
SPED	Speed control	1 - 1000	1000
DIGN	Display digit	Move to one or two decimal places	1
OUT	Output signal	4 - 20mA or 20 - 4mA	4 - 20 mA
DEAD	Dead zone	0 - 9.99%	0.5%

Electrical Connections

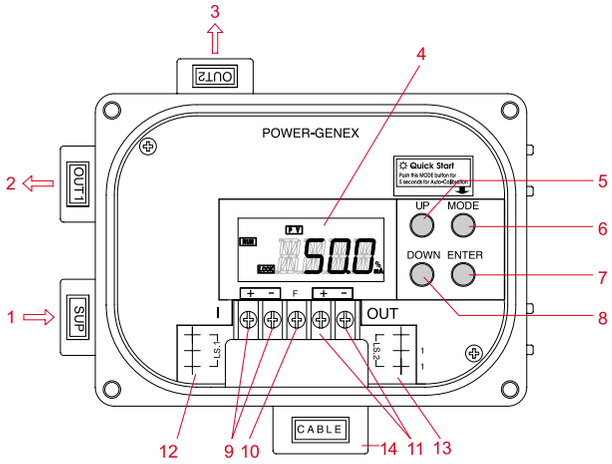


Auto - Calibration

① Push MODE button for more than 5 seconds, and Auto Calibration will start.
② The time required for this process may be different according to the actuator volume, but it generally takes about 2~3 minutes.

Checking Ambient Temperature

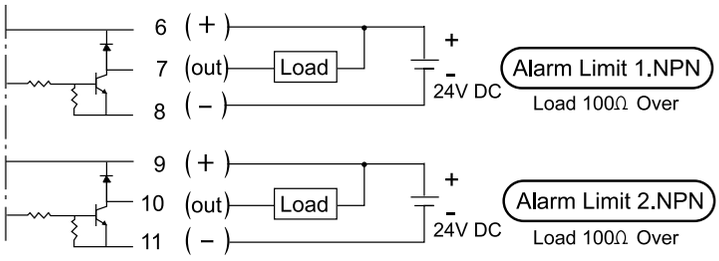
Push ENTER button, and the ambient temperature will be shown on the LCD.



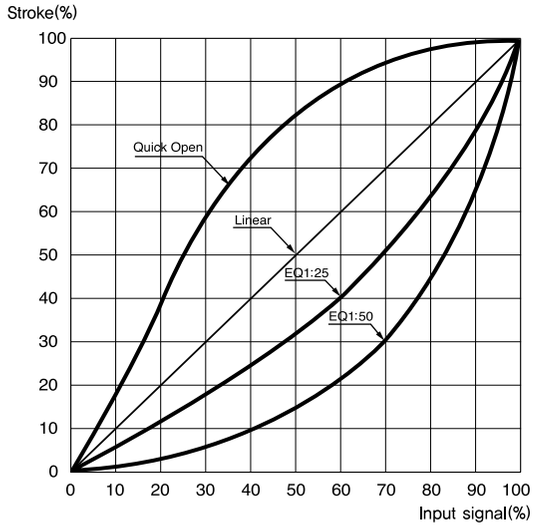
1 : Air supply
2 : Output 1
3 : Output 2
4 : Display LCD
5 : Up key
6 : Mode key
7 : Enter key
8 : Down key

9 : Input signal (+,-)
10 : Frame ground
11 : Ouput signal (+ -)
12 : Alarm limit 1
13 : Alarm limit 2
14 : Electrical connections

Measuring Alarm Limits



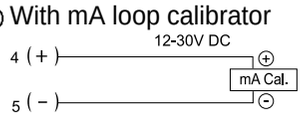
Characteristic Curves



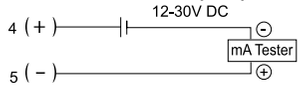
Measuring 4-20mA Output Signal

Note that the input signal should be provided for measurement of output signal.

① With mA loop calibrator



② With mulitimeter (mA)



ZERO / SPAN of position feedback will be automatically set after Auto Calibration.

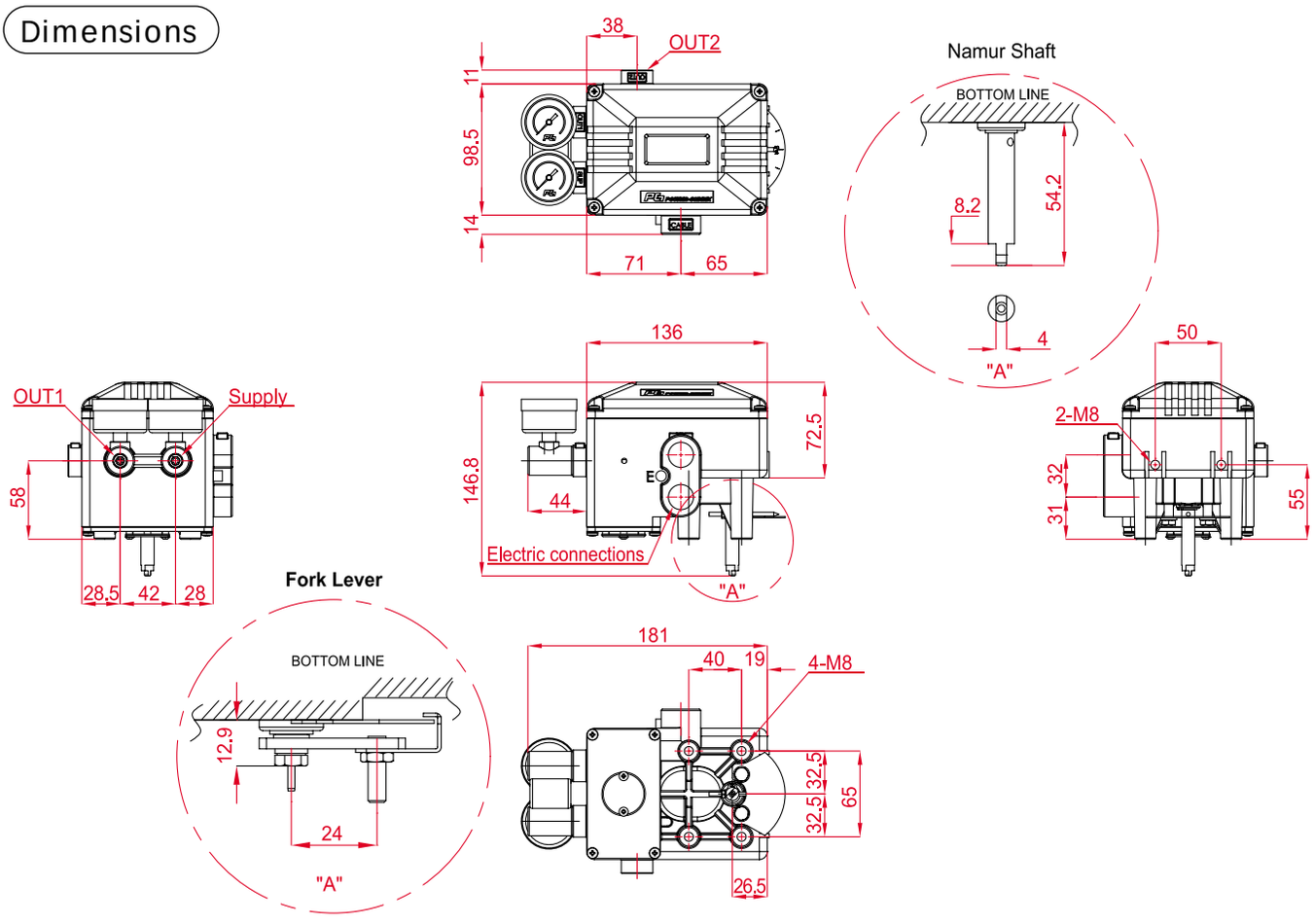
How to Order

SSR – | Prorection Class | Feedback Lever | Pressure Gauge Block | Position Feedback | HART Communi-cation | Connection Threads | Mounting Bracket |

Description	Code
Protection Class :	F : Flameproof (Exd ⅡB T6) I : Intrinsic safety (Exia ⅡC T6) W : Weatherproof to IP 66
Feedback Lever	F : Fork lever N : NAMUR shaft (direct mounting)
Pressure Gauge Block :	N : None 1 : 6 bar (90 psi) 2 : 10 bar (150 psi)
Position Feedback :	N : None O : Position transmitter (4 ~ 20 mA output signal) L : 2 × alarm limit M : O + L

Description	Code
HART Communication :	N : None H : HART Comm
Connection Threads: **(pneumatic - electrical)**	3 : Rc 1/4 - G 1/2 (standard) 4 : NPT 1/4 - NPT 1/2 5 : Rc 1/4 - M20 x 1.5
Mounting Bracket :	N : None R : Multi-size bracket for DIN VDI/VDE 3845 (130 × 30 × 50 bracket on request)

Dimensions



Note : All specifications and characteristics are the same with SSR.

How to Order

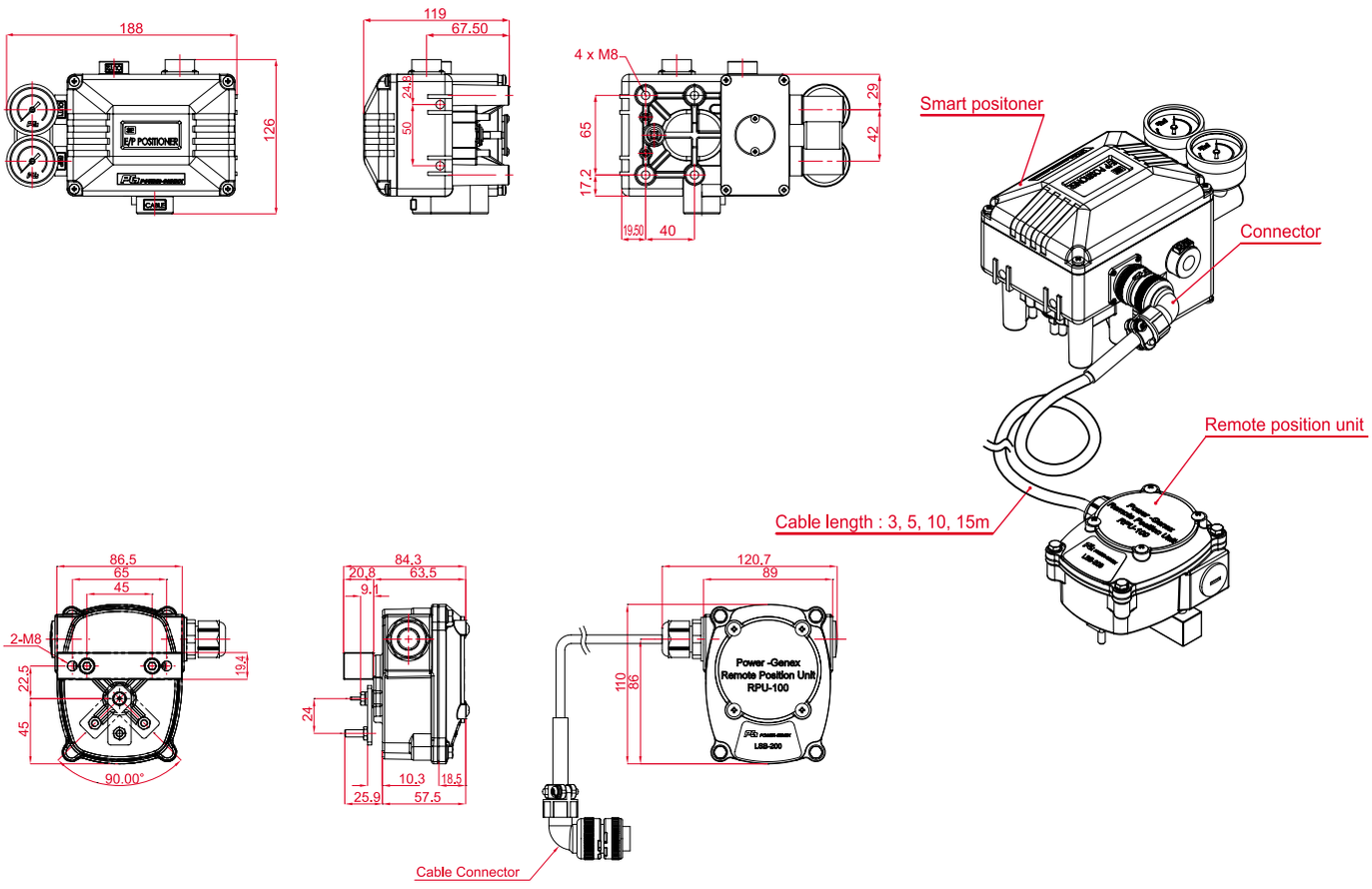
RSSR— | Protection Class | Feedback Shaft | Pressure Gauge | Position Feedback | Connection Threads | HART Comm. | — | Cable Length |

Description	Code
Protection Class :	I : Intrinsic safety (Exia ⅡC T6) W : Weatherproof to IP 66
Feedback Shaft :	F : Fork lever type
Pressure Gauge :	1 : 6 bar (90 psi) 2 : 10 bar (150 psi)
Position Feedback :	N : None O : Position transmitter (4 ~ 20 mA output signal)

Description	Code
Connection Threads : **(pneumatic - electrical)**	3 : Rc 1/4 - G 1/2 4 : NPT 1/4 - NPT 1/2 5 : Rc 1/4 - M20 ×1.5
HART Communication :	N : None H : HART Communicatrion
Cable Length :	3, 5, 10, 15m Other : On request

Ex) RSSR-WA1O3H-3 (weatherproof, fork lever type, 6 bar pressure gauges, position transmitter, Rc 1/4 - G 1/2, HART communication, cable 3m)

Dimensions



Digital Valve Positioner

SEL

Reliable valve control device guaranteeing optimum span and zero settings by smart auto-calibration function

Features

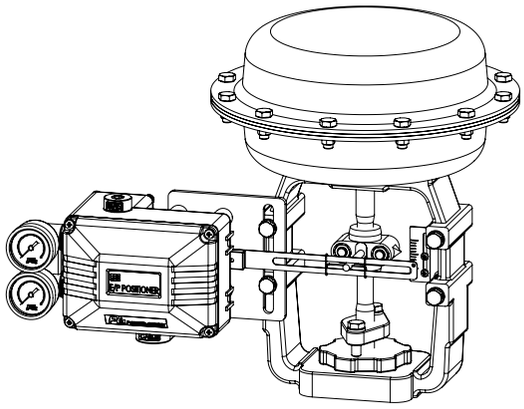
- Auto-Calibration for optimum zero and span setting
- Simple and easy to set
- Precise control performance and high dynamic response
- Pressure regulator built in to eliminate variations in supply air pressure
- Low air consumption due to piezo electric microvalve
- Input / output signal isolated
- Automatic detection for DA(direct acting) or RA(reverse acting)
- Single and double acting available
- No hunting on the small actuators
- 1/2 split range available
- High resistance against shock and vibration

Options

- Position transmitter (4...20mA output signal)
- 2 ×alarm limit (open, close)
- Explosion proof type (Exd ⅡB T6, Exia ⅡC T6)

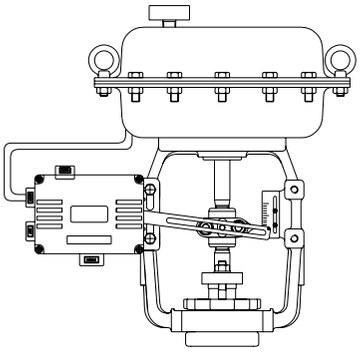
Specifications

Input Signal	4 - 20 mA DC
Voltage Supply Min. /Max.	8.5V DC / 30V DC (425 ohm)
Power Consumption	30.8 mW @ 4 mA / 170 mW @ 20 mA
Characteristic	Linear (Note)
Stoke	5 - 65 mm (max. up to 150 mm)
Air Supply Pressure	1.5 - 7.0 bar (20 - 100 psi) Pressurized air or allowed gas, free of water, oil, and dust
Air Capacity	80 LPM @ supply air of 1.4 bar (20psi)
Air Consumption	1.3 LPM ≒0.08 ㎥/h @ supply air of 1.5 bar (22psi)
Output Pressure Range	0 - 100% of supply air pressure
Linearity	Within ± 0.5 %
Hysteresis	Within 0.2 %
Sensitivity	Within ± 0.2 %
Operating Temperature	-20 - +80℃
Pneumatic Connections	Rc 1/4 or 1/4 NPT
Electrical Connections	G 1/2 or 1/2 NPT
Protection Class	IP66, intrinsic safety (Exia) or flameproof (Exd)
Body Material	Aluminum die-cast
Weight	2.5 kg

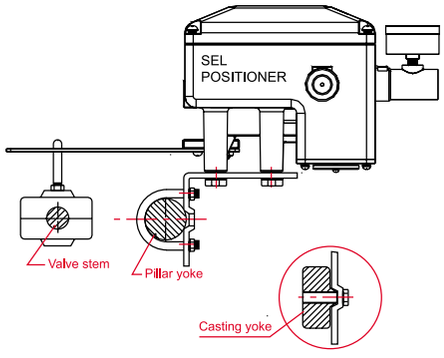


Note : Equal percentage or Quick-open option is available.
Please contact for more details

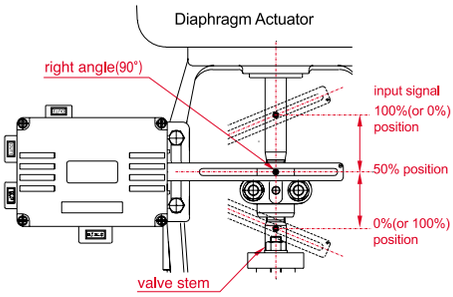
Mounting



General Mounting to Linear Actuator

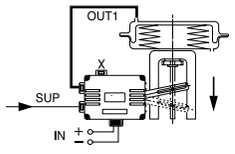
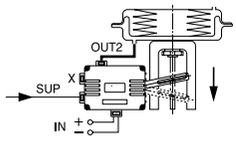
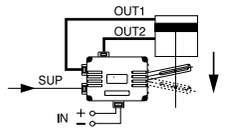


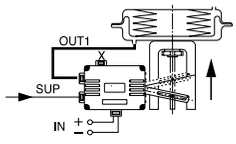
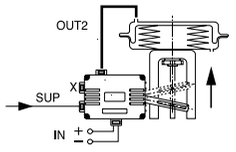
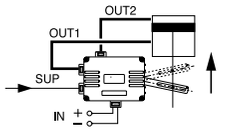
Mounting to Linear Actuator to IEC 534



Feedback Lever Installation

Air Connections

Direct Acting(DA)	
As the input signal increases, Valve stem moves downwards Actuator : DA Switch position : DA	 OUT2 must be plugged
As the input signal increases, Valve stem moves downwards Actuator : DA Switch position : DA	 OUT1 must be plugged
As the input signal increases, Valve stem moves downwards Switch position : DA	

Reverse Acting(RA)	
As the input signal increases, Valve stem moves upwards Actuator : RA Switch position : RA	 OUT2 must be plugged
As the input signal increases, Valve stem moves upwards Actuator : RA Switch position : RA	 OUT1 must be plugged
As the input signal increases, Valve stem moves upwards Switch position : RA	

Electrical Connections

1 (+)
2 (-) — IN. 4-20mA input signal

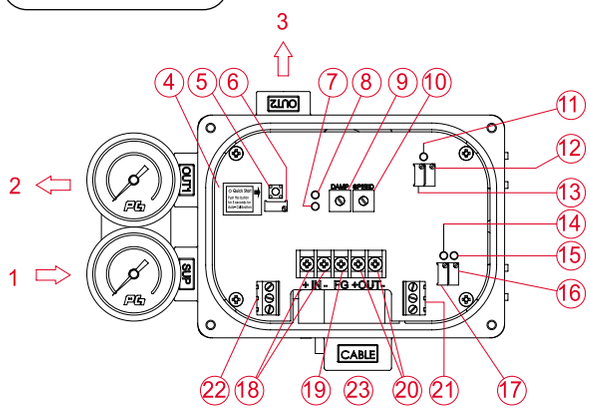
3 (FG) — Frame Ground

4 (+)
5 (-) — OUT. 4-20mA output signal

6 (+)
7 (out)
8 (-) — LS1. (Low) Alarm limit 1

9 (+)
10 (out)
11 (-) — LS2. (High) Alarm limit 2

Board View



① Supply air	⑬ Feedback zero
② OUT 1	⑭ Limit switch lamp 2
③ OUT 2	⑮ Limit switch lamp 2
④ Board cover	⑯ Limit switch 2 adjusting screw
⑤ Auto-setting button	⑰ Limit switch 1 adjusting screw
⑥ Span adjusting screw	⑱ Input signal +, -
⑦ DA lamp	⑲ Frame ground
⑧ RA lamp	⑳ Output signal +, -
⑨ Damping screw	㉑ Limit switch 2 terminal
⑩ Speed adjusting screw	㉒ Limit switch 1 terminal
⑪ Feedback lamp	㉓ Electrical connections
⑫ Feedback span	

Auto-Calibration

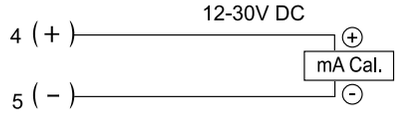
Push Auto-Setting button ⑤ for 5 seconds for auto-calibration. Generally it will take 2 - 3 minutes until the process is finished but it can take more time according to the actuator volume.

Measuring 4-20mA Output Signal

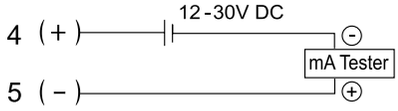
1) Specifications

Output Signal	4 - 20 mA, 2 - wire
Power Supply Rating	15 - 30V DC
Recommended Power Supply	24V DC
Operating Temperature	-20 - +70 ℃
Input Impedance	0 - 430 Ω
Characteristic	Linear
Linearity	± 1.0 % F.S.
Hysteresis	0.5 % F.S.
Repeatability	± 0.5 % F.S.
Adjustment	Zero and span
Rotary Angle	50...90° (max. 100°)

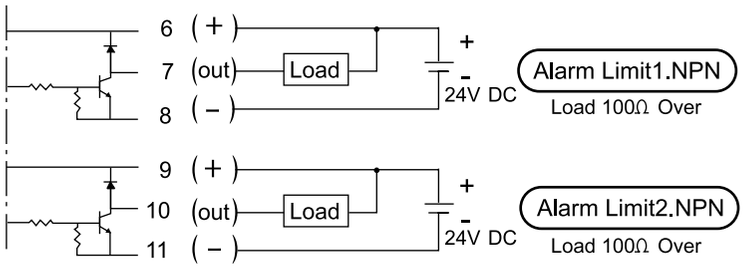
2) With mA Loop Calibrator



3) With Multi-Meter



Setting Alarm Limits



How to Order

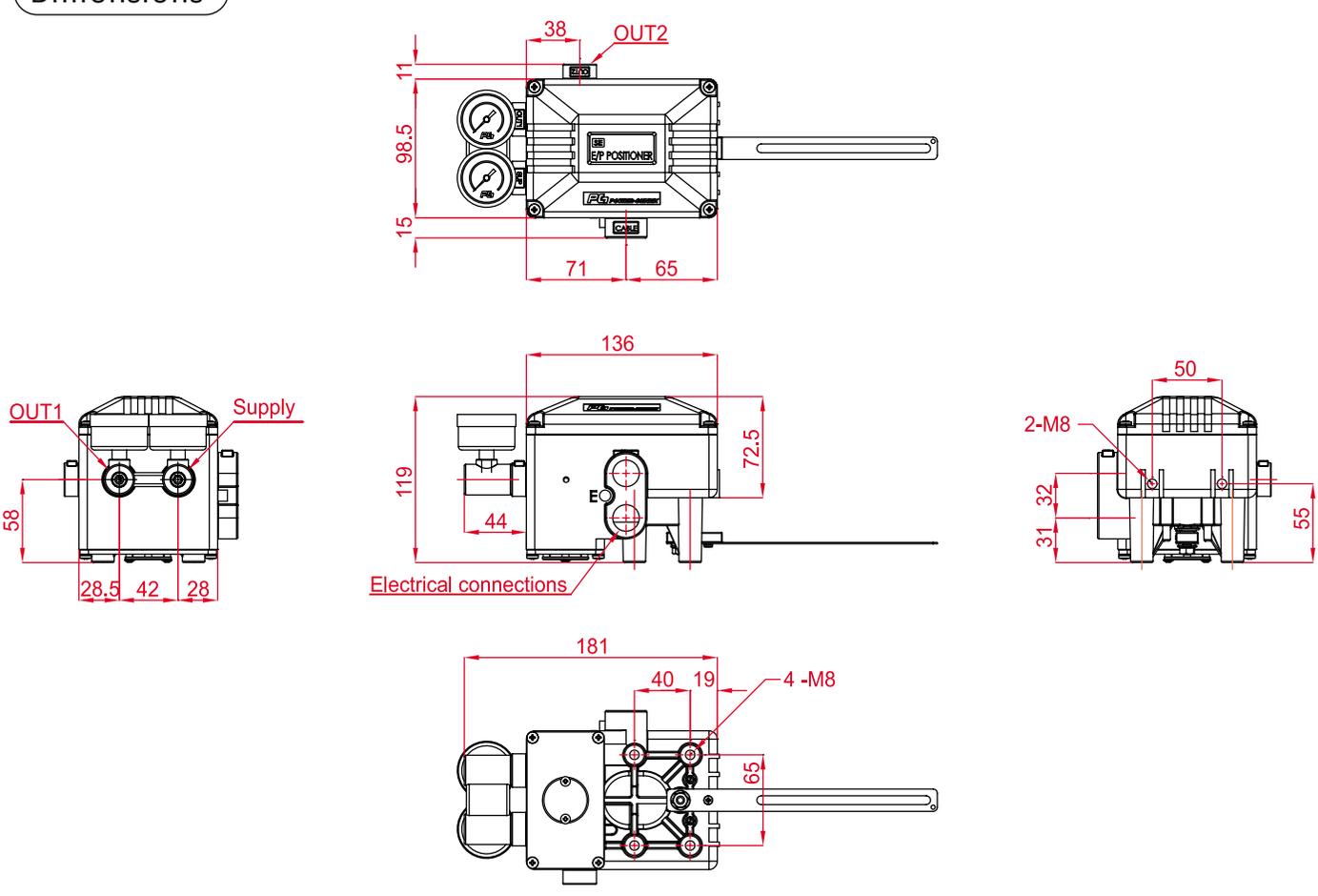
SEL – | Protection Class | Feedback Lever | Pressure Gauge (SUP. OUT) | Position Feedback | Connection Threads | Mounting Bracket |

Description	Code
Protection Class :	F : Flameproof (Exd ⅡB T6) I : Intrinsic safety (Ex ia ⅡC T6) W : Weatherproof to IP66
Feedback Lever :	A : Stroke (5 ~ 65 mm) B : Stroke (10 ~ 85 mm) C : Stroke (up to 150 mm)
Pressure Gauge :	1 : 6 bar (90 psi) 2 : 10 bar (150 psi)

Description	Code
Position Feedback :	N : None (standard) O : Position transmitter (4~20mA output signal) L : 2 x alarm limit M : O + L
Connection Threads: (pneumatic - electrical)	3 : Rc 1/4 - G 1/2 (standard) 4 : NPT 1/4 - NPT 1/2 5 : Rc 1/4 - M20 x 1.5
Mounting Bracket :	N : None L : DIN / IEC 534

Ex) SEL-WA1ON (weatherproof, 5 - 65mm stroke, 10 bar pressure gauges, position transmistter)

Dimensions



Digital Valve Positioner

SER

Auto-Calibration Ability

Reliable valve control device guaranteeing optimum span and zero settings by smart auto-calibration function

Features

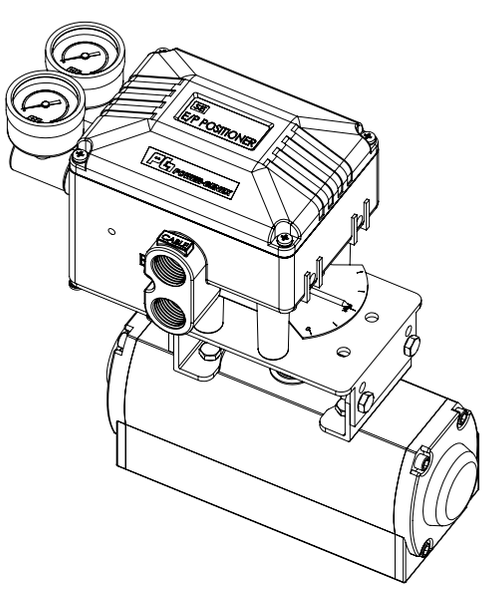
- Auto-Calibration for optimum zero and span setting
- Simple and easy to set
- Precise control performance and high dynamic response
- Pressure regulator built in to eliminate variations in supply air pressure
- Low air consumption due to piezo electric microvalve
- Input / output signal isolated
- Automatic detection for DA(direct acting) or RA(reverse acting)
- Single and double acting available
- No hunting on the small actuators
- 1/2 split range available
- High resistance against shock and vibration

Options

- Position transmitter (4...20mA output signal)
- 2 ×alarm limits (open, close)
- Explosion proof type (Exd ⅡB T6, Exia ⅡC T6)

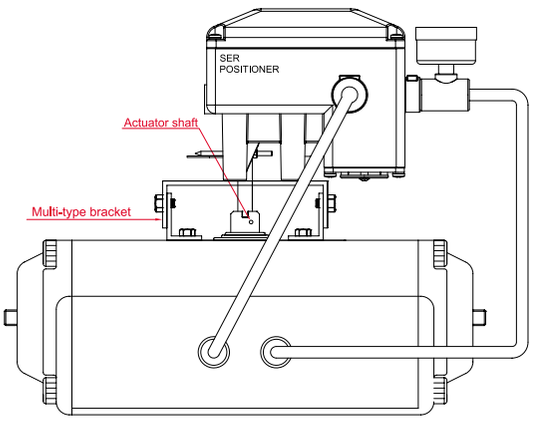
Specifications

Input Signal	4 - 20 mA DC
Voltage Supply Min. /Max.	8.5V DC / 30V DC (425 ohm)
Power Consumption	30.8 mW @ 4 mA / 170 mW @ 20 mA
Characteristic	Linear
Operating Angle	40°- 90°
Air Supply Pressure	1.5 - 7.0 bar (20 - 100 psi) Pressurized air or allowed gas, free of water, oil, and dust
Air Capacity	80 LPM @ supply air of 1.4 bar (20psi)
Air Consumption	1.3 LPM ≒0.08 ㎥/h @ supply air of 1.5 bar (22psi)
Output Pressure Range	0 - 100% of supply air pressure
Linearity	Within ± 0.5 %
Hysteresis	Within 0.2 %
Sensitivity	Within ± 0.2 %
Operating Temperature	-20 - +80℃
Pneumatic Connections	Rc 1/4 or 1/4 NPT
Electrical Connections	G 1/2 or 1/2 NPT
Protection Class	IP66, intrinsic safety (Exia) or flameproof (Exd)
Body Material	Aluminum die-cast
Weight	2.5 kg



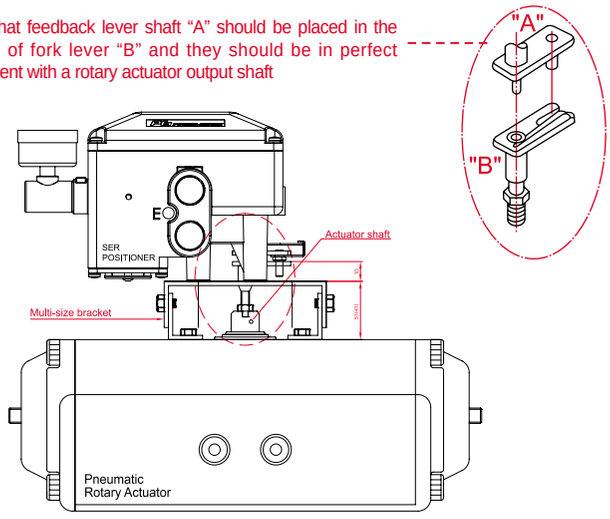
Note : Equal percentage or Quick-open option is available.
Please contact for more details

Mounting



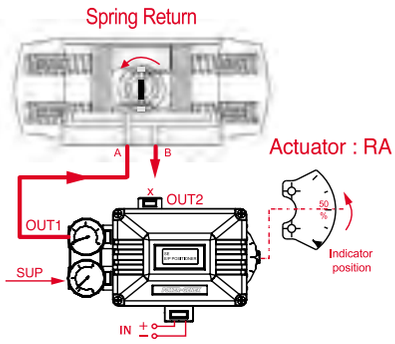
NAMUR Type

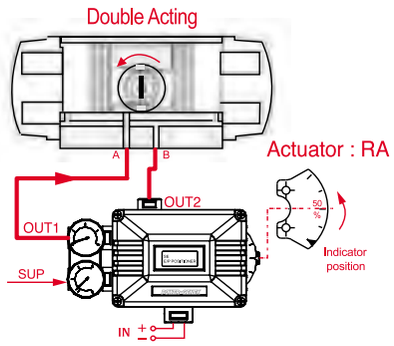
Note that feedback lever shaft “A” should be placed in the orifice of fork lever “B” and they should be in perfect alignment with a rotary actuator output shaft

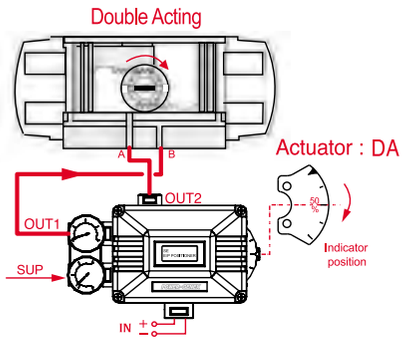


Fork Lever Type

Air Connections



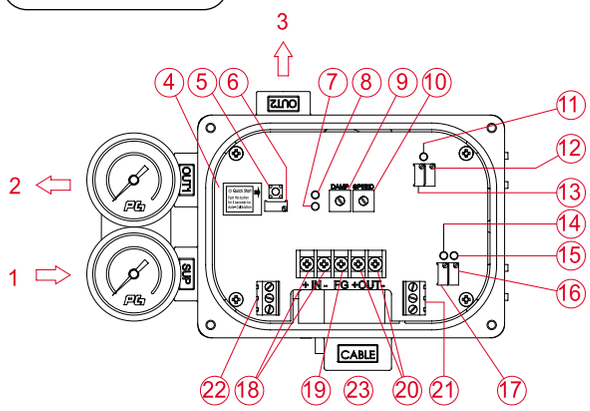




	Spring Return	Double Acting
Reverse Acting	Out 1 : piped, Out 2 : plugged	Out 1 : piped to Actuator port A, Out 2 : piped to Actuator port B
Direct Acting	Out 1 : plugged, Out 2 : piped	Out 1 : piped to Actuator port B, Out 2 : piped to Actuator port A

Electrical Connections

Board View



① Supply air	⑬ Feedback zero
② OUT 1	⑭ Limit switch lamp 2
③ OUT 2	⑮ Limit switch lamp 2
④ Board cover	⑯ Limit switch 2 adjusting screw
⑤ Auto-setting button	⑰ Limit switch 1 adjusting screw
⑥ Span adjusting screw	⑱ Input signal +, -
⑦ DA lamp	⑲ Frame ground
⑧ RA lamp	⑳ Output signal +, -
⑨ Damping screw	㉑ Limit switch 2 terminal
⑩ Speed adjusting screw	㉒ Limit switch 1 terminal
⑪ Feedback lamp	㉓ Electrical connections
⑫ Feedback span	

Auto-Calibration

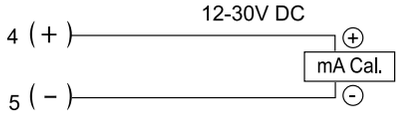
Push Auto-Setting button ⑤ for 5 seconds for auto-calibration. Generally it will take 2 - 3 minutes until the process is finished but it can take more time according to the actuator volume.

Measuring 4-20mA Output Signal

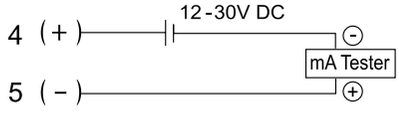
1) Specifications

Output Signal	4 - 20 mA, 2 - wire
Power Supply Rating	15 - 30V DC
Recommended Power Supply	24V DC
Operating Temperature	-20 - +70 ℃
Input Impedance	0 - 430 Ω
Characteristic	Linear
Linearity	± 1.0 % F.S.
Hysteresis	0.5 % F.S.
Repeatability	± 0.5 % F.S.
Adjustment	Zero and span
Rotary Angle	50...90° (max. 100°)

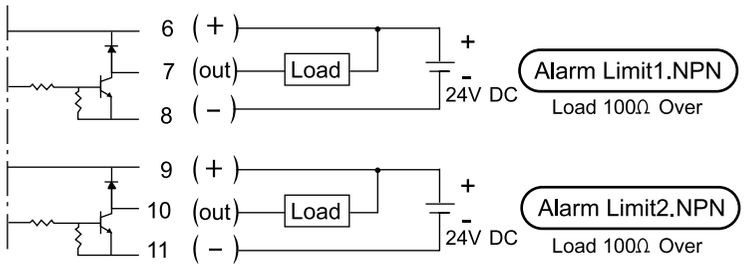
2) With mA Loop Calibrator



3) With Multi-Meter



Setting Alarm Limits



How to Order

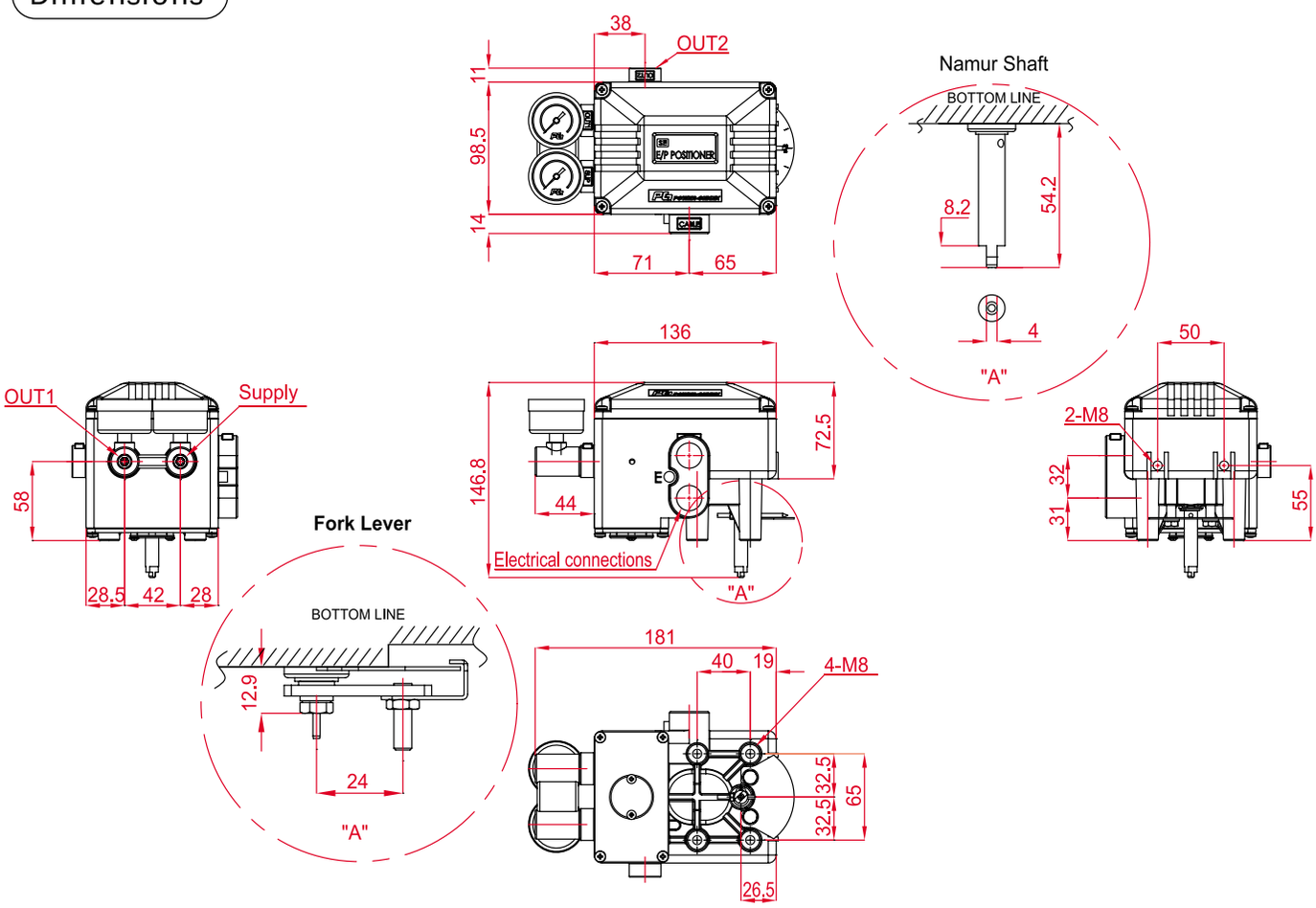
SER – [Protection Class] [Feedback Shaft] [Pressure Gauge (SUP. OUT)] [Position Feedback] [Connection Threads] [Mounting Bracket]

Description	Code
Protection Class :	F : Flameproof (Exd ⅡB T6) I : Intrinsic safety (Ex ia ⅡC T6) W : Weatherproof to IP66
Feedback Shaft :	F : Fork lever N : NAMUR shaft (direct mounting)
Pressure Gauge :	1 : 6 bar (90 psi) 2 : 10 bar (150 psi)

Description	Code
Position Feedback :	N : None (standard) O : Position transmitter (4~20mA output signal) L : 2 x alarm limit M : O + L
Connection Threads: (pneumatic - electrical)	3 : Rc 1/4 - G 1/2 (standard) 4 : NPT 1/4 - NPT 1/2 5 : Rc 1/4 - M20 x 1.5
Mounting Bracket :	N : None R : Multi-size bracket for DIN VDI/VDE 3845 (130 x 30 x 50 bracket on request)

Ex) SER-WN2OR (weatherproof, NAMUR shaft, 10 bar pressure gauges, position transmitter, multi-size bracket)

Dimensions



Electro-Pneumatic Positioner

EPL

Ⓔx ATEX-approved (flameproof)

Intrinsically safe
/ Non-explosion proof

Robust valve control device giving a confidence in reliable performance and outstanding durability under harsh working environments

Features

- Easy maintenance
- Precise calibration with simple SPAN and ZERO adjustments
- Simple conversion to direct acting or reverse acting
- 1/2 split range available
- Rugged aluminum housing with corrosion-resistant coating
- Vibration resistant design
- Stainless steel gauges standard
- Restricted pilot valve orifice kit for small actuators included
- Certified for ATEX Ⓔx Eex md ⅡB T5 (05 ATEX 1076X) by NEMKO in conformance with EN 50014:1997, EN 50018:2000 and EN 50028:1987
- Certified for EMC (K1046 / E04) in conformance with EN 61000-6-2:2001 and EN 61000-6-4:2001 by RWTUV
- Certified for Ex md ⅡB T6 (99-1075-Q1), Ex md ⅡC T6 (2000-1057-Q1), and Ex ia ⅡB T6 (2000-1056-Q1) by KOSHA

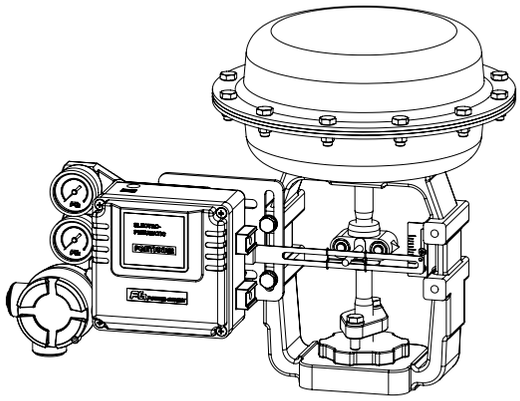
Options

- Position transmitter (4...20 mA output signal)
- High temperature

Specifications

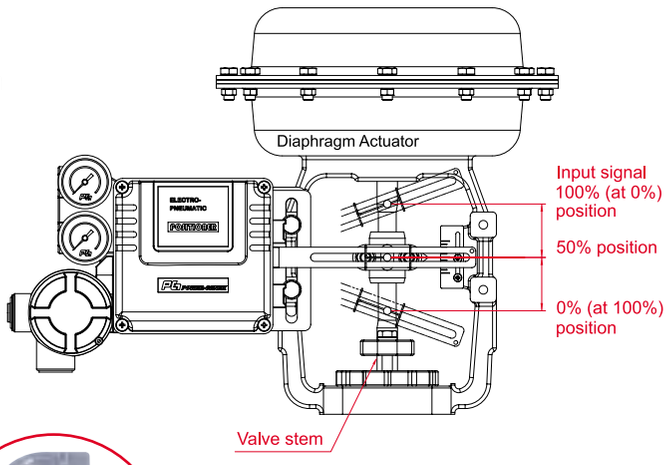
	EPL	
	Linear Type (Lever Feedback)	
	Single	Double
Input Signal	4~20 mA DC (Note. 1)	
Input Resistance	235±15 Ω	
Air Supply	Max. 7.0 bar (100 psi) free of oil, water, and moisture	
Standard Stroke	10~80mm (Note. 2)	
Pneumatic Connections	Rc 1/4 or NPT 1/4	
Electrical Connections	G 1/2 or NPT 1/2	
Protection Class	Ex md ⅡB T6, Ex md ⅡC(H_2) T6, IP66, Ex ia ⅡB T6 Eex md ⅡB T5 for ATEX Ⓔx	
Ambient Temperature	-20 ~ +70℃	
Pressure Gauge	Stainless Steel	
Output Characteristics	Linear	
Linearity	Within ±1.0 % F.S	Within ±1.5 % F.S
Sensitivity	Within ±0.2 % F.S	Within ±0.5 % F.S
Hysteresis	Within 1.0 % F.S	
Repeatability	Within ±0.5 % F.S	
Air Consumption	5 LPM (Sup. 1.4 kgf/㎠)	
Flow Capacity	80 LPM (Sup. 1.4 kgf/㎠)	
Material	Aluminum die-cast	
Weight	3.3 kg (with terminal box) 3.0 kg (without terminal box)	

Note : 1) 1/2 spilt range is available for 4-12mA input signal or 12-20mA input signal
2) Feedback lever can be extended to stroke 80 - 150mm

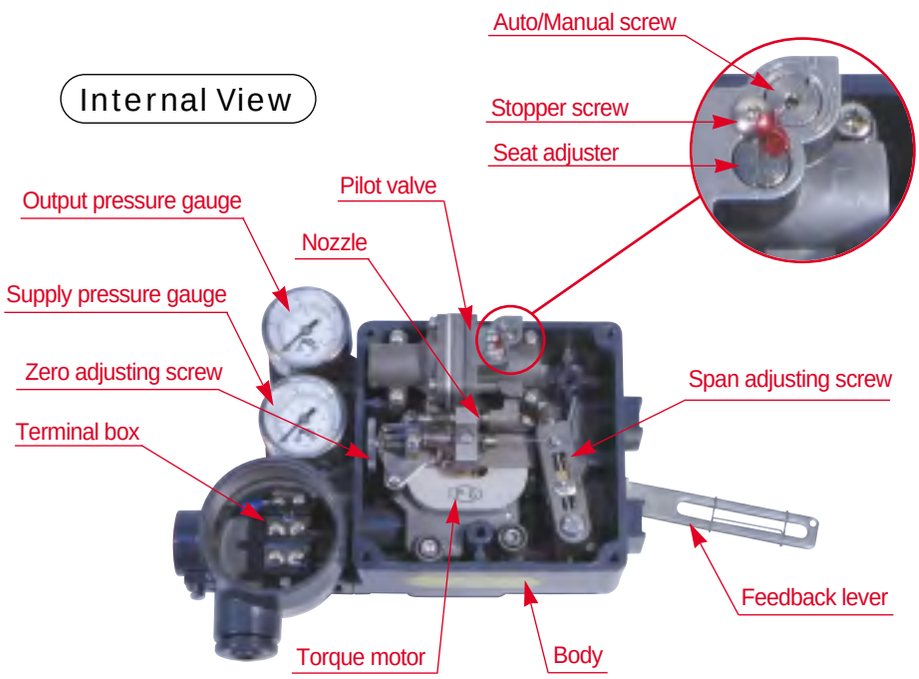


Mounting

1. Install the EPL positioner so that the angle between the valve stem and the feedback lever can be 90° at 12mA input signal (50%) as shown to the right.
2. The operating angle of the EPL feedback lever is minimum 10° to maximum 30°.

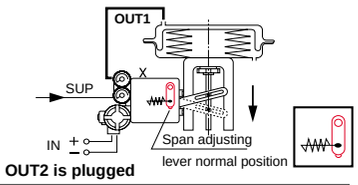
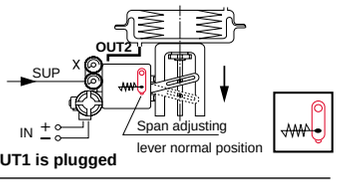
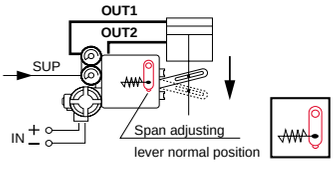


Internal View

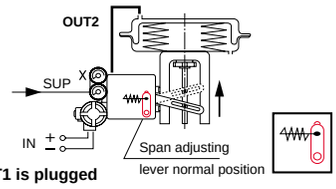
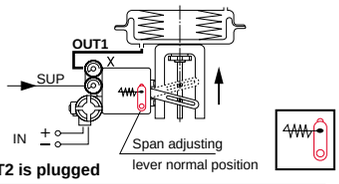
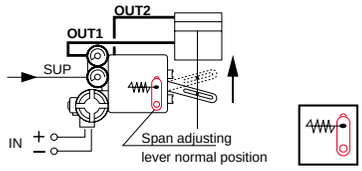


Air Connections

Direct Acting (DA)

As the input signal increases, Valve stem moves downwards Actuator : **DA** Connection : out 1	 **OUT2 is plugged**
As the input signal increases, Valve stem moves downwards Actuator : **DA** Connection : out 2	 **OUT1 is plugged**
As the input signal increases, Valve stem moves downwards	

Reverse Acting (RA)

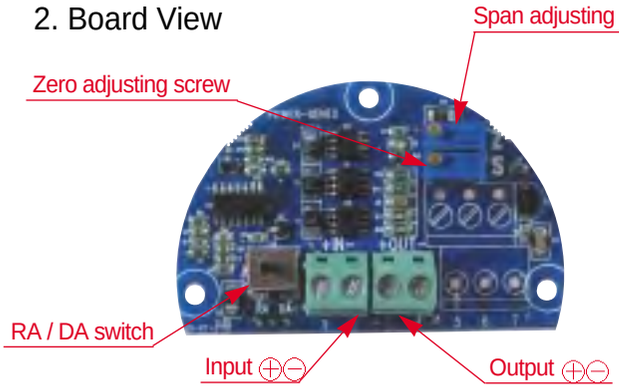
As the input signal increases, Valve stem moves downwards Actuator : **RA** Connection : out 2	 **OUT1 is plugged**
As the input signal increases, Valve stem moves downwards Actuator : **RA** Connection : out 1	 **OUT2 is plugged**
As the input signal increases, Valve stem moves downwards	

Position Transmitter Options (Built-in Type)

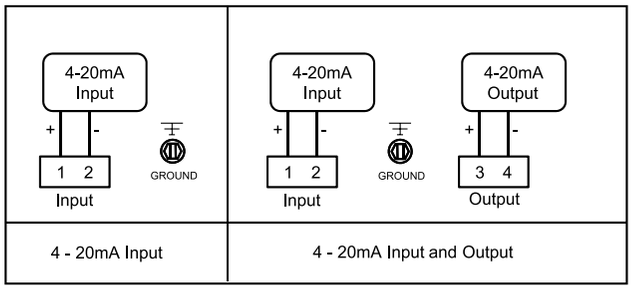
1. Specifications

Power Supply Rating	5.5 - 30 VDC loop power
Recommended Power Supply	24 VDC
Output Signal	4 - 20 mA, 2-wire
Operating Temperature	-20° - 70℃
Load Impedance	0 ~ 600 ohms
Max. Output	30 mA DC
Linearity	±1.0 %
Hysteresis	1.0 % of full scale
Repeatability	±0.5 % of full scale
Adjustment	Zero and Span in terminal box

2. Board View

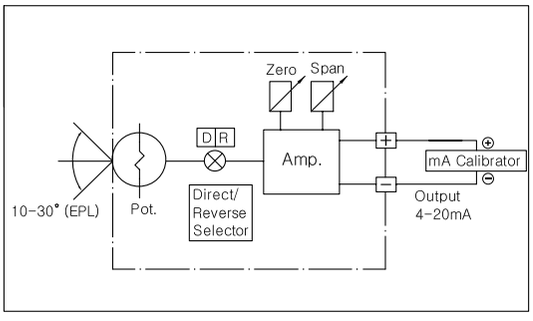


3. Wiring Diagram

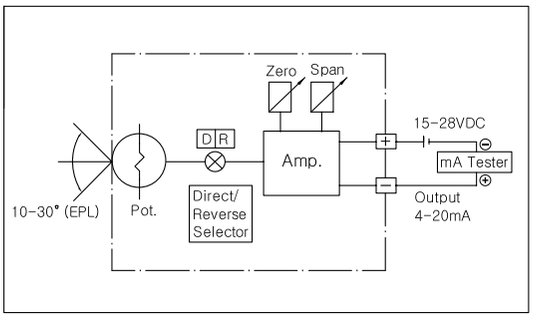


4. Measuring 4 -20mA Output Signal

1) With mA calibrator

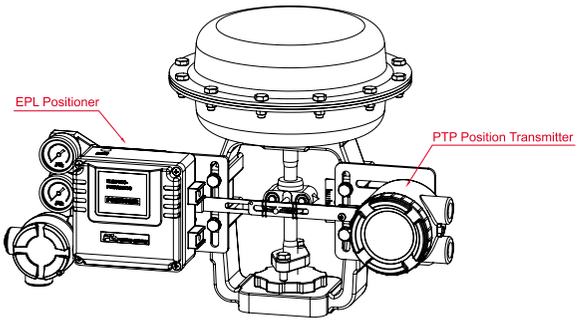


2) With multimeter

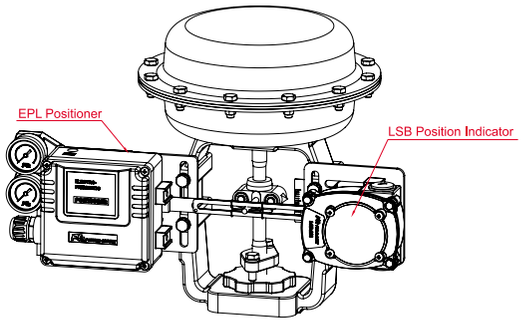


Application for Limit Switches (External Type)

1) With explosion proof PTP-L



2) With non-explosion proof LSB-200



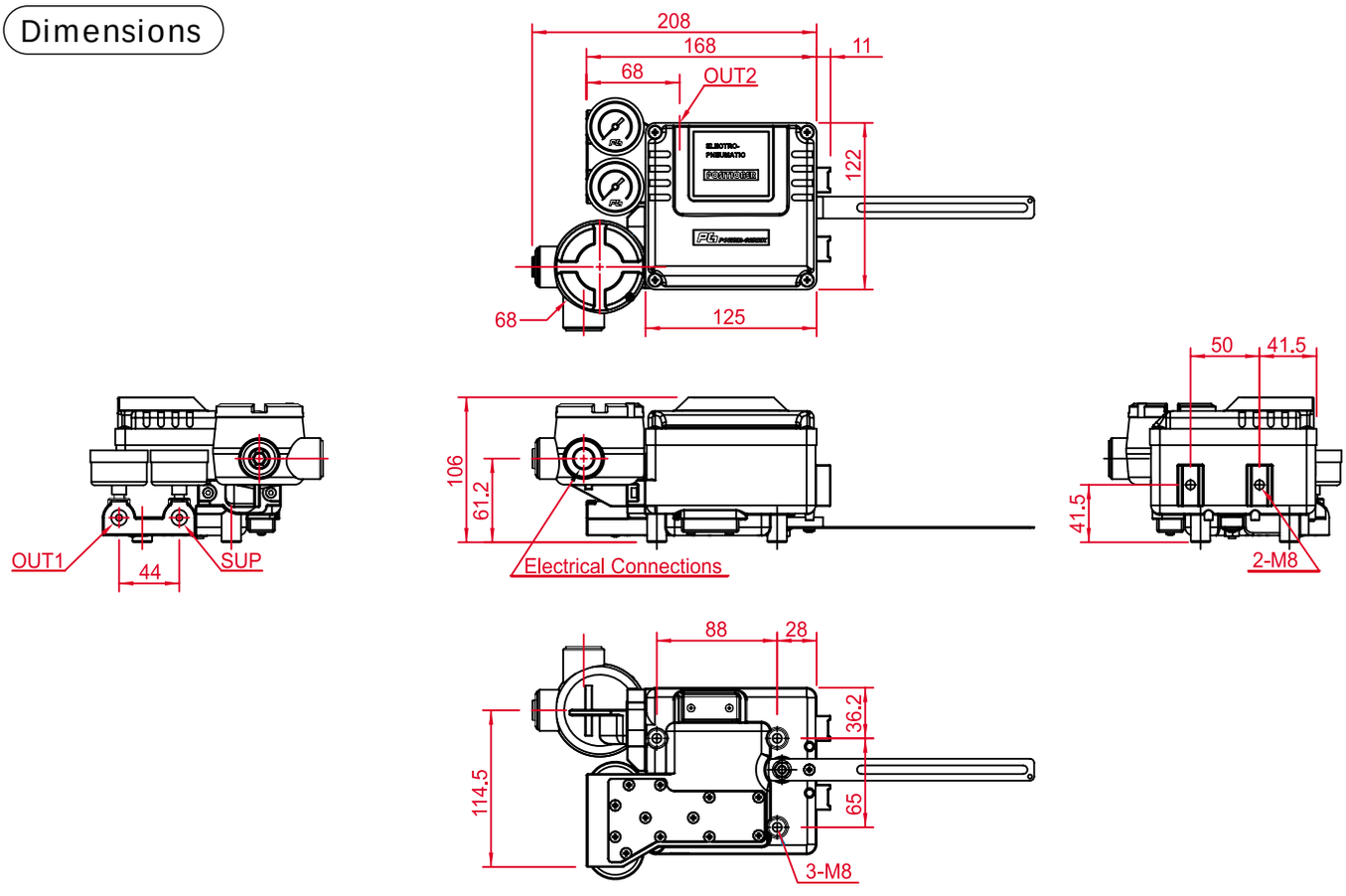
How to Order

EPL –	Protection Class	Feedback Lever	Pressure Gauge (SUP. OUT)	Pilot Valve Orifice	Position Feedback	Connection Threads	High Temp	Mounting Bracket

Description	Code
Protection Class:	F : Flameproof Ex md ⅡB T6 D : Flameproof Ex md ⅡC T6 A : Flameproof Eex md ⅡB T5 ATEX Ⓔx I : Intrinsic safety (Ex ia ⅡB T6) W : Weatherproof to IP66
Feedback Lever:	A : Stroke 10 ~ 40 mm B : Stroke 10 ~ 80 mm C : Stroke 80 ~ 150 mm
Pressure Gauge:	1 : 6 bar (90 psi) 2 : 10 bar (150 psi)
Pilot Valve Orifice:	S : Standard (Actuator volume over 180 cm^3) M : Small orifice (ϕ1.0 or ϕ0.7) (Actuator volume 90~180 cm^3)

Description	Code
Position Feedback: (Only for weatherproof type)	N : None (standard) O : Position transmitter (4~20 mA output signal)
Connection Threads: (pneumatic - electrical)	3 : Rc 1/4 - G 1/2 (standard) 4 : NPT 1/4 - NPT 1/2 5 : Rc 1/4 - M20 x 1.5
High Temperature: (only for weatherproof type)	T : 70 ℃ (standard) H : 120 ℃ (without position feedback option) 85 ℃ (with position feedback option)
Mounting Bracket:	N : None L : DIN / IEC 534

Dimensions



Electro-Pneumatic Positioner

EPR

Ⓔx ATEX-approved (flameproof)

Intrinsically safe
/ Non-explosion proof

With Dome Indicator

Robust valve control device giving a confidence in reliable performance and outstanding durability under harsh working environments

Features

- Easy maintenance
- Precise calibration with simple SPAN and ZERO adjustments
- Simple conversion to direct acting or reverse acting
- 1/2 split range available
- Rugged aluminum housing with corrosion-resistant coating
- Vibration resistant design
- Stainless steel gauges standard
- Restricted pilot valve orifice kit for small actuators included
- Certified for ATEX Ⓔx Eex md ⅡB T5 (05 ATEX 1076X) by NEMKO in conformance with EN 50014:1997, EN 50018:2000 and EN 50028:1987
- Certified for EMC (K1046 / E04) in conformance with EN 61000-6-2:2001 and EN 61000-6-4:2001 by RWTUV
- Certified for Ex md ⅡB T6 (99-1075-Q1), Ex md ⅡC T6 (2000-1057-Q1), and Ex ia ⅡB T6 (2000-1056-Q1) by KOSHA

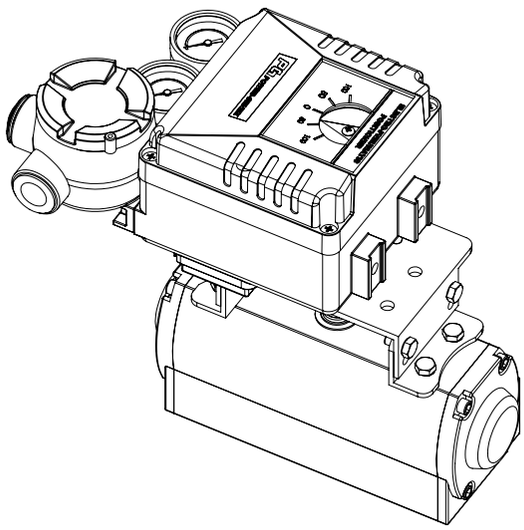
Options

- Position transmitter (4...20 mA output signal)
- 2 x SPDT limit switch
- 2 x P&F proximity sensor NJ2-V3-N
- Visual dome indicator
- High temperature

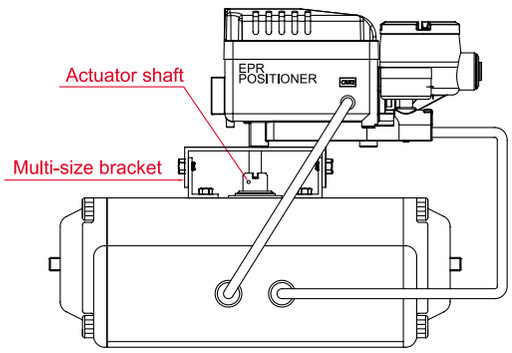
Specifications

	EPR	
	Rotary Type (Cam Feedback)	
	Single	Double
Input Signal	4~20 mA DC (Note. 1)	
Input Resistance	235±15 Ω	
Air Supply	Max. 7.0 bar (100 psi) free of oil, water, and moisture	
Operating Angle	60~100° (Note. 2)	
Pneumatic Connections	Rc 1/4 or NPT 1/4	
Electrical Connections	G 1/2 or NPT 1/2	
Protection Class	Ex md ⅡB T6, Ex md ⅡC(H_2) T6, IP66, Ex ia ⅡB T6 Eex md ⅡB T5 for ATEX Ⓔx	
Ambient Temperature	-20 ~ +70℃	
Pressure Gauge	Stainless steel	
Output Characteristics	Linear	
Linearity	Within ±1.0 % F.S	Within ±1.5 % F.S
Sensitivity	Within ±0.5 % F.S	
Hysteresis	Within 1.0 % F.S	
Repeatability	Within ±0.5 % F.S	
Air Consumption	5 LPM (Sup. 1.4 kgf/㎠)	
Flow Capacity	80 LPM (Sup. 1.4 kgf/㎠)	
Material	Aluminum die-cast	
Weight	3.5 kg (with terminal box) 3.2 kg (without terminal box)	

Note : 1) 1/2 spilt range is available for 4-12mA input signal or 12-20mA input signal
2) Operating angle can be adjusted to 0~60° or 0~100°

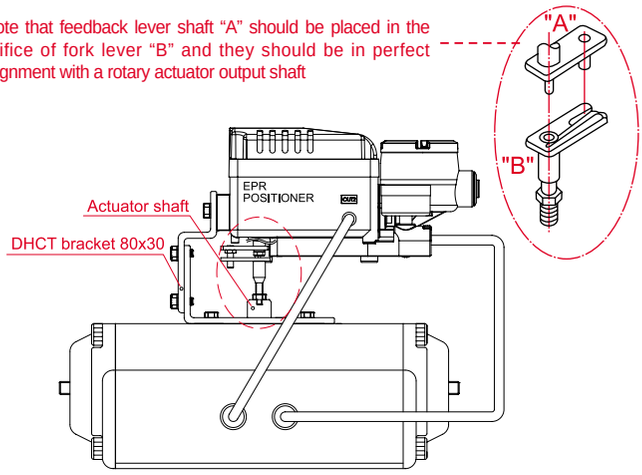


Mounting



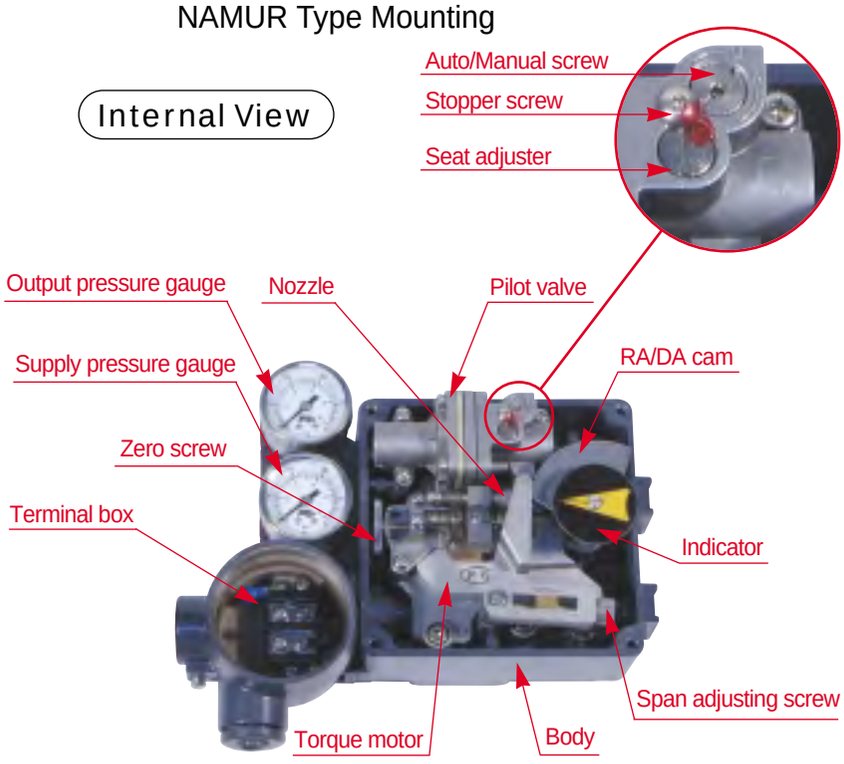
NAMUR Type Mounting

Note that feedback lever shaft “A” should be placed in the orifice of fork lever “B” and they should be in perfect alignment with a rotary actuator output shaft



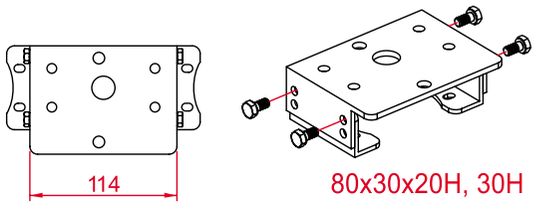
Fork Lever Type Mounting

Internal View

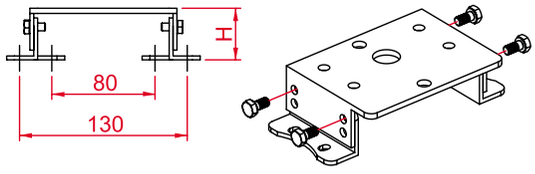


Multi-size Bracket

TYPE	H
80 x 30 x 20H	41
80 x 30 x 30H	51
130 x 30 x 20H	41
130 x 30 x 30H	51
130 x 30 x 50H	71



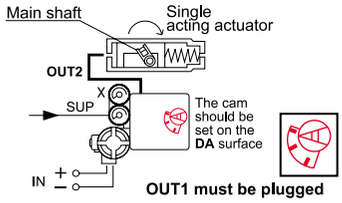
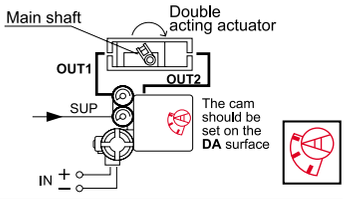
80x30x20H, 30H



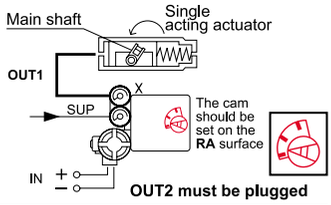
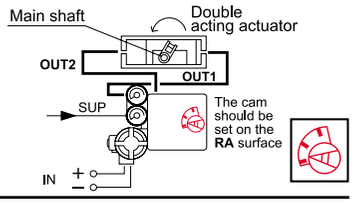
80x30x20H, 30H, 50H

Air Connections

Direct Acting (DA)

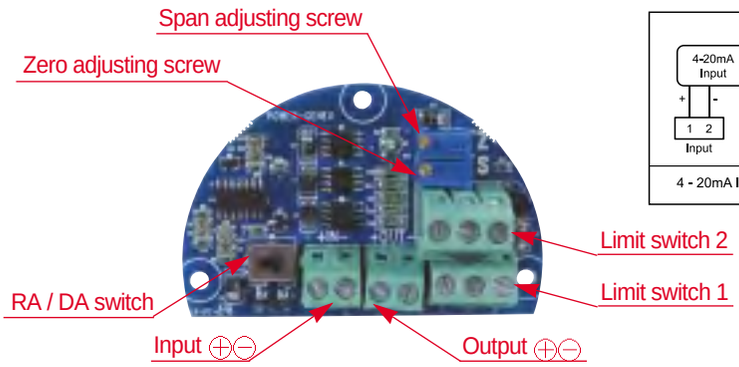
As the input signal increases, Actuator stem rotates clockwise.	
As the input signal increases, Actuator stem rotates clockwise.	

Reverse Acting (RA)

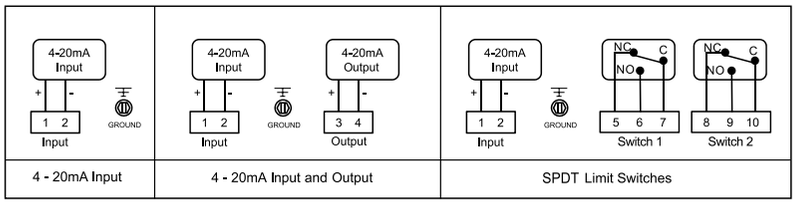
As the input signal increases, Actuator stem rotates counter clockwise.	
As the input signal increases, Actuator stem rotates counter clockwise.	

Position Transmitter Options (Built-in Type)

1. Board View



2. Wiring Diagram

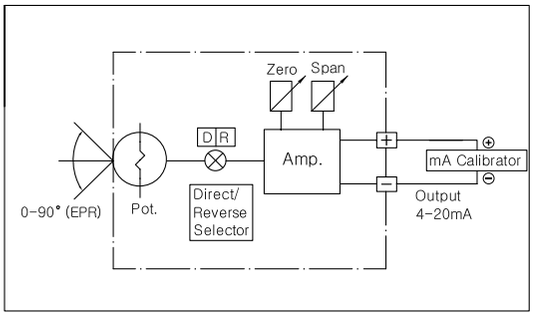


3. Position Transmitter (4-20mA output signal)

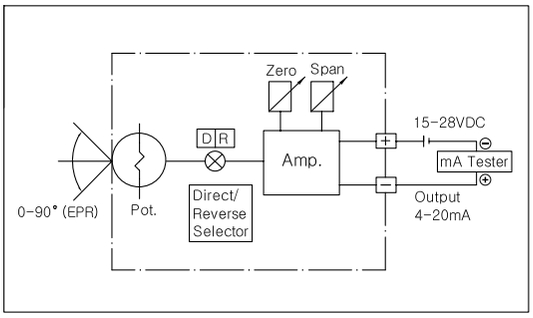
a. Specifications

Power Supply Rating	5.5 - 30 VDC loop power
Recommended Power Supply	24 VDC
Output Signal	4 - 20 mA, 2-wire
Operating Temperature	-20° to 70℃
Load Impedance	0 ~ 600 ohms
Max. Output	30 mA DC
Linearity	±1.0 %
Hysteresis	1.0 % of full scale
Repeatability	±0.5 % of full scale
Adjustment	Zero and Span in terminal box

b. with mA calibrator



c. with multimeter

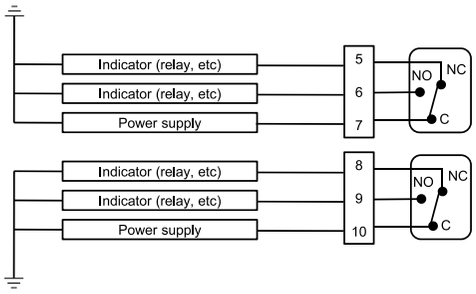


4. SPDT Limit Switches

a. Specifications

Contacts	SPDT Form C
AC Rating	16 A 1/2 HP 125/250 VAC
DC Rating	0.6 A 125 VDC / 0.3 A 250 VDC
Adjustment	Cams with set screws (L-wrench included for setting)

b. Wiring and Application



How to Order

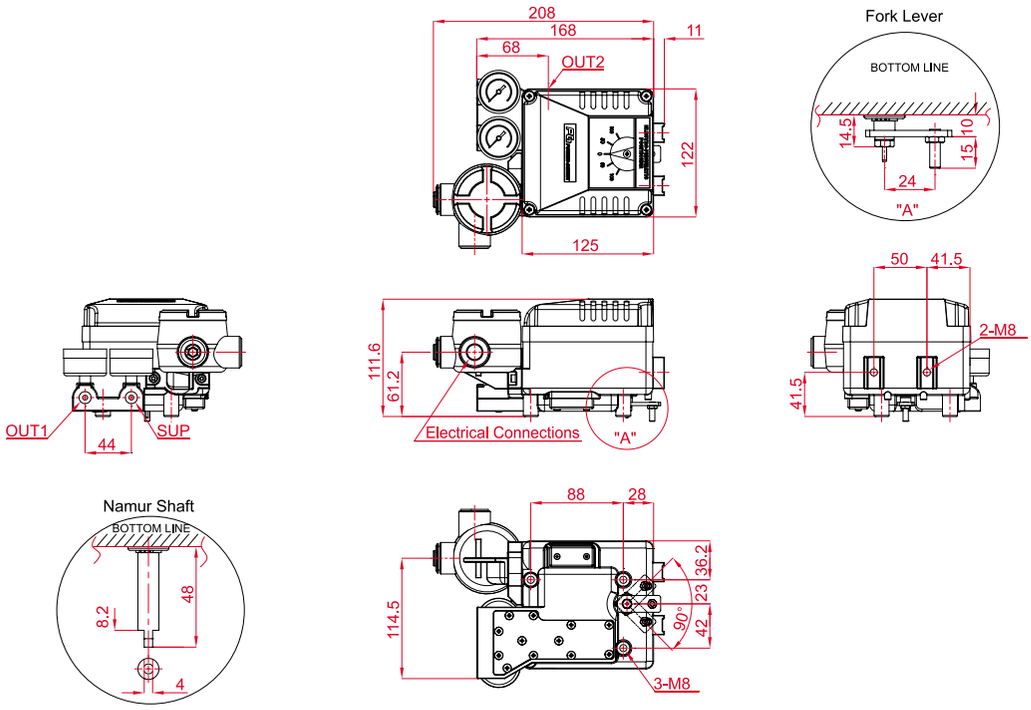
EPR– | Protection Class | Feedback Shaft | Pressure Gauge (SUP. OUT) | Pilot Valve Orifice | Position Feedback | Connection Threads | Dome Indicator | High Temp | Mounting Bracket

Description	Code
Protection Class:	F : Flameproof Ex md ⅡB T6 D : Flameproof Ex md ⅡC T6 A : Flameproof Eex md ⅡB T5 ATEX Ⓔx I : Intrinsic safety (Ex ia ⅡB T6) W : Weatherproof to IP66
Feedback Shaft:	N : NAMUR shaft (direct mounting) A : Fork lever M6 x 40L B : Fork lever other size on request
Pressure Gauge:	1 : 6 bar (90 psi) 2 : 10 bar (150 psi, standard)
Pilot Valve Orifice:	S : Standard (Actuator volume over 180 ㎤) M : Small orifice (ϕ1.0 or ϕ0.7) (Actuator volume 90~180 ㎤)
Position Feedback: **(only for weatherproof type)**	N : None (standard) O : Position transmitter (4~20mA output signal) L : 2 x SPDT limit switch P : 2 x proximity sensor P&F NJ2-V3-N M : O + L Q : O + P

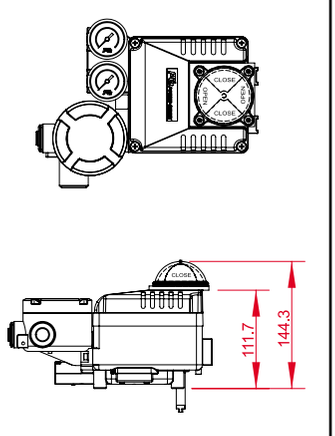
Description	Code
Connection Threads: **(pneumatic - electrical)**	3 : Rc 1/4 - G 1/2 (standard) 4 : NPT 1/4 - NPT 1/2 5 : Rc 1/4 - M20 x 1.5
Dome Indicator:	N : Flat indicator (standard) D : Dome indicator
High Temperature: **(only for weatherproof type)**	T : 70 ℃ (standard) H : 120 ℃ (without position feedback option) 85 ℃ (with position feedback option)
Mounting Bracket:	N : None
• **NAMUR Shaft Type :**	R : Multi-size NAMUR bracket for DIN VDI/VDE 3845 (130 x 30 x 50 bracket on request)
• **Fork Lever Type :**	F : DHCT bracket 80x30 for fork lever type E : Multi-size NAMUR bracket for fork lever type (130 x 30 x 50 bracket on request)

Dimensions

A. With Flat Indicator



B. With Dome Indicator



Pneumatic-Pneumatic Positioner

PPL

Robust valve control device giving a confidence in reliable performance and outstanding durability under harsh working environments

Features

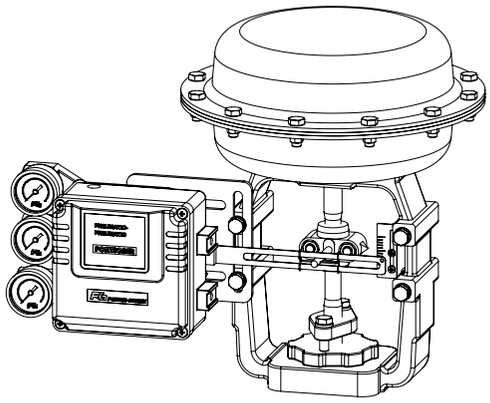
- Easy maintenance
- Precise calibration with simple SPAN and ZERO adjustments
- Simple conversion to direct acting or reverse acting
- 1/2 split range available
- Rugged aluminum housing with corrosion-resistant coating
- Vibration resistant design
- Stainless steel gauges standard
- Restricted pilot valve orifice kit for small actuators included

Options

- High temperature

Specifications

	PPL	
	Linear Type (Lever Feedback)	
	Single	Double
Input Signal	0.2 - 1.0 bar (3 - 15 psi) (Note.1, 2)	
Supply Air Pressure	Max. 7.0 bar (100 psi)	
Standard Stroke	10 - 80 mm (Note.3)	
Pneumatic Connections	Rc 1/4 or NPT 1/4	
Ambient Temperature	-20 - +70 ℃	
Pressure Gauge	Stainless steel	
Output Characteristics	Linear	
Linearity	Within ± 1.0 % F.S	Within ± 1.5 % F.S
Sensitivity	Within ± 0.2 % F.S	Within ± 0.5 % F.S
Hysteresis	Within 1.0 % F.S	
Repeatability	Within ± 0.5 % F.S	
Air Consumption	5 LPM (Sup. 1.4 bar)	
Flow Capacity	80 LPM (Sup. 1.4 bar)	
Body Material	Aluminium die-cast	
Weight	2.1 kg	



Note : 1) 1/2 spilt range is available for 3-9 psi input signal or 9-15 psi input signal
2) Please contact for 6-30 psi input signal
3) Feedback lever can be extended to stroke 80 - 150mm

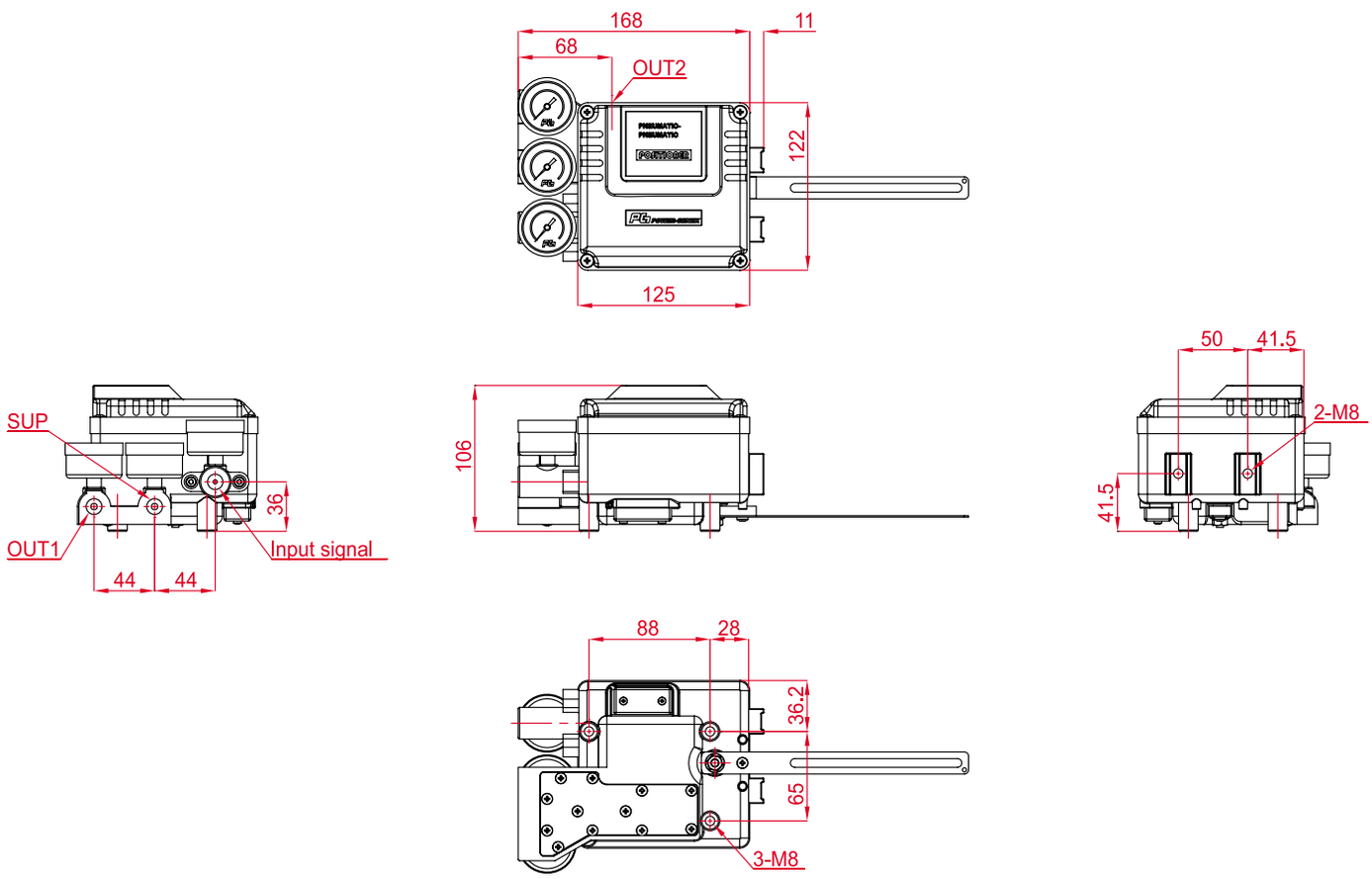
How to Order

PPL – | Feedback Lever | Pressure Gauge (SUP. OUT) | Pilot Valve Orifice | Connection Threads | High Temp | Mounting Bracket |

Description	Code
Feedback Lever :	A : Stroke (10 ~ 40 mm) B : Stroke (10 ~ 80 mm) C : Stroke (80 ~ 150 mm)
Pressure Gauge :	1 : 6 bar (90 psi) 2 : 10 bar (150 psi)
Pilot Valve Orifice :	S : Standard (Actuator volume over 180 ㎤) M : Small orifice (ϕ1.0 or ϕ0.7) (Actuator volume 90~180 ㎤)

Description	Code
Connection Threads : **(pneumatic)**	3 : Rc 1/4 4 : NPT 1/4
High Temperature :.	T : 70 ℃ (standard) H : 120 ℃
Mounting Bracket :	N : None L : DIN / IEC 534

Dimensions



Pneumatic-Pneumatic Positioner

PPR

Robust valve control device giving a confidence in reliable performance and outstanding durability under harsh working environments

Features

- Easy maintenance
- Precise calibration with simple SPAN and ZERO adjustments
- Simple conversion to direct acting or reverse acting
- 1/2 split range available
- Rugged aluminum housing with corrosion-resistant coating
- Vibration resistant design
- Stainless steel gauges standard
- Restricted pilot valve orifice kit for small actuators included

Options

- Position transmitter (4-20mA output signal)
- 2 x SPDT limit switch
- 2 x P&F proximity sensor NJ2-V3-N
- Visual dome indicator
- High temperature

Specifications

	PPR	
	Rotary Type (Cam Feedback)	
	Single	Double
Input Signal	0.2 - 1.0 bar (3 - 15 psi) (Note.1, 2)	
Supply Air Pressure	Max. 7.0 bar (100 psi)	
Standard Stroke	60 - 100° (Note.3)	
Pneumatic Connections	Rc 1/4 or NPT 1/4	
Ambient Temperature	-20 - +70 ℃	
Pressure Gauge	Stainless steel	
Output Characteristics	Linear	
Linearity	Within ± 1.0 % F.S	Within ± 1.5 % F.S
Sensitivity	Within ± 0.5 % F.S	
Hysteresis	Within 1.0 % F.S	
Repeatability	Within ± 0.5 % F.S	
Air Consumption	5 LPM (Sup. 1.4 bar)	
Flow Capacity	80 LPM (Sup. 1.4 bar)	
Body Material	Aluminium die-cast	
Weight	2.5 kg	

With Dome Indicator

Note : 1) 1/2 spilt range is available for 3-9 psi input signal or 9-15 psi input signal
2) Please contact for 6-30 psi input signal
3) Operating angle can be adjusted to 0~60° or 0~100°

How to Order

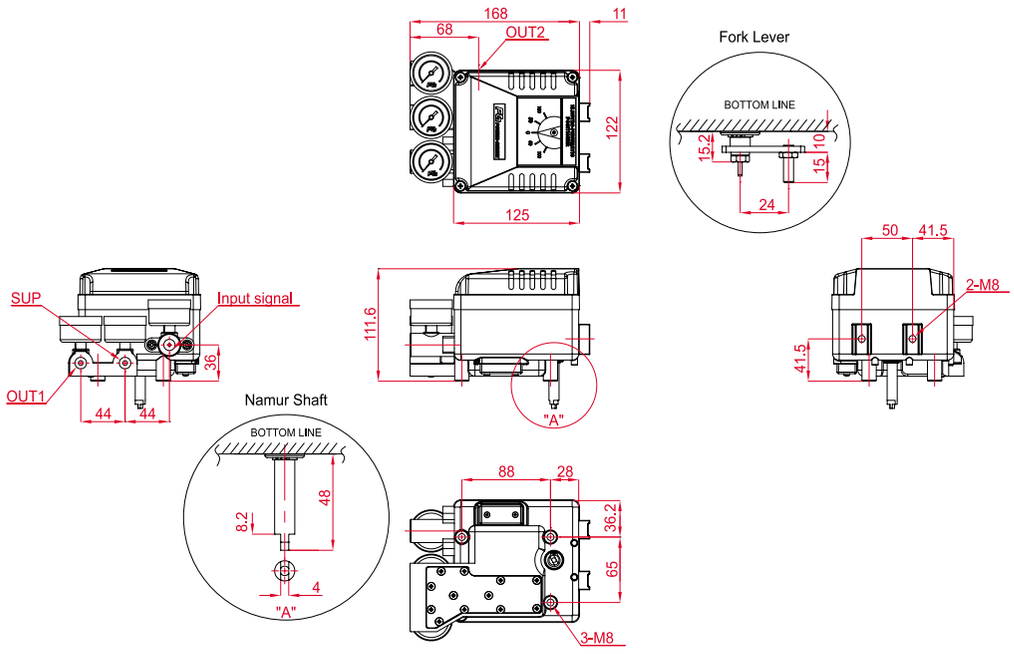
PPR – | Feedback Shaft | Pressure Gauge (SUP. OUT) | Pilot Valve Orifice | Position Feedback | Connection Threads | Dome Indicator | High Temp | Mounting Bracket |

Description	Code
Feedback Shaft :	N : NAMUR shaft (direct mounting) A : Fork lever M6 x 40L B : Fork lever other size on request
Pressure Gauge :	1 : 6 bar (90 psi) 2 : 10 bar (150 psi)
Pilot Valve Orifice :	S : Standard (Actuator volume over 180 cm^3) M : Small orifice (ϕ1.0 or ϕ0.7) (Actuator volume 90~180 cm^3)
Position Feedback :	N : None (standard) O : Position transmitter (4~20mA output signal) L : 2 x SPDT limit switch P : 2 x proximity sensor P&F NJ2-V3-N M : O+L Q : O+P

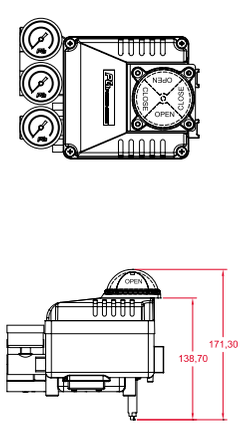
Description	Code
Connection Threads : (pneumatic)	3 : Rc 1/4 4 : NPT 1/4
Dome Indicator :	N : Flat indicator (standard) D : Dome indicator
High Temperature :	T : 70℃ (standard) H : 120℃ (without position feedback option) 85℃ (with position feedback option)
Mounting Bracket :	N : None
• **NAMUR Shaft Type :**	R : Multi-size NAMUR bracket for DIN VDI/VDE 3845 (130 x 30 x 50 bracket on request)
• **Fork Lever Type :**	F : DHCT bracket 80x30 for fork lever type E : Multi-size NAMUR bracket for fork lever type (130 x 30 x 50 bracket on request)

Dimensions

A. With Flat Indicator



B. With Dome Indicator



Cylinder Positioner
(E/P Positioner)

EPCL

Electro-pneumatic positioner ideally designed and optimized for cylinder actuator and guaranteeing precise and stable performance with cylinder actuator

Features

- Easy to set
- Compact
- Precise and stable performance
- Suitable for a wide application

Specifications

Input Signal	4 - 20 mA @ 24 VDC
Input Resistance	425 Ω
Air Supply	3 - 7 bar (100 psi) free of oil, water, and moisture
Standard Stroke	30 mm - 300 mm
Pneumatic Connections	Rc 1/4 or NPT 1/4
Electrical Connections	G 1/2 or NPT 1/2
Protection Class	Exd IIC T6
Ambient Temperature	-20 - + 70 ℃
Output Characteristics	Linear
Linearity	Within ± 1.0 % F.S
Sensitivity	Within ± 0.5 % F.S
Hysteresis	Within 1.0 % F.S
Repeatability	Within ± 0.5 % F.S
Air Consumption	5 LPM (Sup. 1.4 bar)
Material	Aluminum die-cast
Weight	2 kg

How to Order

EPCL — Stroke — Connections (Pneumatic/ Electrical)

Description	Code
Stroke :	On request (30 mm - 300 mm)
Connections : (Pneumatic - electrical)	P : Rc 1/4 - G 1/2 N : NPT 1/4 - NPT 1/2

NOTE

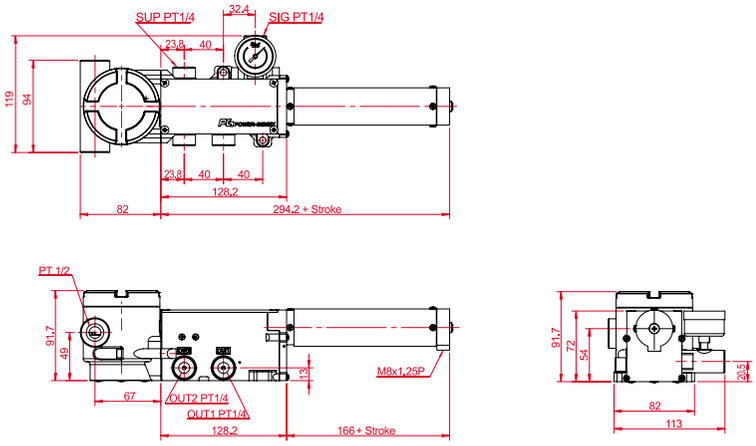
Please be sure to describe a size and a stroke of the cylinder actuator required when placing an order.

CAUTION

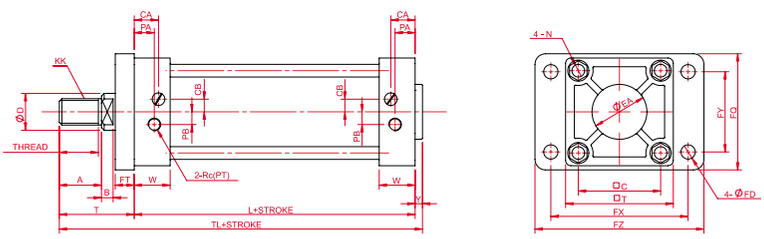
1. Please be sure to disconnect supply air completely before opening a feedback spring protection tube.
2. When input signal increases, the EPCL can operate only in the direction that the cylinder extends.

Dimensions

EPCL



Cylinder Actuator



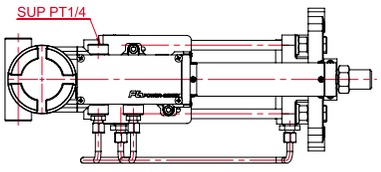
(Unit : mm)

Tube I·O (mm)	Stroke (mm)	Thread	A	B	□C	□T	CA	CB	ØD	ØEA	KK	L
40	~ 800	27	30	6	44	60	18	8	16	32	M14×P1.25	84
50	~1000	32	35	7	52	70	19.5	11	20	40	M18×P1.25	90
63	~1000	32	35	7	64	83	23	11	20	40	M18×P1.25	98
80	~1000	37	40	11	78	102	25	12	25	52	M22×P1.25	116
100	~1000	37	40	11	92	116	27.5	12	30	52	M26×P1.25	126

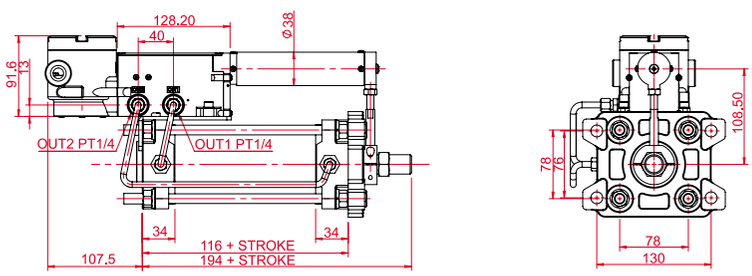
Tube I·O (mm)	N	Rc(PT)	PA	PB	W	V	FD	FQ	FT	FX	FY	FZ	T	TL
40	M 8×P1.25	1/4	12.5	6.5	26.5	3	9	65	12	80	42	100	51	138
50	M 8×P1.25	3/8	14	8	28	3	9	75	12	90	50	110	58	151
63	M 8×P1.25	3/8	15	9	29.5	3	11.5	91	15	105	59	130	58	159
80	M 12×P1.25	1/2	19	12	34	7	13.5	110	18	130	76	160	71	194
100	M 12×P1.25	1/2	20	12	36.5	7	13.5	126	18	150	92	180	72	205

Note : Please make an inquiry for other size cylinder actuators not described above.

Application Example for EPCL on Cylinder Actuator



Note that this drawing is an example showing the EPCL mounted on the cylinder actuator (ϕ80 ×125mm).The length of the EPCL feedback spring tube can be different according to strokes of the cylinder actuators. So please contact for an optimum mounting



Cylinder Positioner
(P/P Positioner)

PPCL

Pneumatic-pneumatic positioner ideally designed and optimized for cylinder actuator and guaranteeing precise and stable performance with cylinder actuator

Features

- Easy to set
- Compact
- Precise and stable performance
- Suitable for a wide application

Specifications

Input Signal	3 - 15 psi (0.2 - 1 bar) (Note)
Air Supply	3 - 7 bar (100 psi) free of oil, water, and moisture
Standard Stroke	30 mm - 300 mm
Pneumatic Connections	Rc 1/4 or NPT 1/4
Protection Class	IP 55
Ambient Temperature	-20 - +70 ℃
Pressure Gauge	Stainless Steel
Output Characteristics	Linear
Linearity	Within ± 1.0 % F.S
Sensitivity	Within ± 0.5 % F.S
Hysteresis	Within 1.0 % F.S
Repeatability	Within ± 0.5 % F.S
Air Consumption	5 LPM (Sup. 1.4 bar)
Material	Aluminum die-cast
Weight	1.5 kg

Note : Please contact for 0.4-2 bar (6-30 psi) input signal

How to Order

PPCL — Stroke — Connections (Pneumatic)

Description	Code
Stroke :	On request (30 mm ~ 300 mm)
Connections : (Pneumatic)	P : Rc 1/4 N : NPT 1/4

NOTE

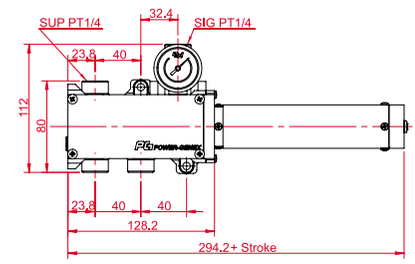
Please be sure to describe a size and a stroke of the cylinder actuator required when placing an order.

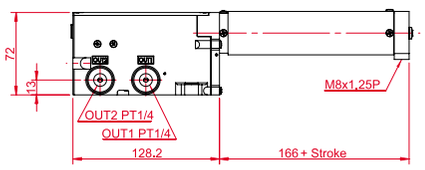
CAUTION

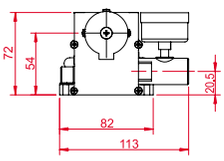
1. Please be sure to disconnect supply air completely before opening a feedback spring protection tube.
2. When input pressure increases, the PPCL can operate only in the direction that the cylinder extends.

Dimensions

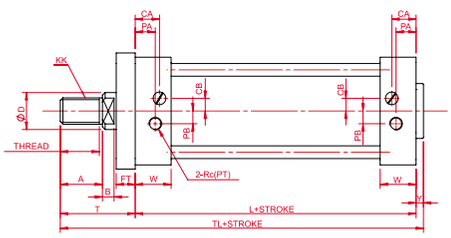
PPCL

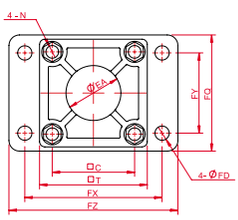






Cylinder Actuator





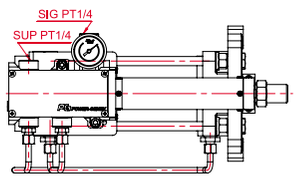
(Unit : mm)

Tube I·O (mm)	Stroke (mm)	Thread	A	B	□C	□T	CA	CB	ΦD	ΦEA	KK	L
40	~ 800	27	30	6	44	60	18	8	16	32	M14×P1.25	84
50	~1000	32	35	7	52	70	19.5	11	20	40	M18×P1.25	90
63	~1000	32	35	7	64	83	23	11	20	40	M18×P1.25	98
80	~1000	37	40	11	78	102	25	12	25	52	M22×P1.25	116
100	~1000	37	40	11	92	116	27.5	12	30	52	M26×P1.25	126

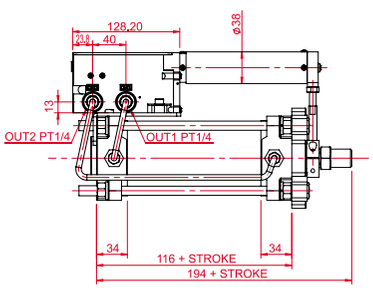
Tube I·O (mm)	N	Rc(PT)	PA	PB	W	V	FD	FQ	FT	FX	FY	FZ	T	TL
40	M 8×P1.25	1/4	12.5	6.5	26.5	3	9	65	12	80	42	100	51	138
50	M 8×P1.25	3/8	14	8	28	3	9	75	12	90	50	110	58	151
63	M 8×P1.25	3/8	15	9	29.5	3	11.5	91	15	105	59	130	58	159
80	M 12 ×P1.25	1/2	19	12	34	7	13.5	110	18	130	76	160	71	194
100	M 12 ×P1.25	1/2	20	12	36.5	7	13.5	126	18	150	92	180	72	205

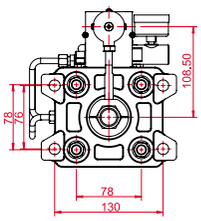
Note : Please make an inquiry for other size cylinder actuators not described above.

Application Example for PPCL on Cylinder Actuator



Note that this drawing is an example showing the PPCL mounted on the cylinder actuator (ϕ80 ×125mm).The length of the PPCL feedback spring tube can be different according to strokes of the cylinder actuators. So please contact for an optimum mounting





IPC

Dynamic valve drive to convert 4-20mA current signal to pneumatic output pressure with state-of-the art piezoelectric technology

Features

- Rugged aluminum die-cast housing
- Precise control performance and high dynamic response
- Simple and easy to set
- Low air consumption due to piezo electric microvalve

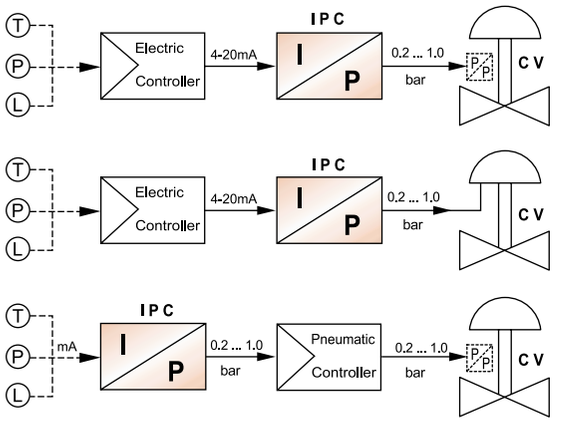
Specifications

Model	IPC
Input Signal	4 - 20 mA @ 24 VDC, 2-wire
Output Pressure	0 - 1 bar (0 - 15 psi) 0.2 - 1 bar (3 - 15 psi) 0.4 - 2 bar (6 - 30 psi) 0.2 - 3 bar (3 - 45 psi)
Output Characteristic	Linear to input signal
Action	Direct
Total Error	Max. error ±0.3% of span (linearity + hysteresis + repeatability)
Supply Air	1.5~3.0 bar (filtered, compressed, dry and non-oiled)
Operating Temperature	-20℃- +70℃
Protection Class	IP55
Impedance	425 Ω@ 20 mA
Mounting Type	Rail (to DIN EN 50022)
Pneumatic Connection	Rc 1/8
Electrical Connections	PG 9
Body Material	Aluminum die-cast
Weight	820 g

How to Order

Output Pressure	Required Supply Air	Part Number
0 - 1 bar (0 - 15 psi)	1.5 bar (23 psi)	IPC - 01
0.2 - 1 bar (3 - 15 psi)	1.5 bar (23 psi)	IPC - 21
0.4 - 2 bar (6 - 30 psi)	2.5 bar (38 psi)	IPC - 42
0.2 - 3 bar (3 - 45 psi)	3.5 bar (53 psi)	IPC - 23
Other Pressure		On request

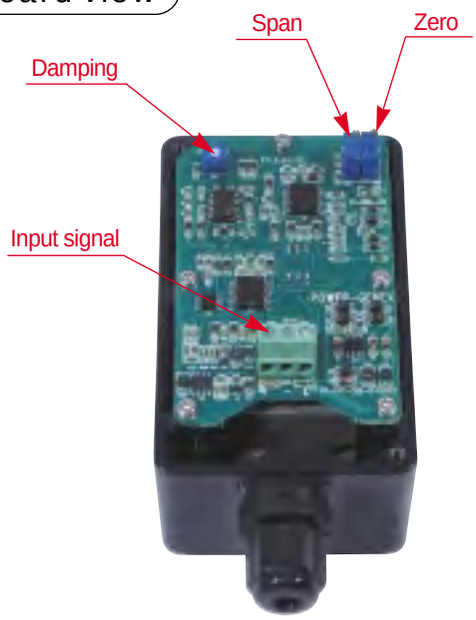
Applications



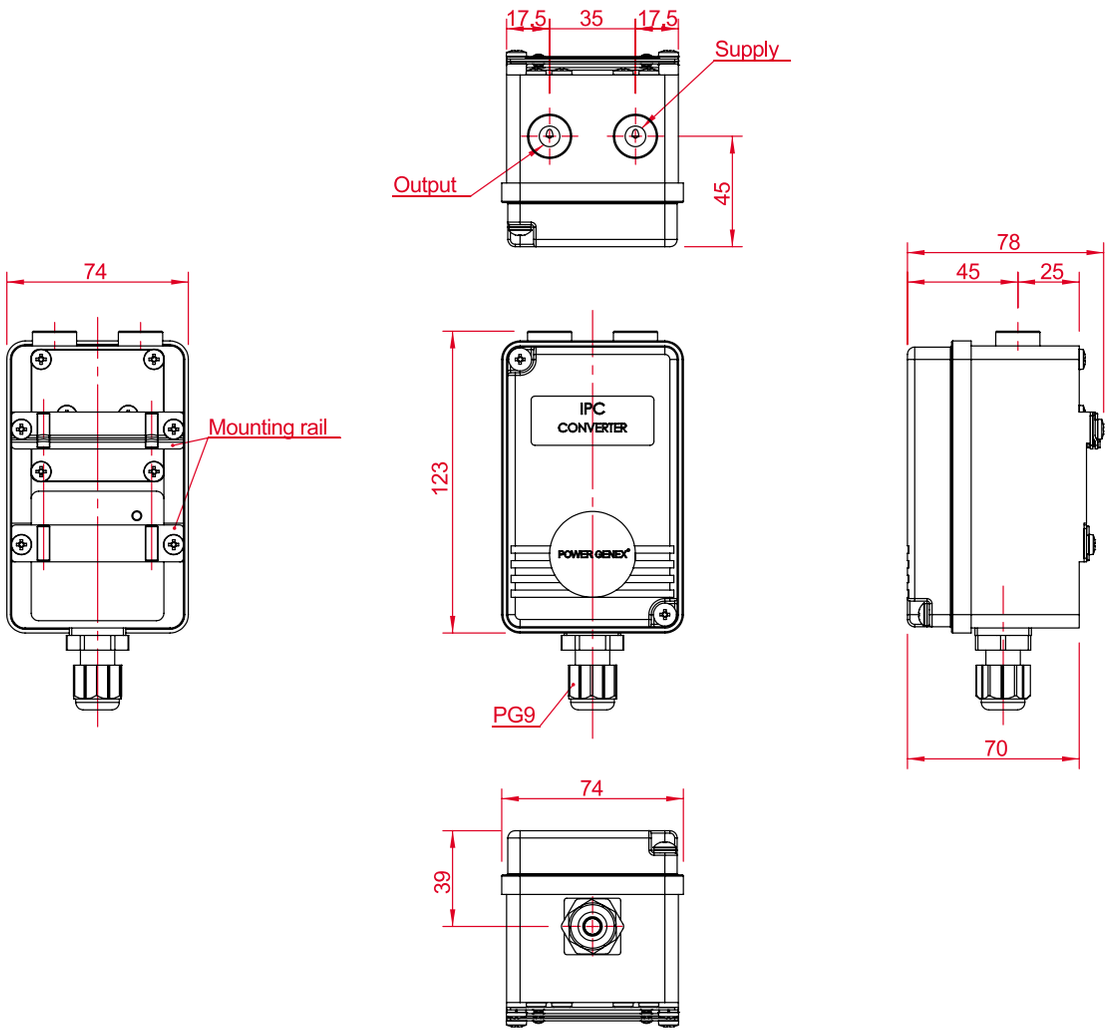
Ⓣ Temp. Transmitter Ⓟ Press. Transmitter Ⓛ Level Transmitter

IPC : I/P Converter, CV : Pneumatic Control Valve

Board view



Dimensions



Position Transmitter

PTP

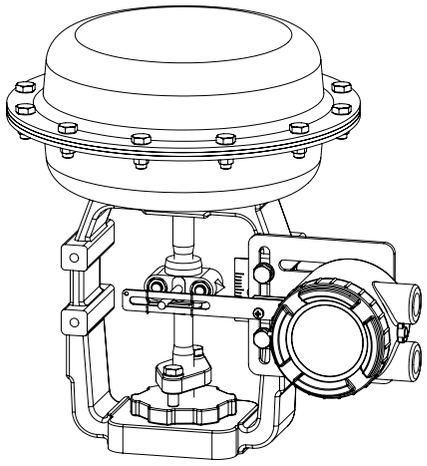
Explosion proof position transmitter for reliable valve position feedback with 4-20mA output signal

Features

- Rugged aluminum die-cast housing
- Optional 2 x SPDT limit switch or 2 x P&F proximity sensor NJ2-V3-N

Specifications

Model	PTP-L	PTP-R
Current Output Signal	4 - 20 mA, 2-wire	
Power Supply Range	12 - 30 VDC (24VDC recommendable)	
Span Adjustable Angle	10° - 45°	0° - 90°
Linearity	Within ± 1.0% F.S.	
Repeatability	Within ± 0.25% F.S.	
Hysteresis	Within 1.0% F.S.	
Operating Ambient Temperature	-20℃- +70℃	
Explosion Proof Class	Exd ⅡC T6 (KOSHA Cert. No. 2008-1053-Q1)	
Protection Class	IP66	
Electrical Connections	G 1/2 or NPT 1/2	
Weight	0.9 kg	



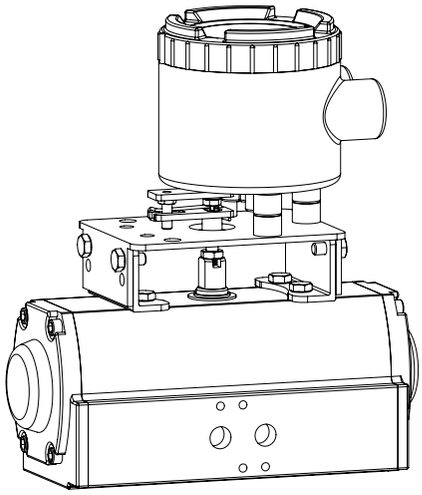
PTP-L Mounting to Globe Control Valve

How to Order

PTP — Operation — Limit Switches | Electrical Connections | Feedback Lever

Description	Code
Operation :	L : Linear type R : Rotary type
Limit Switches:	N : None S : 2 x SPDT mechanical limit switch P : 2 x P&F proximity sensor NJ2-V3-N
Electrical Connections:	1 : G 1/2 2 : NPT 1/2
Feedback Lever: (only for linear type)	A : Stroke 10 - 40mm B : Stroke 10 - 80mm C : Stroke 80 - 150mm

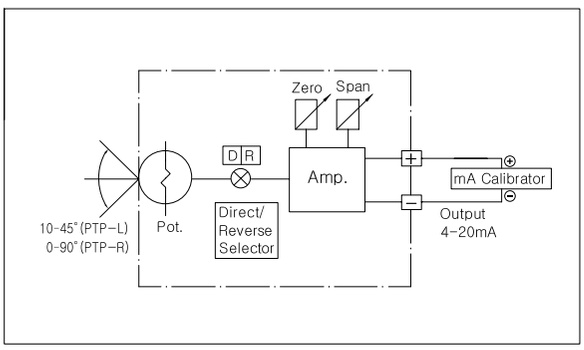
Ex) PTP-L-S1A (linear type, 2 x SPDT, G 1/2,10-40mm stroke)



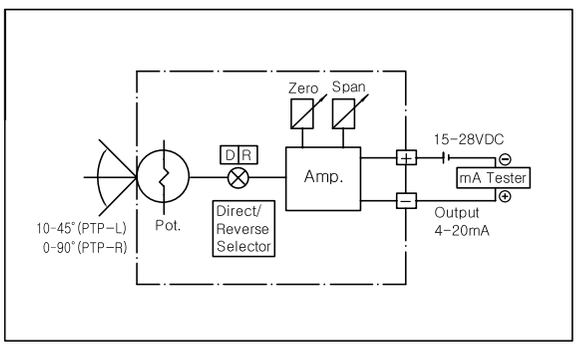
PTP-R Mounting to Pneumatic Rotary Actuator

Measuring 4-20mA Output Signal

1) with mA calibrator

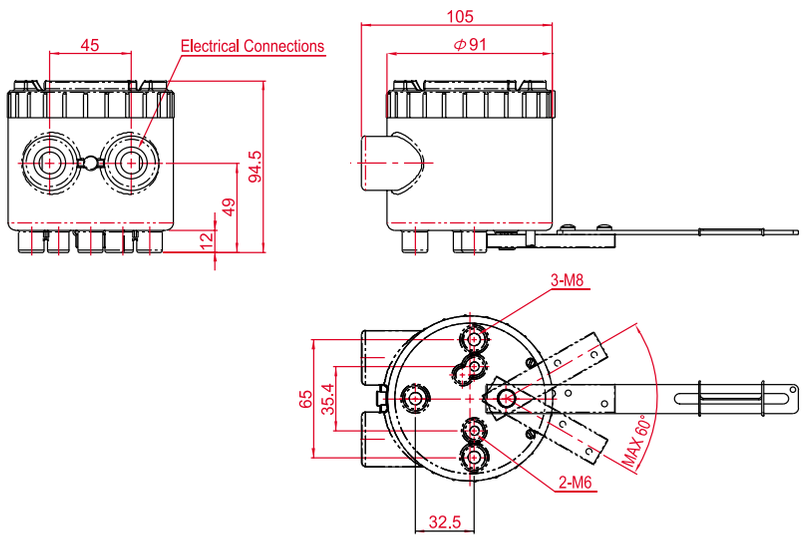


2) with multimeter

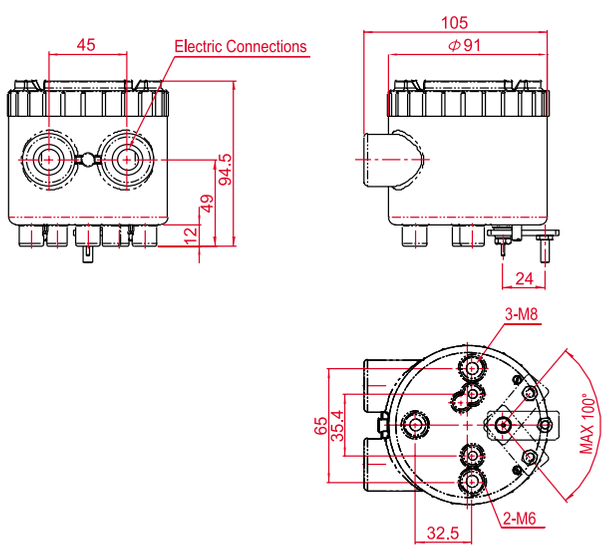


Dimensions

PTP-L (linear type)



PTP-R (rotary type)



Digital Position Transmitter
(With HART Communication)

SSPT

HART-enabled digital position transmitter for precise position measurements and feedback with optimized auto-calibration program

Features

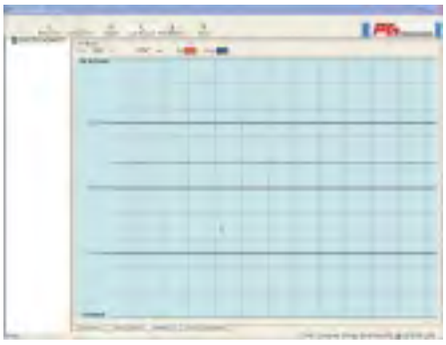
- Precise linearity with 0.2% F.S.
- Position calibration via local adjustment or remote calibration via hand-held terminal
- LCD indicator inside
- Diagnostics and configuration via HART communication
- Optional HART communication
- Optional 2 x alarm limit
- Applicable for machines, ship-building and power plant turbines

Specifications

Model	SSPT
Travel	Linear motion : 10 - 100m Rotary motion : 15°- 120° rotation angle
Current Output Signal	2-wire, 4 -20 mA with superimposed digital communication (optional HART protocol)
Reverse polarity protection	12 - 45VDC
Indicator	4 - digit LCD indicator
Protection Class	Weatherproof (IP65), intrinsically safe
Zero and Span Adjustments	Local adjustment or digital communication
Temperature Limits	Ambient : -20℃ - +85℃ Digital display : -10℃ - +80℃
Update Time	Approx. 2ms
Humidity Limits	0 - 100% RH
Output Action	Direct or reverse
Linearity	Within ± 0.2%
Hysteresis	Within 0.2%
Sensitivity	Within ± 0.2%
Repeatability	Within 0.5%
Resolution	Within 0.1%
Electrical Connections	M20
Weight	2.5 kg

Power-Genex HART Master Software

< Device Information >



< Feedback Graph >

SSPT

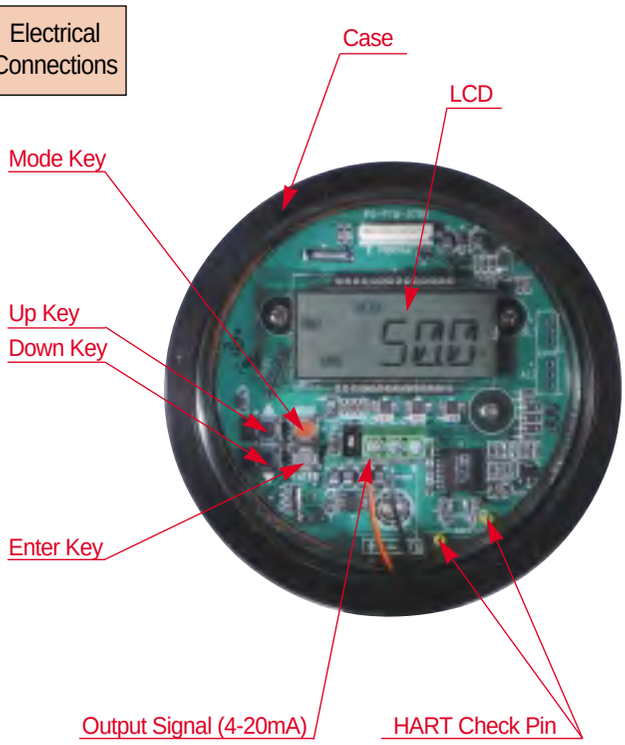
Digital Position Transmitter
(With HART Communication)

How to Order

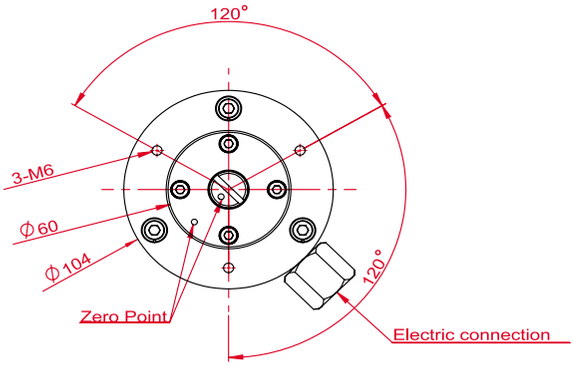
SSPT — | Protection Class | HART Communi-cation | Alarm Limits | Electrical Connections |

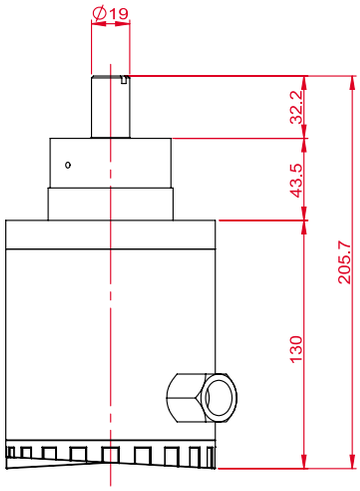
Description	Code
Protection Class :	I : Intrinsic safety (Ex ia IIC T6) W : Weatherproof to IP65
HART Communication :	H : HART communication N : None
Alarm Limits :	L : 2 x alarm limit N : None
Electrical Connections :	1 : M20 x 1.5

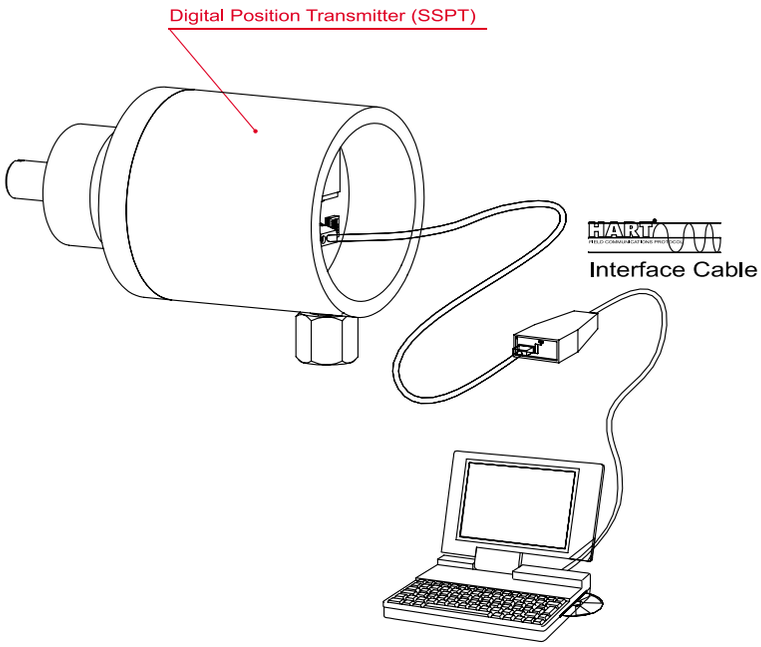
Board View



Dimensions







ESV-S
(Single Coil)

Explosion proof solenoid valve for a confident control in rough working environments

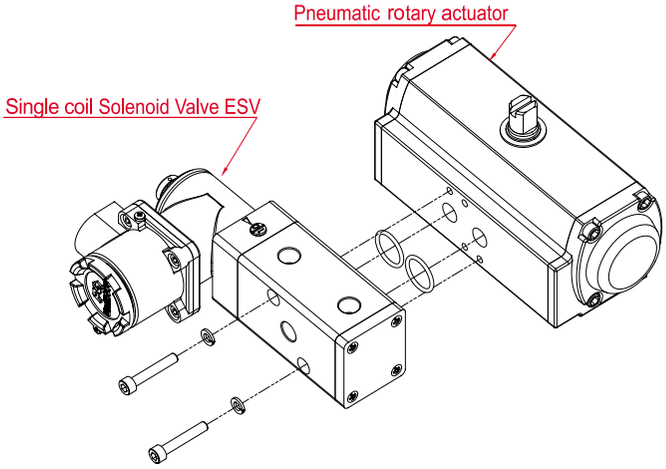
Features

- Rugged aluminum die-cast housing
- Convertible from 5/2 way to 3/2 way
- Rotatable valve head for optimal mounting
- Direct NAMUR mounting or screw mounting

Specifications

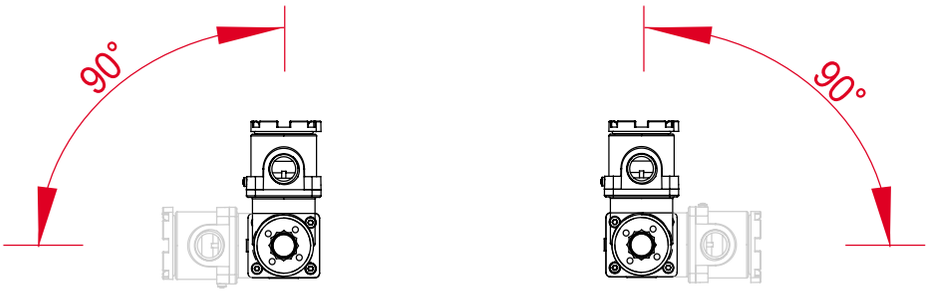
Model	ESV-S
Operating Air Pressure	1.5 - 10 kgf/㎠
Air Supply (Max.)	15 kgf/㎠
Operating Voltage : Current	AC 110V : 55 mA AC 220V : 17 mA DC 24V : 138 mA
Voltage Tolerance	±10%
Frequency	50Hz / 60Hz
Explosion Proof Class	Exd ⅡC T6 (KOSHA Cert. No. 2008-1052-Q1)
Operating Ambient Temperature	-20℃ - +60℃
Flow Capacity (Cv)	0.9
Mounting Configuration	NAMUR or screw interface
Pneumatic Connections	Rc 1/4 or NPT 1/4
Electrical Connection	G 1/2 or NPT 1/2
Coil Insulation Grade	Class F
Duty Cycle	100%
Weight	0.9 kg

Mounting



Rotatable Valve Head

The ESV valve head can be rotated by 90° to the right or to the left for an optimal mounting as shown below



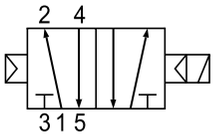
How to Order

ESV	—	S	—	Operating Voltage	Connections (Pneumatic / Electrical)

Description	Code
Operating Voltage:	A220 : AC 220V A110 : AC 110V D24 : DC 24V
Connections: (pneumatic - electrical)	P : Rc 1/4 - G 1/2 N : NPT 1/4 - NPT 1/2

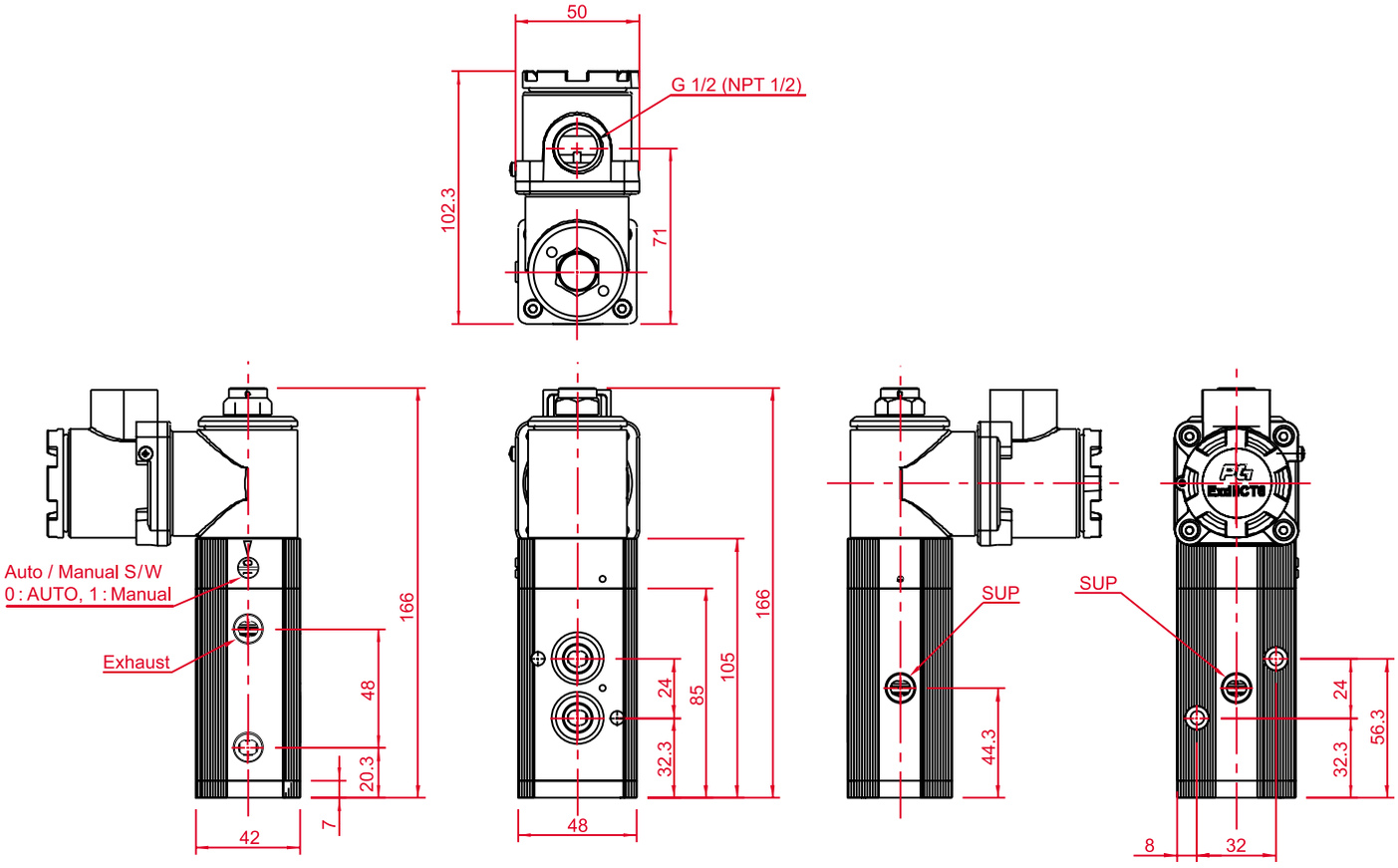
Ex) ESV-S-D24P (Single Coil, 24VDC, Rc 1/4 - G 1/2)

Symbol of Operation



Dimensions

Single Coil Type



ESV-D
(Dual Coil)

Explosion proof solenoid valve for a confident control in rough working environments

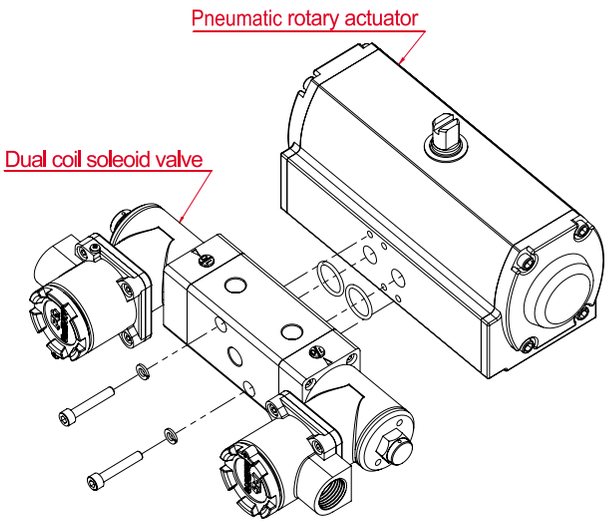
Features

- Rugged aluminum die-cast housing
- Convertible from 5/2 way to 3/2 way
- Rotatable valve head for optimal mounting
- Direct NAMUR mounting or screw mounting

Specifications

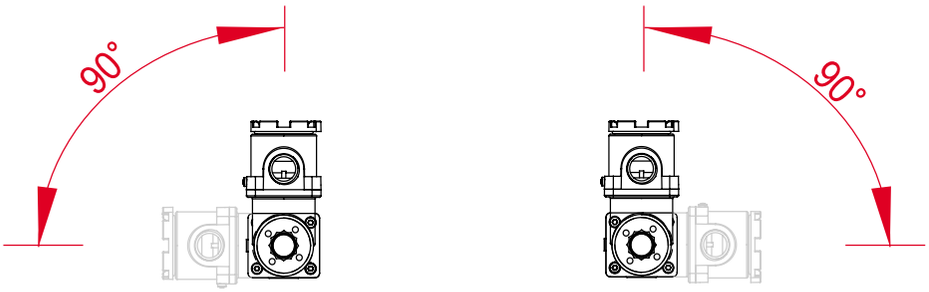
Model	ESV-D
Operating Air Pressure	1.5 - 10 kgf/㎠
Air Supply (Max.)	15 kgf/㎠
Operating Voltage : Current	AC 110V : 55 mA AC 220V : 17 mA DC 24V : 138 mA
Voltage Tolerance	±10%
Frequency	50Hz / 60Hz
Explosion Proof Class	Exd ⅡC T6 (KOSHA Cert. No. 2008-1052-Q1)
Operating Ambient Temperature	-20℃ - +60℃
Flow Capacity (Cv)	0.9
Mounting Configuration	NAMUR or screw interface
Pneumatic Connections	Rc 1/4 or NPT 1/4
Electrical Connection	G 1/2 or NPT 1/2
Coil Insulation Grade	Class F
Duty Cycle	100%
Weight	1.4 kg

Mounting



Rotatable Valve Head

The ESV valve head can be rotated by 90° to the right or to the left for an optimal mounting as shown below



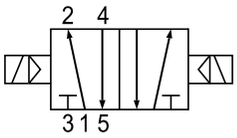
How to Order

ESV	–	D	–	Operating Voltage	Connections (Pneumatic / Electrical)

Description	Code
Operating Voltage:	A220 : AC 220V A110 : AC 110V D24 : DC 24V
Connections: (pneumatic - electrical)	P : Rc 1/4 - G 1/2 N : NPT 1/4 - NPT 1/2

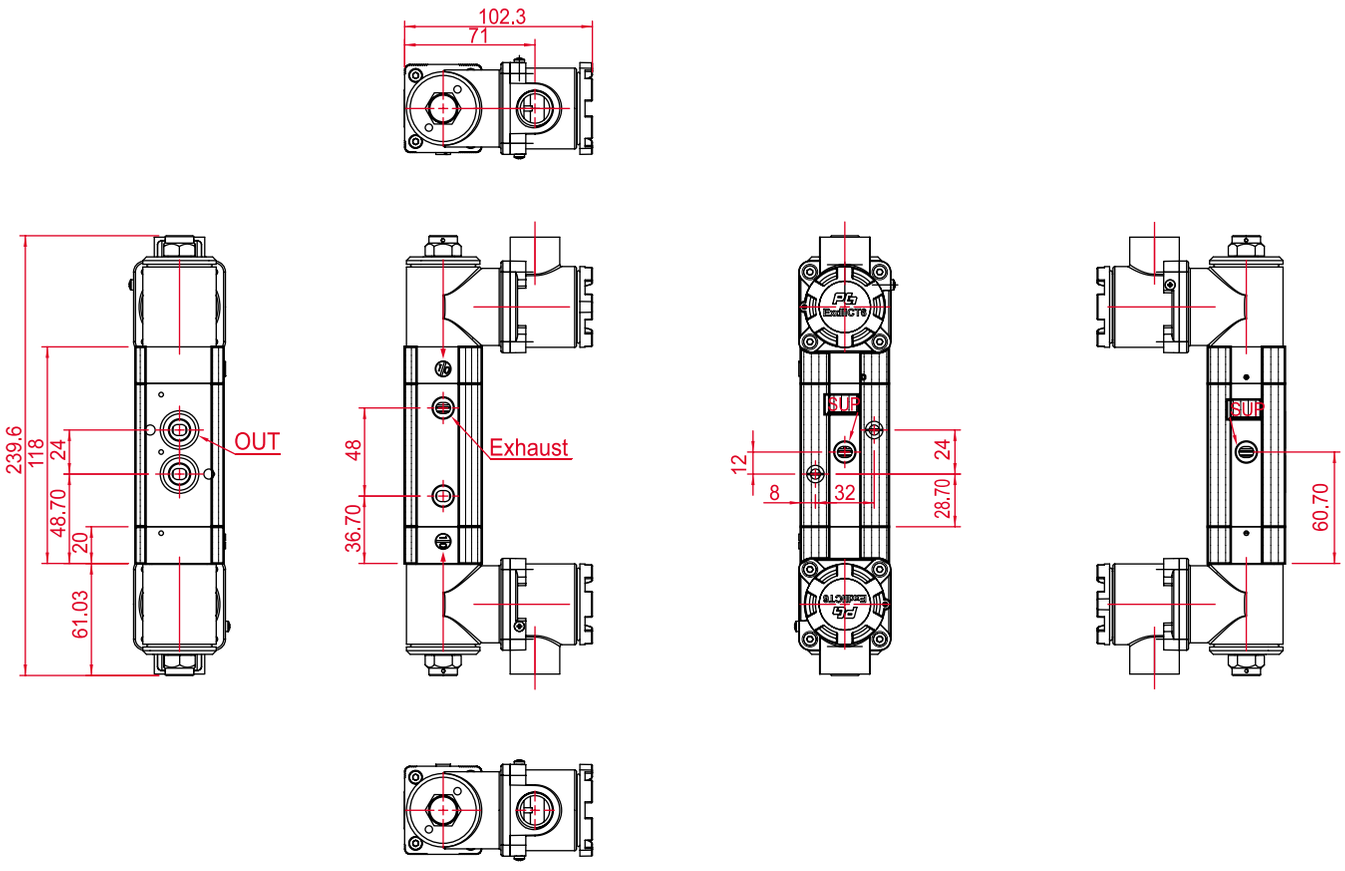
Ex) ESV-D-D24P (Dual Coil, 24VDC, Rc 1/4 - G 1/2)

Symbol of Operation



Dimensions

Dual Coil Type



Air Filter Regulator

FR

Valve air unit essential to provide clean and dry supply air to valve positioners, solenoid valves and pneumatic actuators

Features

- Rugged aluminum die-cast housing
- Optional stainless steel 304 or 316 housing
- Stable setting pressure
- High capacity with 5 micron filter
- Self-relief function to balance output and setting pressures
- High flow capacity

Specifications

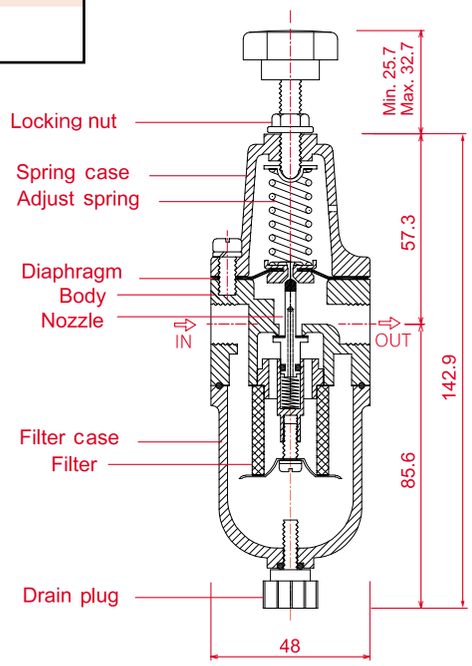
Model	FR-10	FR-20	FR-30
Port Size	Rc 1/4 or NPT 1/4		
Fluid	Air		
Output Pressure Range	0 - 8 bar (120 psi)		
Max. Supply Pressure	15 bar (225 psi)		
Operating and Fluid Temperature	Max. +70℃ (no freezing)		
Supply Air	Filtered compressed, dry and non-oiled air (up to 5 micron)		
Gauge Port Size	Rc 1/8		
Filteration	5 micon		
Housing Material	Aluminum die-cast	Stainless steel 304	Stainless steel 316
Pressure Gauge Material	Stainless steel		
Weight	0.5 kg	1 kg	1 kg

FR - 20 & 30

How to Order

FR [Body Material] — [Port Size] [Pressure Gauge] [Body Color] [Mounting Bracket]

Description	Code
Operation :	10: Aluminum die-cast 20: Stainless steel 304 30: Stainless steel 316
Port Size :	R: Rc 1/4 N : NPT 1/4
Pressure Gauge :	N: None 1: 6 bar (90 psi) 2: 10 bar (150 psi)
Body Color :	G: Gray (standard) B: Black S : None (for FR-20 & 30)
Mounting Bracket :	N: None M : L-type



Air Volume Booster

AVB

Strong valve activator to increase actuator speed or decrease loss of supply air coming from a distance by supplying a larger flow capacity

Features

- Rugged aluminum die-cast housing
- High flow capacity

Specifications

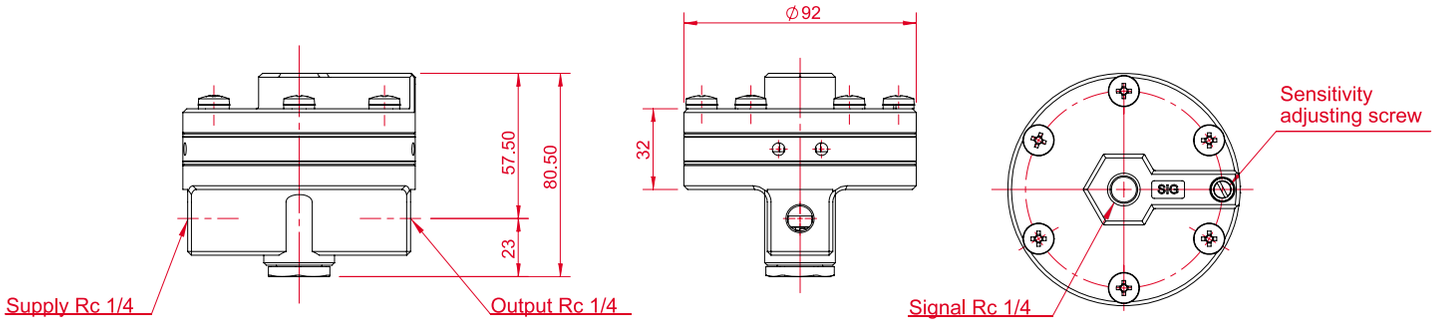
Model	AVB
Max. Supply Pressure	10 kgf / cm² (150 psi)
Max. Output Pressure	10 kgf / cm² (150 psi)
Pressure Ratio In / Out	1 : 1
Flow Capacity (Cv)	1.25
In / Output Port Size	Rc 1/4 or NPT 1/4
Signal Port Size	Rc 1/4 or NPT 1/4
Operating Temperature	-20 - +70℃
Body Material	Aluminum die-cast
Weight	0.6 kg

How to Order

AVB– [Port Size] [Operating Temp.]

Description	Code
Port Size : In - Output	1 : Rc 1/4 - Rc 1/4 2 : Rc 3/8 - Rc 3/8 3 : NPT 1/4 - NPT 1/4 4 : NPT 3/8 - NPT 3/8
Operating Temperature :	1 : -20 - +70℃ (standard) 2 : -20 - +120℃ (high temp.)

Dimensions



Valve Monitoring Indicator

LSB

Robust valve position monitor with good recognizable dome indicator and various switches and feedback options

Features

- Rugged aluminum die-cast housing
- NAMUR mounting
- Optional stainless steel housing (only for LSB-500)

Specifications

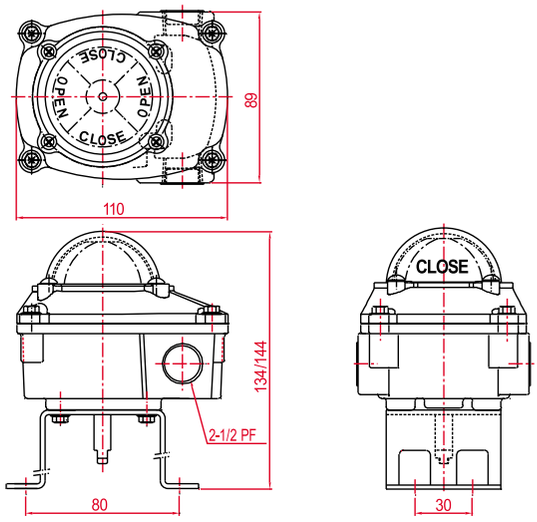
LSB-100

	Standard	Options
Enclosure	Weather proof IP67, O-ring sealed	IP 68
Outside coating	Epoxy-Polyester against corrosion	Nylon coating
Ambient temperature	-20°C ~ +80°C	Higher (~ +100°C) and lower (-40°C ~) temperature
Electrical connections	2 - PF1/2"	NPT1/2", M20x1.5, PG13.5
Terminal block	8 terminal strips (6 for switches, 2 for solenoid valve power)	
Position indicator	Dome type 0°~90°	3 way L-port, T-port
Mounting bracket	Stainless steel acc. to VDI/VDE3845, NAMUR type SS1 or SS2	SS3, MT1
Switches (sensors)	2-SPDT mechanical switch(Form C)	Proximity sensors (P & F, Autonics), Magnetic sensors
Body / Cover material	Aluminum die-cast	

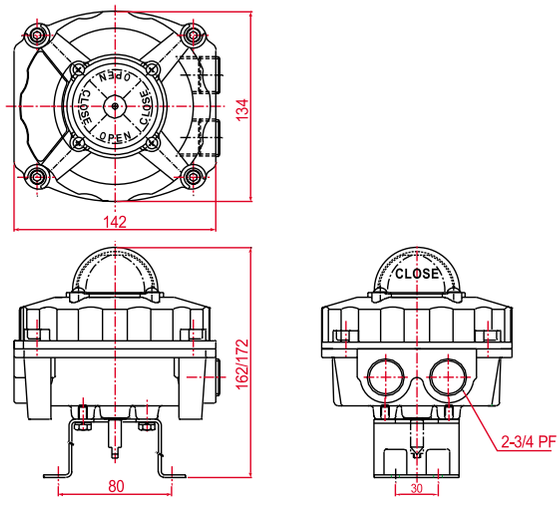
LSB-300 & LSB-500

	Standard	Options
Enclosure	Explosion proof Ex d IIC T6, IP67, O-ring sealed	IP 68
Outside coating	Epoxy-Polyester outside against corrosion	Nylon coating
Ambient temperature	-20°C ~ +80°C	Higher (~ 100°C) and lower (-40°C ~) temperature
Cable entries	2 - PF3/4"	NPT3/4", M25x1.5, M20x1.5
Terminal block	8 terminal strips (6 for switches, 2 for solenoid valve power)	
Position indicator	Dome type 0°~90°	3 way L-port, T-port
Mounting bracket	Stainless steel acc. to VDI/VDE3845 NAMUR type SS1 or SS2	SS3, MT1
Switches (sensors)	2-SPDT mechanical switch(Form C)	DPDT Switches Proximity sensors (P & F, Autonics) Magnetic sensors Position transmitter (output 0~1Kohm, 4-20mA DC)
Body / Cover material	Aluminum die-cast (LSB-300)	Stainless steel 316L (LSB-500)

Dimensions



LSB-100



LSB-300 & LSB-500

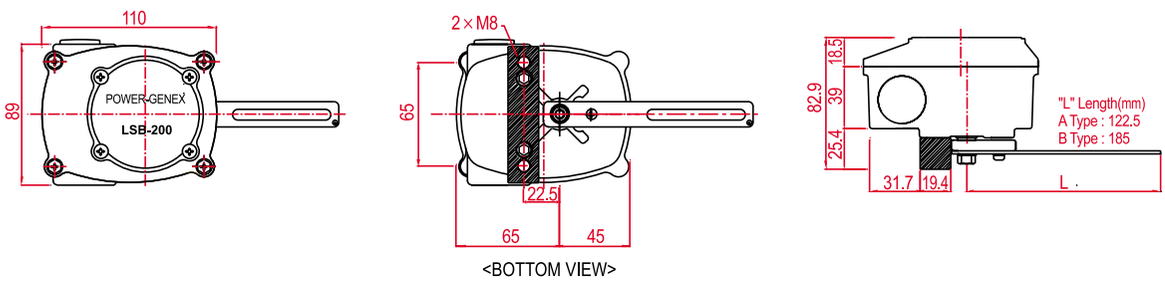
How to Order

LSB — [Explosion proof class] [Switch Type] [Switch / Feedback Option] — [Electrical Connections] [Indicator Option] [Mounting Bracket]

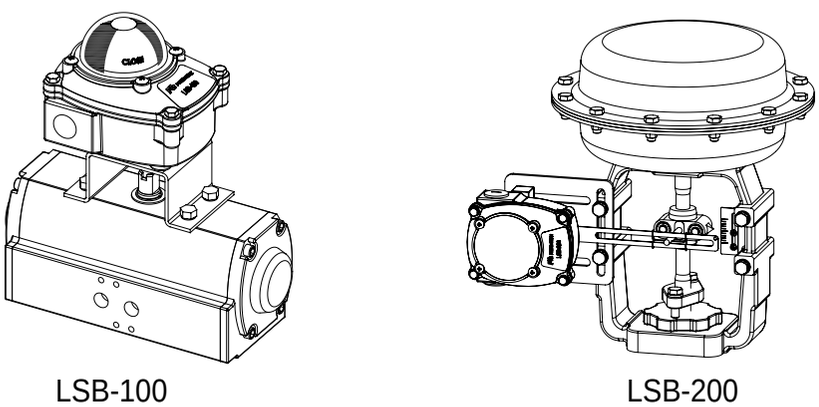
Description	Code
Explosion proof class:	1 : Weatherproof 2 : Linear type weatherproof 3 : Flameproof (Exd ⅡC T6)
Switch Type:	0 : Mechanical switches 1 : Proximity sensors
Switch / Feedback Option: - Mechanical switches and feedback	0 : 2 x SPDT 1 : 3 x SPDT 2 : 4 x SPDT 3 : 2 x SPST 4 : 2 x DPDT 5 : 2 x SPDT + 0-1kohm output 6 : 2 x SPDT + 4-20 mA output 7 : 2 x OMRON SPDT VX-012-1A3 gold-plated
- Proximity sensors	0 : AUTONICS PS17-5DNU 1 : P&F NJ2-V3-N 2 : P&F NJ4-12GK-SN 3 : P&F NBB2-V3-E2

Description	Code
Electrical Connections: - LSB-100 & 200	A : PF 1/2 (standard) B : NPT 1/2 C : M20 x 1.5 D : PG13.5
- LSB-300 & 500	E : PF 3/4 (standard) F : NPT 3/4 G : M25 x 1.5 C : M20 x 1.5
Indicator Option: (not available with LSB-200)	N : 2-way (standard) L : 3-way L-port T : 3-way T-port
Mounting Bracket: (not available with LSB-200)	0 : None 1 : 80x30x20 2 : 80x30x30 3 : 130x30x30 4 : Multi-size bracket

Dimensions (LSB-200)



Mounting



LSB-100 LSB-200

MINI Electric Actuator

PGI 0020

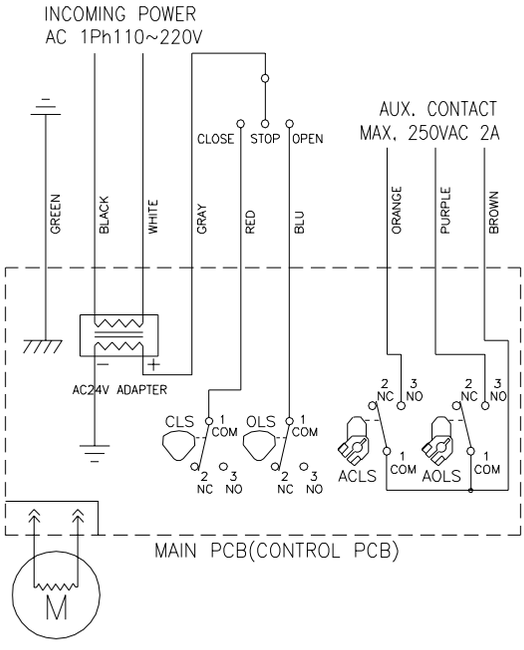
Features

- Ideally designed for operation of 1〞ball valve
- High efficiency and durability
- Free voltage (87~270 VAC, 1 phase) and optional 24V AC / DC
- Compact and light

Specifications

Model			PGI 0020
Rate Torque (Nm)			25
Main Power			Free voltage (110 / 220VAC / 1Ph / 50 / 60Hz) 24V AC / DC
Operating Time	50 Hz		11
	60 Hz		
Rated Current	24V	AC	0.60
		DC	0.55
	1Phase	110	0.16
		220	0.08
Motor Insulation Class			E
Enclosure			IP66, O-ring sealed
Duty Cycle (on-off)			S2 : 50%
Motor			DC motor
Limit Switches			1 ea for Open & Close (5A, 250VAC)
Extra Limit Switches			Relays for Open & Close (5A, 250VAC)
Mounting			ISO F03, 9 X 9 - DP12 square female shaft
Travel Angle			90° ± 5°
Electrical Connection			1-PG11 cable gland with wires 30cm long
Surface Protection			Polyester coating
Operating Temperature			-10℃ - +65℃
Humidity (R.H)			90%
Weight			1 kg

Wiring



Angle Seat Valve

PG3

Globe valve equipped with angle seat body and flat plug with soft seal

Features

- Spring return closed or open, double-acting
- Stainless steel valve body standard (316SS)
- High flow rate
- Optical visual indication
- Low control air consumption due to minimized volume in the actuator
- Optional mechanical switches, proximity sensors, solenoid valve, valve positioner, stroke limiter and manual override device
- Proportional plug on request

Applications

– Water, air, steam up to 180 ℃, oils, corrosive media, neutral gases and liquids, textile dyeing and drying, ink and paint dispensing

Specifications

1) Valve Body

Size		DN15, DN20, DN25, DN32, DN40, DN50
End Connections		Female thread, socket welding, flange type (ANSI, DIN, JIS)
Nominal Pressure		PN16
Wetted Material	Body	Stainless steel 316
	Plug & Steam	Stainless steel 316
	Plug Sealing	PTFE
	Packing	PTFE
Leakage Class		ANSI Class VI
Media Viscosity		Max. 600 mm2/s
Fluid Temperature		-10 ~ +180 ℃ (steam up to +180 ℃)

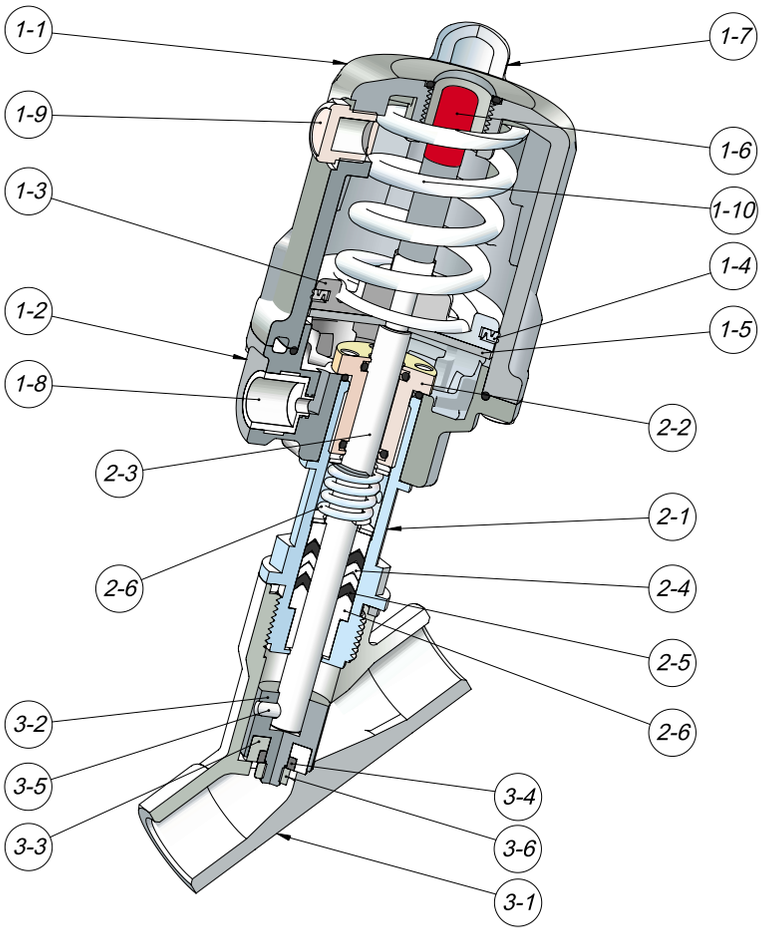
With Limit Switch Box

2) Actuator

Type	Pneumatic piston actuator Normally close, normally open, double acting
Size	50mm, 63mm, 80mm, 100mm
Material	PA , PPS
Piston Seal Material	Viton
Pilot Port	G 1/4
Control Media	Air, natural gas
Control Pressure	4 ~ 10 bar
Rotation	360°
Ambient Temp.	PA : -10 ℃ ~ + 60 ℃ PPS : +5 ℃ ~ + 130 ℃

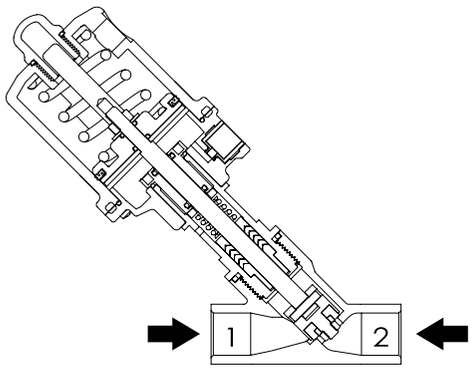
Internal View of Limit Switch Box

Internal View



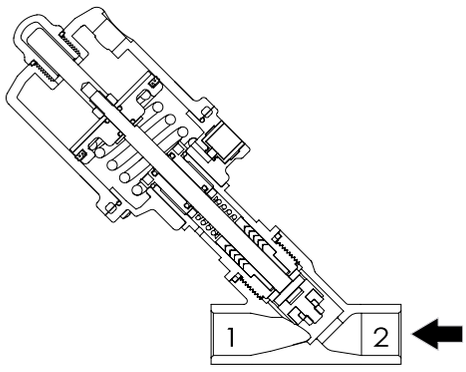
Part No.	Description	Material	Q'ty	
1-1	Auctuator case (UP)	PA & PPS	1	
1-2	Auctuator case (Down)	PA & PPS	1	
1-3	Piston	PA & PPS	1	
1-4	Piston seal	Viton	1	
1-5	Piston washer	316SS	1	
1-6	Indicator rod	AL	1	
1-7	indicator cap	PC	1	
1-8	Air inlet	Brass	1	
1-9	Noise filter	Brass	1	
1-10	Return Spring	SPS4	1	
2-1	Stuffing box	316SS	1	
2-2	Stuffing box joint screw	Brass	1	
2-3	Valve stem	316SS	1	
2-4	V-packing (1)	PTFE	2	
2-5	V-packing (2)	Viton	2	
2-6	Packing Spring	STS304	1	
3-1	Valve body	CF8M(316SS)	1	
3-2	Plug	316SS	1	
3-3	Plug seal	PTFE	1	
3-4	Plug washer	316SS	1	
3-5	Plug ping	316SS	1	
3-6	Lock Nut	316SS	1	

Normally Close (NC) 1 → 2 or 2 → 1



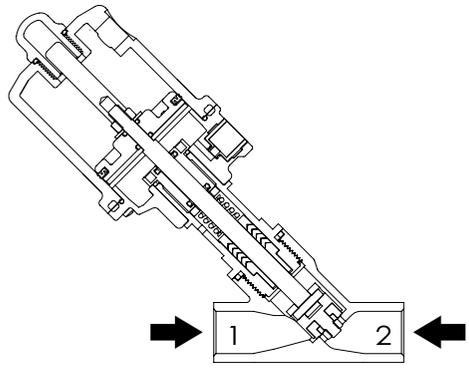
Valve size		Flow (Cv)	Operating pressure differential (bar)	Control Pressure (bar)		Actuator size (mm)	Weight (kg)	Part No.
DN	NPT		max	min	max			
15	1/2"	5.4	16	4.0	10	50	0.9	PG3-15XC5XX
20	3/4"	11.0	16	4.0	10	50	1.1	PG3-20XC5XX
25	1"	20.7	12	4.0	10	63	1.7	PG3-25XC6XX
32	1-1/4"	25	7	4.0	10	63	2.3	PG3-32XC6XX
32	1-1/4"	25	12	4.0	10	80	2.9	PG3-32XC8XX
40	1-1/2"	30.7	10	4.0	10	80	3.3	PG3-40XC8XX
40	1-1/2"	30.7	14	4.0	10	100	4.4	PG3-40XC9XX
50	2"	55.3	5	4.0	10	80	4.5	PG3-50XC8XX
50	2"	55.3	9	4.0	10	100	5.8	PG3-50XC9XX

Normally Open (NO) 2 → 1



Valve size		Flow (Cv)	Operating pressure differential (bar)	Control Pressure (bar)		Actuator size (mm)	Weight (kg)	Part No.
DN	NPT		max	min	max			
15	1/2"	5.4	16	4.0	10	50	0.9	PG3-15XO5XX
20	3/4"	11.0	16	4.0	10	50	1.1	PG3-20XO5XX
25	1"	20.7	15	4.0	10	63	1.7	PG3-25XO6XX
32	1-1/4"	25	10	4.0	10	63	2.3	PG3-32XO6XX
32	1-1/4"	25	14	4.0	10	80	2.9	PG3-32XO8XX
40	1-1/2"	30.7	10	4.0	10	80	3.3	PG3-40XO8XX
40	1-1/2"	30.7	15	4.0	10	100	4.4	PG3-40XO9XX
50	2"	55.3	8	4.0	10	80	4.5	PG3-50XO8XX
50	2"	55.3	10	4.0	10	100	5.8	PG3-50XO9XX

Double Acting, Bo-Direction 1 → 2, 2 → 1



Valve size		Flow (Cv)	Operating pressure differential (bar)	Control Pressure (bar)		Actuator size (mm)	Weight (kg)	Part No.
DN	NPT		max	min	max			
15	1/2"	5.4	16	4.0	10	50	0.8	PG3-15XD5XX
20	3/4"	11.0	16	4.0	10	50	1.0	PG3-20XD5XX
25	1"	20.7	16	4.5	10	63	1.5	PG3-25XD6XX
32	1-1/4"	25	12	4.5	10	63	2.1	PG3-32XD6XX
32	1-1/4"	25	16	4.5	10	80	2.4	PG3-32XD8XX
40	1-1/2"	30.7	12	4.5	10	80	2.8	PG3-40XD8XX
40	1-1/2"	30.7	16	4.5	10	100	3.1	PG3-40XD9XX
50	2"	55.3	9	4.5	10	80	4.0	PG3-50XD8XX
50	2"	55.3	12	4.5	10	100	4.5	PG3-50XD9XX

How to Order

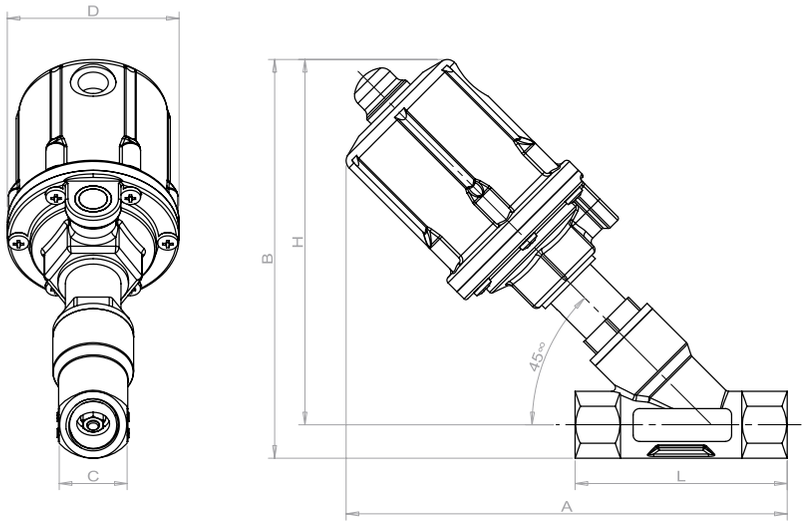
PG3 — Valve Size | Body Connections — Actuator Type | Actuator Size | Actuator Material — Options

* Body material: 3 = CF8M (316SS) , Other material on request

Description	Code
Valve Size:	15 = 1/2" (DN15) 20 = 3/4" (DN20) 25 = 1" (DN25) 32 = 1-1/4" (DN32) 40 = 1-1/2" (DN40) 50 = 2" (DN50)
Body Connections:	G = G threaded(standard) N = NPT threaded S = Socket welded F = Flange type (ANSI, DIN, JIS)
Actuator Type:	C = Normally close O = Normally open D = Double acting

Description	Code
Actuator Size:	5 = 50mm 6 = 63mm 8 = 80mm 9 = 100mm
Actuator Material:	A = PA : -10 ℃ ~ + 60 ℃ (standard) S = PPS : +5 ℃ ~ + 130 ℃
Options:	N = Without accessory MS = Micro switches (open and close) PS = Proximity sensors (P&F NJ2) SV = Solenoid valve EP = Positioner (E/P or P/P) SL = Stroke limiter MO = Manual override device

Dimensions



Valve size		Actuator mm	A	B	C	D	H	L	Part No.
DN	NPT								
15	1/2"	ø50	174.5	158	27	ø68	144.5	84	PG3-15XX5XX
20	3/4"	ø50	182	163.5	34	ø68	146.5	94	PG3-20XX5XX
25	1"	ø63	211	192.5	40	ø84	172.5	104	PG3-25XX6XX
32	1-1/4"	ø63	225	211.5	49	ø84	187	120	PG3-32XX6XX
32	1-1/4"	ø80	247.5	234	49	ø105	209.5	120	PG3-32XX8XX
40	1-1/2"	ø80	252	238.5	55	ø105	211	130	PG3-40XX8XX
40	1-1/2"	ø100	294.5	281	55	ø126	253.5	130	PG3-40XX9XX
50	2"	ø80	275	267	70	ø105	232	150	PG3-50XX8XX
50	2"	ø100	317	309	70	ø126	274	150	PG3-50XX9XX

Unit Conversion Table

Length

From To⟶	mm	cm	m	km	in	ft	yd	mile
mm	1	0.1	0.001	-	0.03937	-	-	-
cm	10	1	0.01	-	0.393701	0.032808	-	-
m	1000	100	1	0.001	39.3701	3.28084	1.09361	-
km	-	-	1000	1	-	3280.84	1093.61	0.621371
in	25.4	2.54	-	-	1	0.083333	0.027778	-
ft	304.8	30.48	0.3048	-	12	1	0.33333	-
yd	914.4	91.44	0.9144	0.000914	36	3	1	0.000568
mile	-	-	1609.344	1.609344	-	5280	1760	1

Tip) SI Unit : mm, cm, m, km

Square Measure

From To⟶	cm^2	m^2	km^2	in^2	ft^2	yd^2	acre	$mile^2$
cm^2	1	0.0001	-	0.155	0.001076	0.00012	-	-
m^2	10000	1	0.000001	1550	10.7639	1.19599	0.000247	-
km^2	-	1000000	1	-	-	-	247.105	0.386102
in^2	6.4516	0.000645	-	1	0.006944	0.000772	-	-
ft^2	929.03	0.092903	-	144	1	0.111111	0.000023	-
yd^2	8361.27	0.836127	-	1296	9	1	0.000207	-
acre	-	4046.86	0.004047	-	43560	4840	1	0.001562
$mile^2$	-	-	2.589987	-	-	-	640	1

Tip) SI Unit : cm^2, m^2, km^2

Weight

From To⟶	kg	tonne	lb	UK cwt	UK ton	UK cwt	UK ton
kg	1	0.001	2.20462	0.019684	0.000984	0.022046	0.001102
tonne	1000	1	2204.62	19.6841	0.984207	22.0462	1.10231
lb	0.453592	0.000454	1	0.008929	0.000446	0.01	0.0005
UK cwt	50.8023	0.050802	112	1	0.05	1.12	0.056
UK ton	1016.05	1.01605	2240	20	1	22.4	1.12
US cwt	45.3592	0.045359	100	0.892857	0.044643	1	0.05
US ton	907.185	0.907185	2000	17.8571	0.892857	20	1

Tip) SI Unit : kg, t

Cubic Capacity

From To⟶	cm^3	m^3	litre(dm^3)	in^3	ft^3	yd^3	UK pint	UK gall	UK pint	UK gall
cm^3	1	-	0.001	0.061024	0.0000353	-	0.00176	0.00022	0.002113	0.000264
m^3	-	1	1000	61023.7	35.3147	1.30795	1759.75	219.969	2113.38	264.172
litre(dm^3)	1000	0.001	1	61.0237	0.035315	0.001308	1.75975	0.219969	2.11338	0.264172
in^3	16.3871	0.000016	0.016387	1	0.000579	0.0000214	0.028837	0.003605	0.034632	0.004329
ft^3	28316.8	0.028317	28.3168	1728	1	0.037037	49.8307	6.22883	59.8442	7.48052
yd^3	764555	0.764555	764.555	46656	27	1	1345.429	168.1784	1615.793	201.974
UK pint	568.261	0.0005683	0.568261	34.6774	0.020068	0.000743	1	0.125	1.20095	0.150119
UK gall	4546.09	0.0045461	4.54609	277.42	0.160544	0.005946	8	1	9.6076	1.20095
UK pint	473.176	0.0004732	0.473176	28.875	0.01671	0.000619	0.832674	0.104084	1	0.125
UK gall	3785.41	0.0037854	3.785411	231	0.133681	0.004951	6.661392	0.832674	8	1

Tip) SI Unit : cm^3, m^3, L

Pressure

From To⟶	atmos	mm Hg	bar	Pa	in H_2O	in Hg	psi	kg/cm^2
atmos	1	760	1.0132	101325	406.781	29.9213	14.6959	1.033
mm Hg	0.0013158	1	0.001333	133.322	0.53524	0.03937	0.019337	0.00136
bar	0.9869	750.062	1	100000	401.463	29.53	14.504	1.01957
Pa	0.0000099	0.007501	0.00001	1	0.004015	0.000295	0.000145	0.00001
in H_2O	0.0024583	1.86832	0.002491	249.089	1	0.073556	0.036127	0.00254
in Hg	0.033421	25.4	0.033864	3386.391	3.5951	1	0.491154	0.003452
psi	0.068046	51.7149	0.068948	6894.76	27.6799	2.03602	1	0.07029
kg/cm^2	0.968	735.72	0.9808	98088	393.786	28.965	14.226	1

Tip) Pa = 1 N/m^2 1 atmos = 1,033 kg/cm^2 SI Unit : bar, Pa

Unit Conversion Table

Cubic Capacity of Running Fluid

From To⟶	L/s(dm³/s)	L/h	m³/s	m³/h	cfm	ft³/h	UK gall/m	UK gall/h	US gall/m	US gall/h
L/s(dm³/s)	1	3600	0.001	3.6	2.118882	127.133	13.19814	791.8884	15.85032	951.019
L/h	0.000278	1	-	0.001	0.000588	0.035315	0.003666	0.219969	0.004403	0.264172
m³/s	1000	3600000	1	3600	2118.88	127133	13198.1	791889	1585	0.3951019
m³/h	0.277778	1000	0.000278	1	0.588578	35.3147	3.66615	219.969	4.402863	264.1718
cfm	0.471947	1699.017	0.000472	1.699017	1	60	6.228833	373.73	7.480517	448.831
ft³/h	0.007866	28.3168	-	0.028317	0.016667	1	0.103814	6.228833	0.124675	7.480517
UK gall/m	0.075768	272766	0.0000758	0.272766	0.160544	9.63262	1	60	1.20095	72.057
UK gall/h	0.001263	4.54609	-	0.004546	0.002676	0.160544	0.016667	1	0.020016	1.20095
US gall/m	0.06309	227.125	0.0000631	0.227125	0.133681	8.020832	0.832674	49.96045	1	60
US gall/h	0.001052	3.785411	-	0.003785	0.002228	0.133681	0.013878	0.832674	0.016667	1

Tip) SI Unit : L/s, L/h, m³/s, m³/h

Force

From To⟶	Btu/h	W	kcal/h	kW
Btu/h	1	0.293071	0.251996	0.000293
W	3.41214	1	0.859845	0.001
kcal/h	3.96832	1.163	1	0.001163
kW	3412.14	1000	859.845	1

Tip) SI Unit : W, kW

Energy

From To⟶	Btu	Therm	J	kJ	Cal
Btu	1	0.00001	1055.06	1.055	251.996
Therm	100000	1	-	105.5	25,199.60
J	0.00094	-	1	0.001	0.2388
kJ	0.9478	0.000009478	1000	1	238.85
Cal	0.0039683	0.0039683×10^5	4.1868	-	1

Tip) SI Unit : W, kW

Specific Heat

From To⟶	Btu/lb ℉	J/kg ℃
Btu/lb ℉	1	4186.8
J/kg ℃	0.00023	1

Tip) 1 kcal/kg ℃ = 1 Btu/lb ℉ SI 단위 : J/kg ℃

Electrothermal Speed

From To⟶	Btu/ft²h	W/m²	kcal/m²h
Btu/ft²h	1	3.154	2.712
W/m²	0.3169	1	0.859
kcal/m²h	0.368	1.163	1

Tip) SI Unit : W/m²

Electrothermal Coefficient

From To⟶	Btu/ft²h ℉	W/m² ℃	kcal/m²h ℃
Btu/ft²h ℉	1	5.67826	4.88243
W/m² ℃	0.176110	1	0.859845
kcal/m²h ℃	0.204816	1.163	1

Tip) SI Unit : W/m² ℃

Unit Thermal Capacity

From To⟶	Btu/lb	kJ/kg
Btu/lb	1	2.326
kJ/kg	0.4299	1

Tip) SI Unit : kJ/kg

Temperature

℉ ⟶ ℃ : (℉ - 32) ÷ 1.8
℃ ⟶ ℉ : (℃ × 1.8) + 32

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