



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
- ▶ KC-certified flameproof Ex dmb IIB+H₂ T6
- ▶ NEPSY-certified flameproof Ex dmb IIB+H₂ T6
- ▶ IECEX / KC-certified flameproof Ex dmb IIC T6/T5
- ▶ ATEX / TR-CU-certified flameproof Ex dmb IIC T6/T5
- ▶ IECEX / KC-certified intrinsically safe Ex ia IIC T6
- ▶ ATEX / TR-CU-certified flameproof Ex ia IIC T6

Options

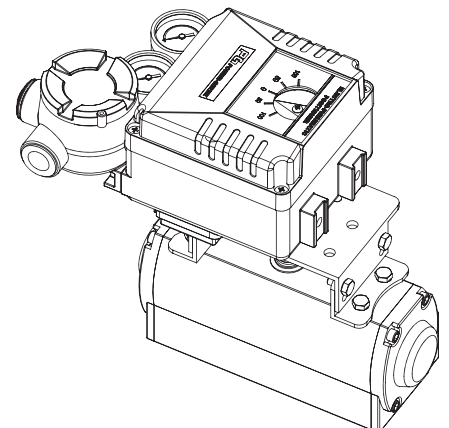
- ▶ Position transmitter (4...20 mA output signal)
- ▶ 2 x SPDT limit switch
- ▶ 2 x P&F proximity sensor NJ2-V3-N
- ▶ Visual dome indicator
 - ▶ High temperature (+120°C)
 - ▶ Low temperature (-40°C)

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	PT(Rc) 1/4 or NPT 1/4	
Electrical Connections	PF(G) 1/2 or NPT 1/2	
Protection Class	Ex dmb IIB+H ₂ T6 / Ex dmb IIC T6/T5 Ex ia IIC T6 / IP66	
Ambient Temperature	-20 ~ +70°C (Note. 3)	
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/cm ²)	
Flow Capacity	80 LPM (Sup. 1.4 kgf/cm ²)	
Material	Aluminum die-cast	
Weight	3.5 kg (with terminal box) 3.2 kg (without terminal box)	



With Dome Indicator

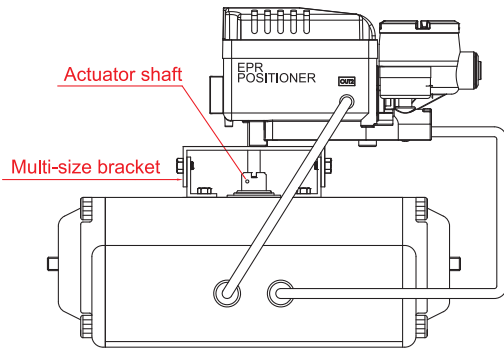


up to +120°C without feedback options
 up to +85°C with feedback options
 up to -40°C without feedback options

Note : 1) 1/2 split 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°

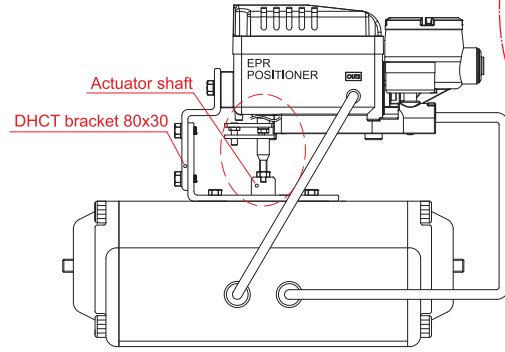
3) Temperature option : up to +85°C with feedback options
 up to -40°C without feedback options

Mounting



NAMUR Type Mounting

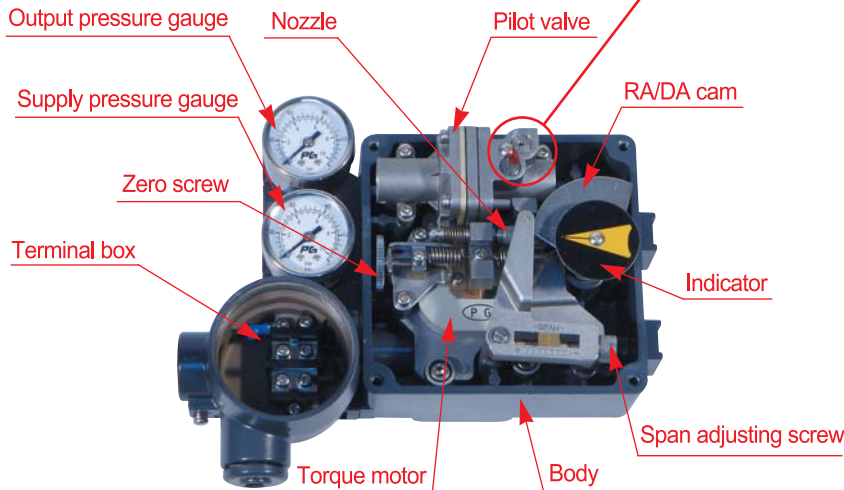
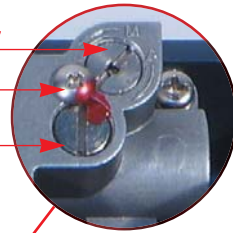
Note that feedback lever shaft "A" should be placed in the orifice of fork lever "B" and they should be in perfect alignment with a rotary actuator output shaft



Fork Lever Type Mounting

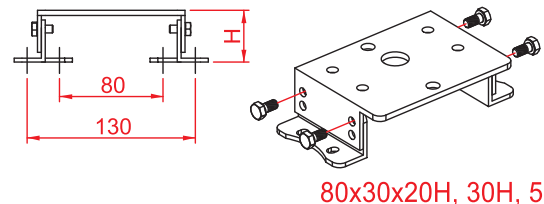
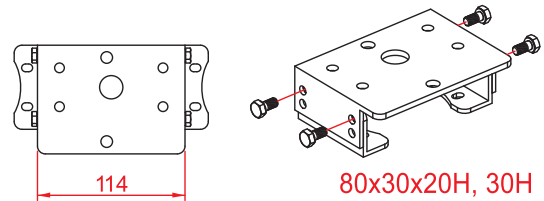
Internal View

Auto/Manual screw
Stopper screw
Seat adjuster



Multi-size Bracket

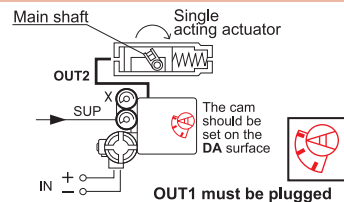
TYPE	H
80 x 30 x 20H	41
80 x 30 x 30H	51
130 x 30 x 20H	41
130 x 30 x 30H	51
130 x 30 x 50H	71



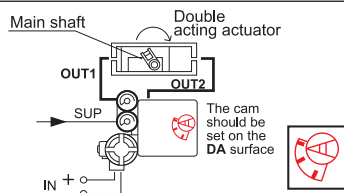
Air Connections

Direct Acting (DA)

As the input signal increases, Actuator stem rotates clockwise.

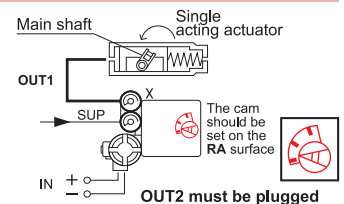


As the input signal increases, Actuator stem rotates clockwise.

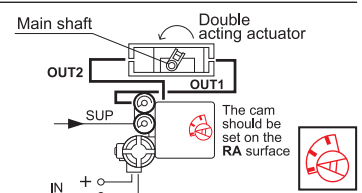


Reverse Acting (RA)

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

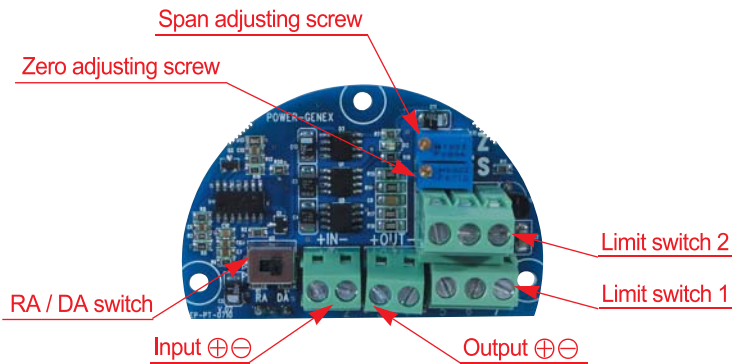


As the input signal increases, Actuator stem rotates counter clockwise.

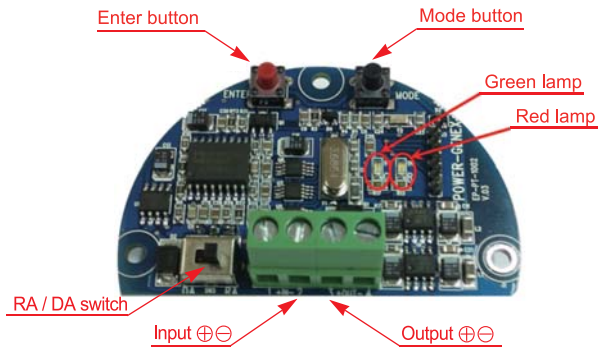


Position Transmitter Options (Built-in Type)

1. Board View



< Analog Position Transmitter & Limit Switches >



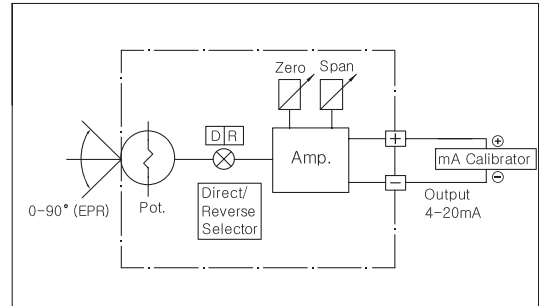
< Smart Position Transmitter >
(Zero / Span Auto Setting)

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

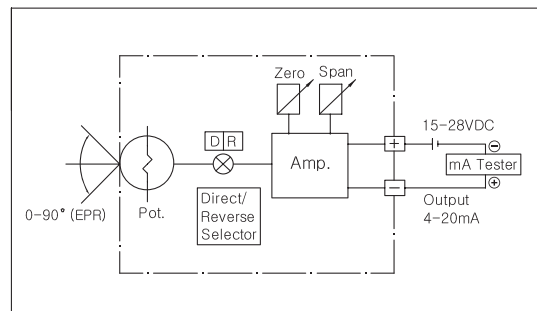
a. Specifications

Power Supply Rating	5.5 - 30 VDC loop power
Recommended Power Supply	24 VDC
Output Signal	4 - 20 mA, 2-wire
Operating Temperature	-20 °C ~ +85 °C
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

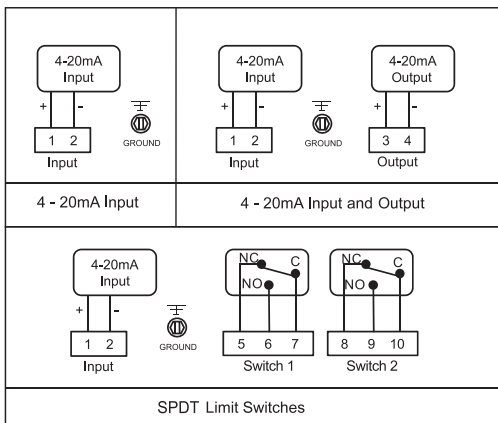
b. with mA calibrator



c. with multimeter



3. Wiring Diagram

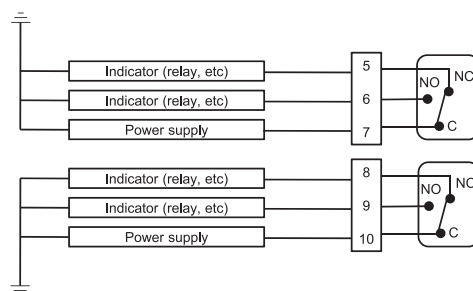


4. SPDT Limit Switches

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

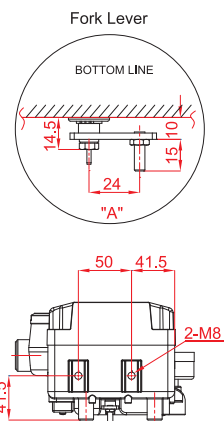
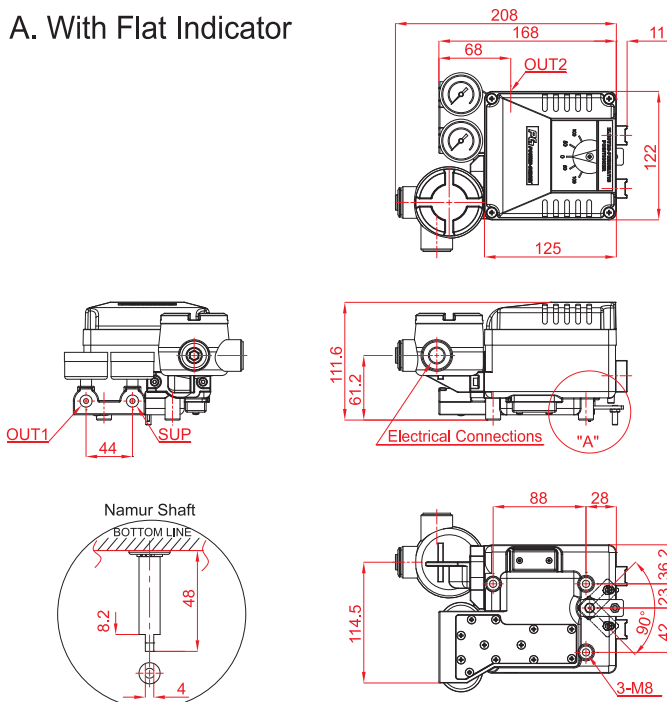


How to Order

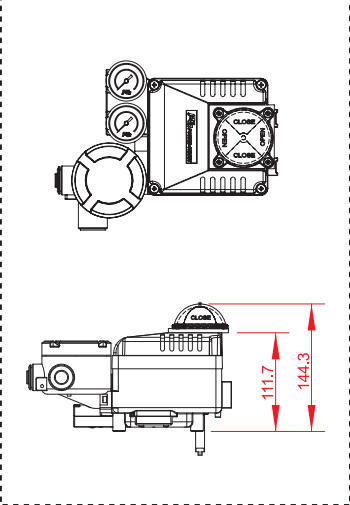
EPR	Protection Class	Feedback Shaft	Pressure Gauge (SUP. OUT)	Pilot Valve Orifice	Position Feedback	Connection Threads	Dome Indicator	Operating Temp.	Mounting Bracket
Description	Code								
Protection Class :	F : KC / NEPSI flameproof Ex dmb IIB+H ₂ T6 A : KC flameproof Ex dmb IIC T6/T5 D : IECEX / ATEX / TR-CU flameproof Ex dmb IIC T6/T5 I : IECEX / ATEX / TR-CU / KC intrinsically safe Ex ia IIC 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)								
Pilot Valve Orifice :	S : Standard (Actuator volume over 180cm ³) M : Small orifice (φ1.0 or φ0.7) (Actuator volume over 90 ~180cm ³)								
Position Feedback : (only for weatherproof type)	N : None (standard) O : Analog position transmitter (4 ~ 20mA output signal) S : Smart 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 : PT(Rc) 1/4 - PF(G) 1/2 (standard) 4 : NPT 1/4 - NPT 1/2 5 : PT(Rc) 1/4 - M20 x 1.5								
Dome Indicator :	N : Flat indicator (standard) D : Dome indicator								
Operating Temperature : (only for weatherproof type)	T : 70°C (standard) H : 120°C (without position feedback option) 85°C (with position feedback option) L : -40°C (without position feedback option)								
Mounting Bracket :	N : None R : Multi-size NAMUR bracket for IEC 60534-6-2 / VDI/VE 3845 (130x30x50 bracket on request) F : PG bracket 80x30 for fork lever type E : Multi-size NAMUR bracket for fork lever type (130x30x50 bracket on request)								

Dimensions

A. With Flat Indicator



B. With Dome Indicator





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

Features

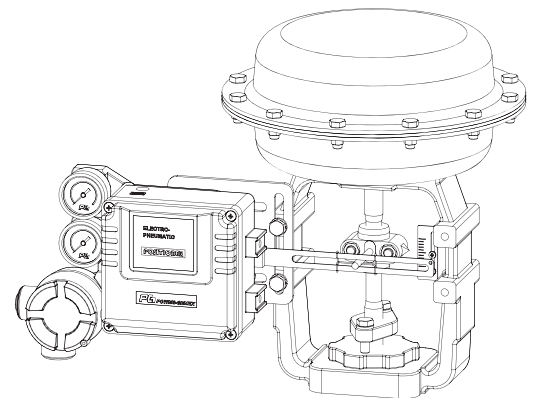
- ▶ Easy maintenance
- ▶ Precise calibration with simple SPAN and ZERO adjustments
- ▶ Simple conversion to direct acting or reverse acting
- ▶ 1/2 split range available
- ▶ Rugged aluminum housing with corrosion-resistant coating
- ▶ Vibration resistant design
- ▶ Stainless steel gauges standard
- ▶ Restricted pilot valve orifice kit for small actuators included
- ▶ KC^s KC-certified flameproof Ex dmb IIB+H₂ T6
- ▶ NEPSI-certified flameproof Ex dmb IIB+H₂ T6
- ▶ IECEX-certified flameproof Ex dmb IIC T6/T5
- ▶ EAC ATEX / TR-CU-certified flameproof Ex dmb IIC T6/T5
- ▶ KC^s KC-certified flameproof Ex dmb IIC T6/T5
- ▶ IECEX-certified intrinsically safe Ex ia IIC T6
- ▶ EAC ATEX / TR-CU-certified flameproof Ex ia IIC T6
- ▶ KC^s KC-certified intrinsically safe Ex ia IIC T6

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	PT(Rc) 1/4 or NPT 1/4	
Electrical Connections	PF(G) 1/2 or NPT 1/2	
Protection Class	Ex dmb IIB+H ₂ T6 / Ex dmb IIC T6/T5 Ex ia IIC T6 / IP66	
Ambient Temperature	-20 ~ +70°C (Note. 3)	
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/cm ²)	
Flow Capacity	80 LPM (Sup. 1.4 kgf/cm ²)	
Material	Aluminum die-cast	
Weight	3.3 kg (with terminal box) 3.0 kg (without terminal box)	

Options

- ▶ Position transmitter (4...20 mA output signal)
- ▶ High temperature (+120 °C)
- ▶ Low temperature (-40 °C)

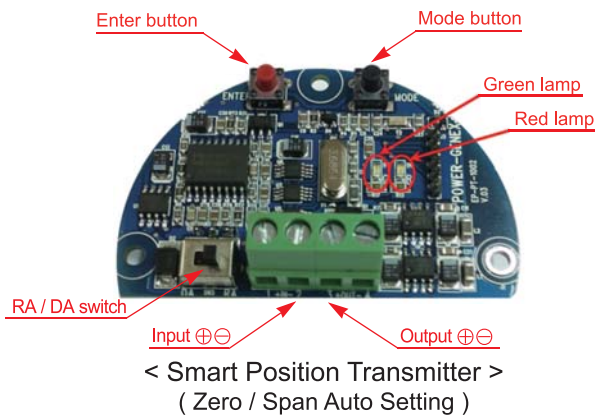
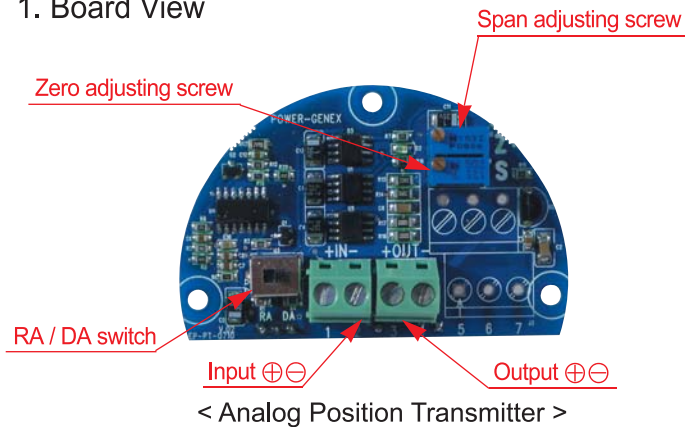


Note : 1) 1/2 split range is available for 4~12mA input signal or 12~20mA input signal
2) Feedback lever can be extended to stroke 80 ~ 150mm

3) Temperature option : up to +120 °C without feedback options
up to +85 °C with feedback options
up to -40 °C without feedback options

Position Transmitter Options (Built-in Type)

1. Board View

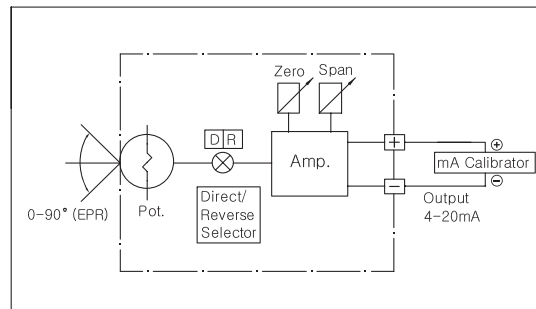


2. Position Transmitter (4-20mA output signal)

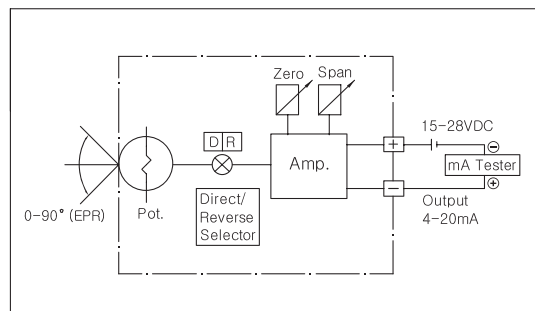
a. Specifications

Power Supply Rating	5.5 - 30 VDC loop power
Recommended Power Supply	24 VDC
Output Signal	4 - 20 mA, 2-wire
Operating Temperature	-20°C ~ +85°C
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

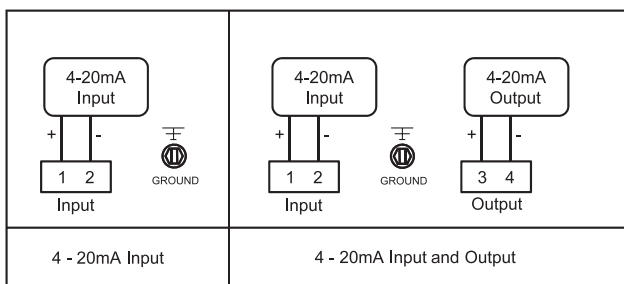
b. with mA calibrator



c. with multimeter

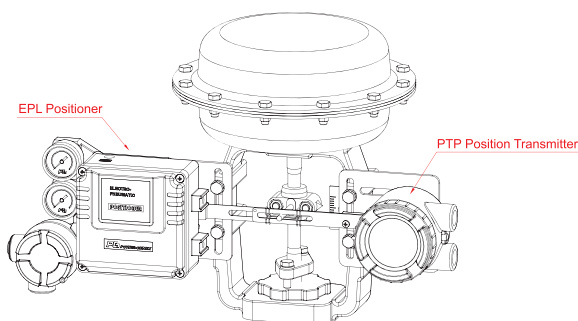


3. Wiring Diagram

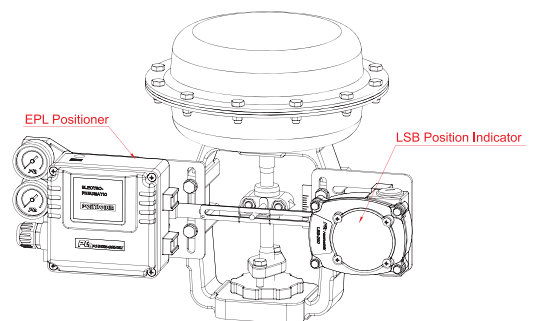


Application for Limit Switches (External Type)

1) With explosion proof PTP-L

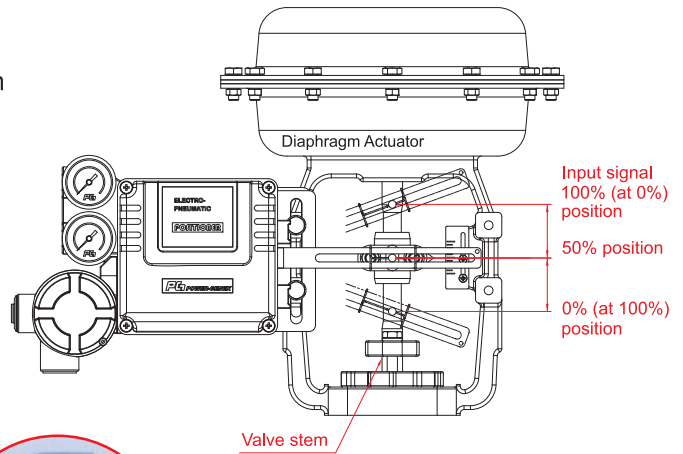


2) With non-explosion proof LSB-200

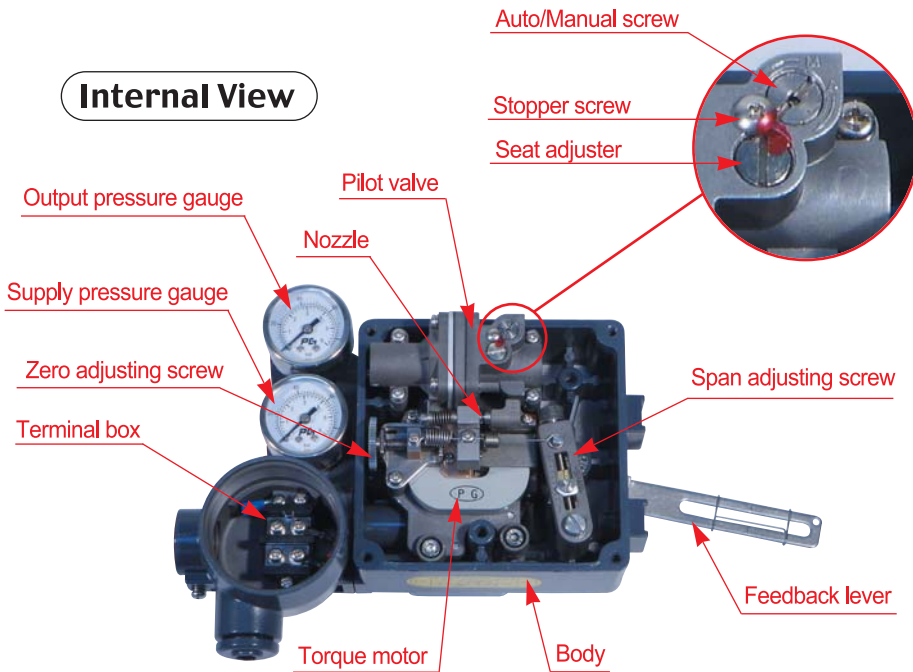


Mounting

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	
As the input signal increases, Valve stem moves downwards Actuator : DA Connection : out 2	
As the input signal increases, Valve stem moves downwards	

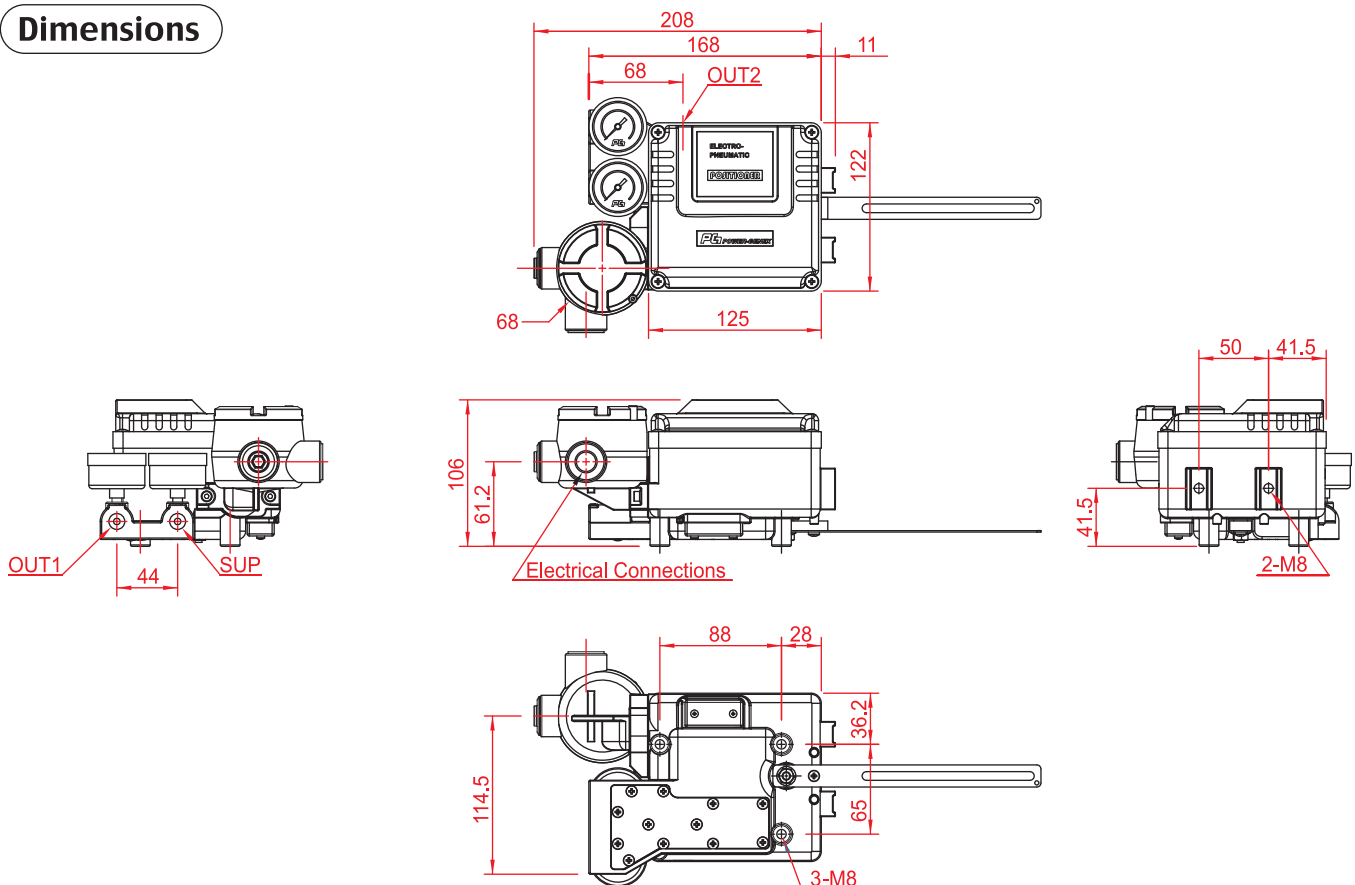
Reverse Acting (RA)

As the input signal increases, Valve stem moves upwards Actuator : RA Connection : out 2	
As the input signal increases, Valve stem moves upwards Actuator : RA Connection : out 1	
As the input signal increases, Valve stem moves upwards	

How to Order

EPL	Protection Class	Feedback Lever	Pressure Gauge (SUP. OUT)	Pilot Valve Orifice	Position Feedback	Connection Threads	Operating Temp.	Mounting Bracket
Description	Code	Description	Code					
Protection Class :	F : KC / NEPSI flameproof Ex dmb IIB+H ₂ T6 A : KC flameproof Ex dmb IIC T6/T5 D : IECEx / ATEX / TR-CU flameproof Ex dmb IIC T6/T5 I : IECEx / ATEX / TR-CU / KC intrinsically safe Ex ia IIC T6 W : Weatherproof to IP66	Position Feedback : (only for weatherproof type)	N : None (standard) O : Analog position transmitter (4 ~ 20mA output signal) S : Smart position transmitter (4 ~ 20mA output signal)					
Feedback Lever :	A : Stroke 10 ~ 40mm B : Stroke 10 ~ 80mm C : Stroke 80 ~ 150mm	Connection Threads : (pneumatic - electrical)	3 : PT(Rc) 1/4 - PF(G) 1/2 (standard) 4 : NPT 1/4 - NPT 1/2 5 : PT(Rc) 1/4 - M20 x 1.5					
Pressure Gauge :	1 : 6 bar (90 psi) 2 : 10 bar (150 psi)	Operating Temperature : (only for weatherproof type)	T : 70°C (standard) H : 120°C (without position feedback option) 85°C (with position feedback option) L : -40°C (without position feedback option)					
Pilot Valve Orifice :	S : Standard (Actuator volume over 180cm ³) M : Small orifice (φ1.0 or φ0.7) (Actuator volume over 90 ~ 180cm ³)	Mounting Bracket :	N : None L : IEC 60534-6-1					

Dimensions



Smart performance with innovative and ever-strong coil drive even under harsh working environments

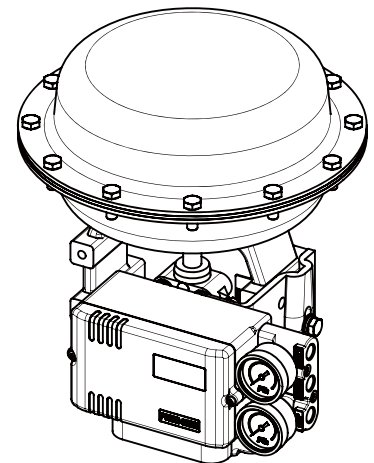


Features

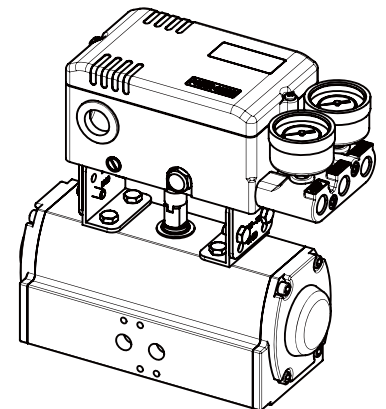
- ▶ Easy and quick auto-calibration
- ▶ Detecting RA (reverse acting) or DA (direct acting) automatically regardless of wrong air connections
- ▶ Available to use for single or double acting without any special adjustments
- ▶ Compact design allowing to be installed on small actuators
- ▶ Providing error messages against performance failures
- ▶ Possible to test the actuator with any fixed signal under a test mode
- ▶ Programmable characteristic curve with 17 points
- ▶ Wide operating temperature range -30 ~ +80 °C
- ▶ Improved control of high-friction globe and ball valves by eliminating an overshoot and a hunting
- ▶ Low air consumption
- ▶ Providing a mounting bracket to meet IEC 60534-6-1 for linear valves
- ▶ Supporting a NAMUR mounting pattern VDI/VDE 3845 (IEC 60534-6-2) and providing a multi-size mounting bracket for rotary valves

Options

- ▶ Output position transmitter (4 - 20 mA)
- ▶ 2 x alarm limit or micro switch (SPDT)
- ▶ Explosion proof type (IECEX / ATEX / KC Ex ia IIC T5)
- ▶ HART communication
- ▶ Profibus communication
- ▶ Fieldbus Foundation communication (in progress)



- SS2L (Linear Type)



- SS2R (Rotary Type)

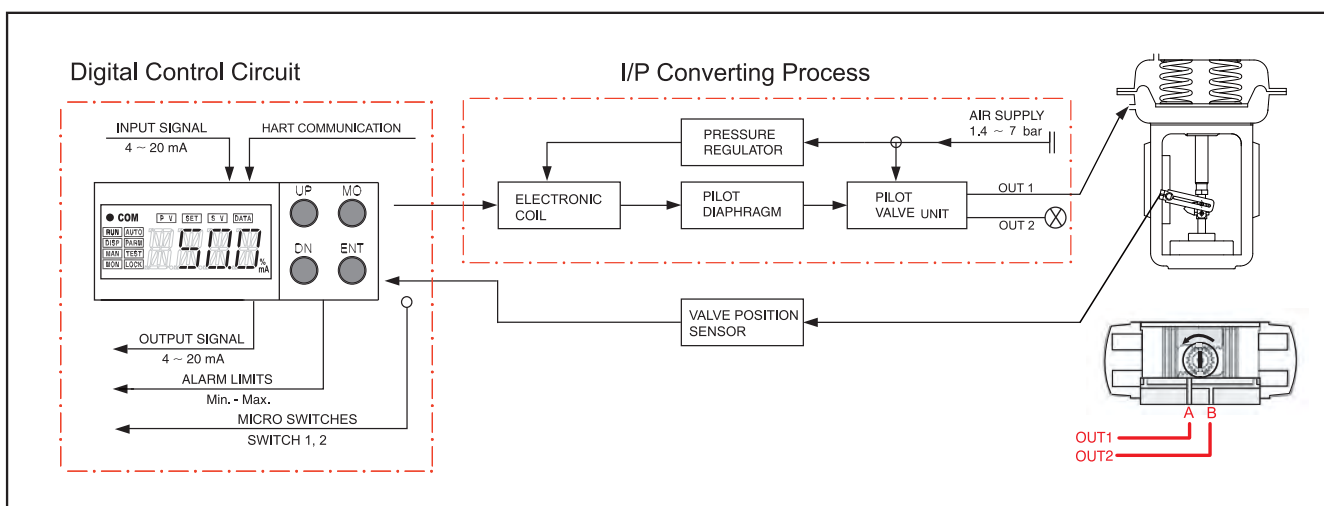
Specifications

Input Signal	4 - 20 mA @ 24 VDC	
Min. / Max. Current	3.6 mA / 50 mA	
Voltage Drop (Resistance)	Without Hart : 8.7 VDC (435Ω @ 20 mA) With Hart : 9.4 VDC (470Ω @ 20 mA)	
Stroke / Angle	Linear type : 5 - 130 mm * Rotary type : 25 - 120°	
Air Supply Pressure	1.4 - 7.0 bar (20 - 100 psi), filtered, compressed dry and non-oiled to meet Class 3 of ISO 8573-1	
Output Pressure Range	0 - 100% of supply air pressure	
Air Capacity	80 ℓ/min = 4.8 N ^m /h = 2.8 scfm (Sup = 1.4 bar) 233 ℓ/min = 14 N ^m /h = 8.2 scfm (Sup = 6 bar)	
Air Consumption	2 ℓ/min = 0.12 N ^m /h = 0.07 scfm (Sup = 1.4 ~ 6 bar)	
Characteristic	Linearity < ±0.3% F.S Hysteresis < 0.2% F.S	Sensitivity < 0.2% F.S Repeatability < 0.2% F.S
Performance Characteristic	Linear, EQ %, Quick open, User set (17 points)	
LCD Indication	4-digit LCD indicator	
Adjustable Speed	1 - 1000 (lowest 1, highest 1000)	
Scan Time	2ms	
Shut-off Value	Range 0 - 10% of position signal	
Valve Action	direct action (DA) / reverse action (RA)	
Operating Temperature	- 30 ~ +80 °C (- 22 ~ +176 °F) **	
Pneumatic Connections	PT(Rc) 1/4 or NPT 1/4	
Electrical Connections	2 x PF(G) 1/2 or NPT 1/2	
Protection Class	IP66, intrinsically safe (IECEX / ATEX / KC Exia IIC T5)	
Body Material	Aluminum die-cast / powder-painted	
Weight	1.6 kg	

* Up to 200mm on request

** -40°C on request

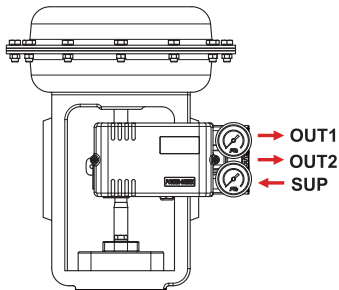
Principle of Operation



If 4-20 mA input signal is supplied, the micro processor compares input signal with position feedback and sends control signal to the I/P converting module. Pneumatic signal from the I/P converting module operates the valve and the valve stays at the desired position.

Mounting to Linear Actuator

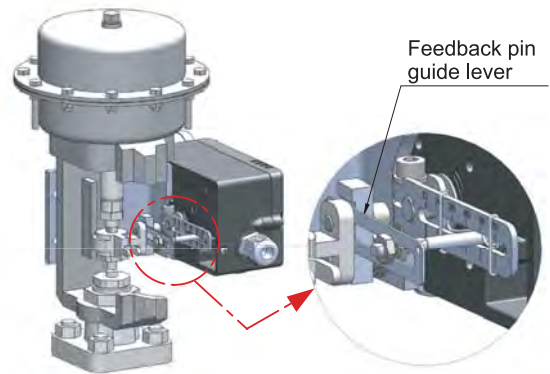
- SS2L (Linear Type)



< Front View >

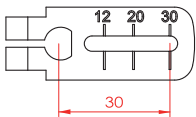


< Side View >

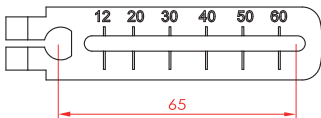


< Feedback Lever Connection >

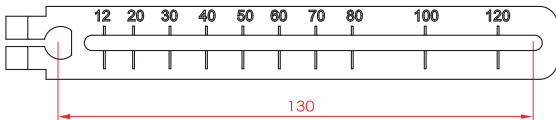
"A" Type



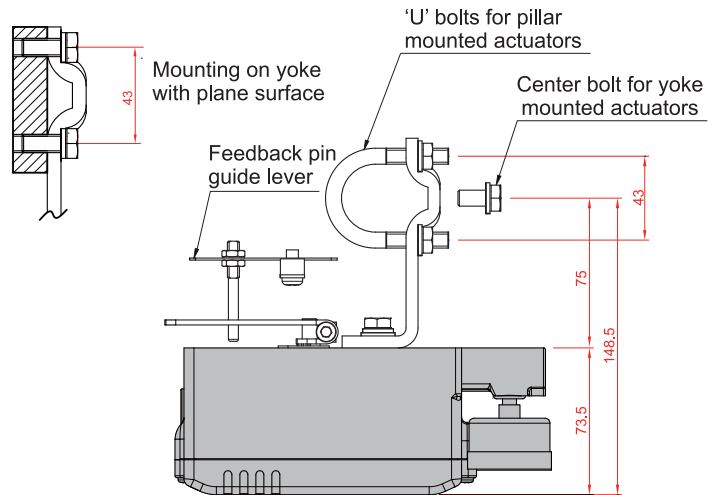
"B" Type



"C" Type



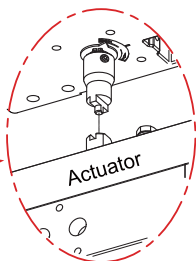
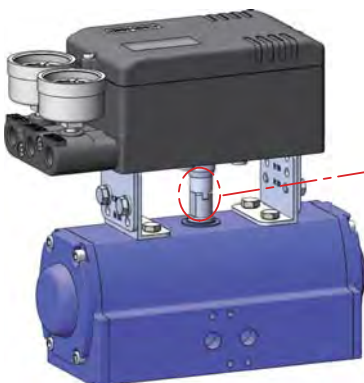
Feedback Lever



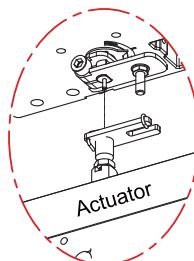
Mounting to linear actuators to IEC 60534 6-1

Mounting to Rotary Actuator

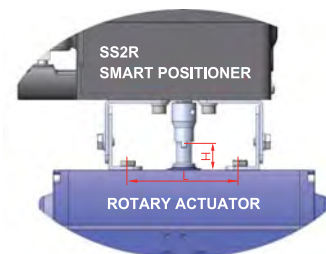
- SS2R (Rotary Type)



NAMUR Type Mounting
(VDI/VDE 3845,
IEC 60534-6-2)



Fork Lever Type Mounting



Size Variation of Multi-Size Bracket

- 1) 80 x 30 x 20 (H) , 4) 130 x 30 x 20 (H)
- 2) 80 x 30 x 30 (H) , 5) 130 x 30 x 30 (H)
- 3) 80 x 30 x 50 (H) , 6) 130 x 30 x 50 (H)

H : Rotary Actuator Shaft Height
L : Length (80 or 130mm)

Air Connections

- SS2L (Linear Type)

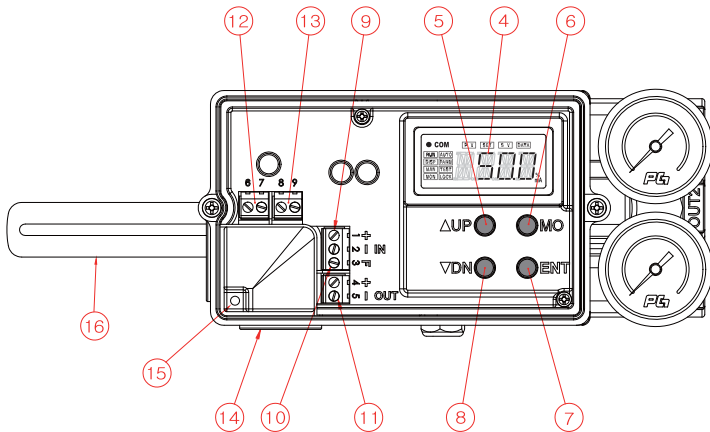
Direct Acting (DA)		Reverse Acting (RA)	
<p>DA 1</p> <p>As the input signal increases, Valve stem moves downwards</p> <p>Actuator : DA</p>	<p>OUT2 must be plugged</p>	<p>RA 1</p> <p>As the input signal increases, Valve stem moves upwards</p> <p>Actuator : RA</p>	<p>OUT2 must be plugged</p>
<p>DA 2</p> <p>As the input signal increases, Valve stem moves downwards</p> <p>Actuator : DA</p>	<p>OUT1 must be plugged</p>	<p>RA 2</p> <p>As the input signal increases, Valve stem moves upwards</p> <p>Actuator : RA</p>	<p>OUT1 must be plugged</p>
<p>DA 3</p> <p>As the input signal increases, Valve stem moves downwards</p>		<p>RA 3</p> <p>As the input signal increases, Valve stem moves upwards</p>	

- SS2R (Rotary Type)

Spring Return	Double Acting	Double Acting
<p>Actuator : RA</p> <p>OUT2 must be plugged</p>	<p>Actuator : RA</p>	<p>Actuator : DA</p>
<p>As the input signal increases, Actuator shaft rotates counter-clockwise</p>	<p>As the input signal increases, Actuator shaft rotates counter-clockwise</p>	<p>As the input signal increases, Actuator shaft rotates clockwise</p>

	Spring Return	Double Acting
Reverse Acting	Out 1 : piped, Out2 : plugged	Out 1 : piped to Actuator port A, Out2 : piped to Actuator port B
Direct Acting	Out 1 : plugged, Out2 : piped	Out 1 : piped to Actuator port B, Out2 : piped to Actuator port A

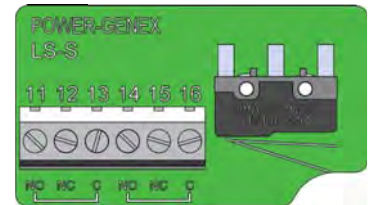
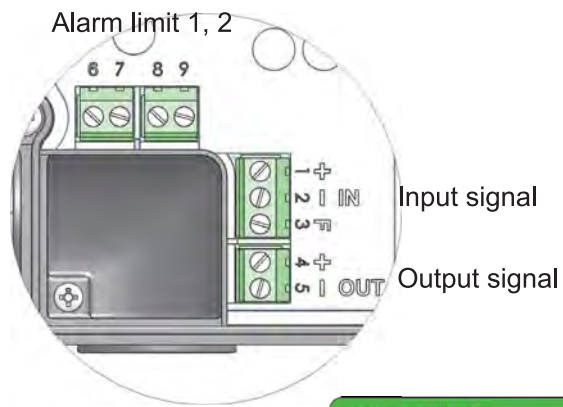
SS2 Front Cover Removed



- 1 : Air supply
- 2 : OUT 1
- 3 : OUT 2
- 4 : Display LCD
- 5 : Up key
- 6 : Mode key
- 7 : Enter key
- 8 : Down key
- 9 : Input signal (+, -)
- 10 : Frame ground
- 11 : Output signal (+, -)
- 12 : Alarm limit 1
- 13 : Alarm limit 2
- 14 : Electrical connections
- 15 : Ground
- 16 : Feedback lever

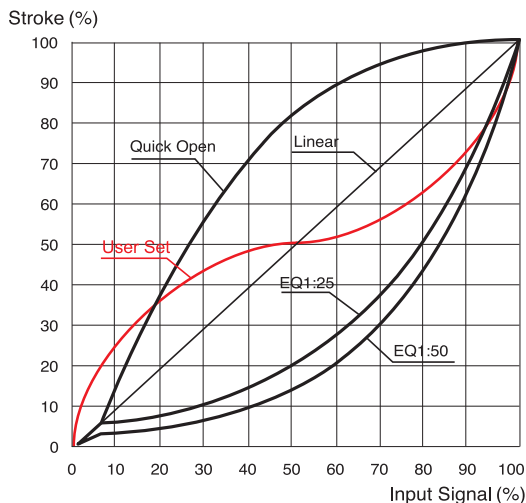
Electrical Connections

- 1 (+) — IN. 4-20mA input signal
- 2 (-) — IN. 4-20mA input signal
- 3 (FG) — Frame Ground
- 4 (+) — OUT. 4-20mA output signal
- 5 (-) — OUT. 4-20mA output signal
- 6 (+) — LS1. (Low) Alarm limit 1
- 7 (-) — LS1. (Low) Alarm limit 1
- 8 (+) — LS2. (High) Alarm limit 2
- 9 (-) — LS2. (High) Alarm limit 2



Micro switches 1, 2

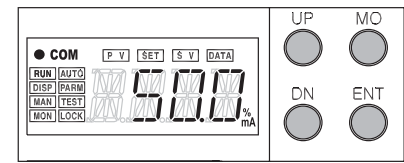
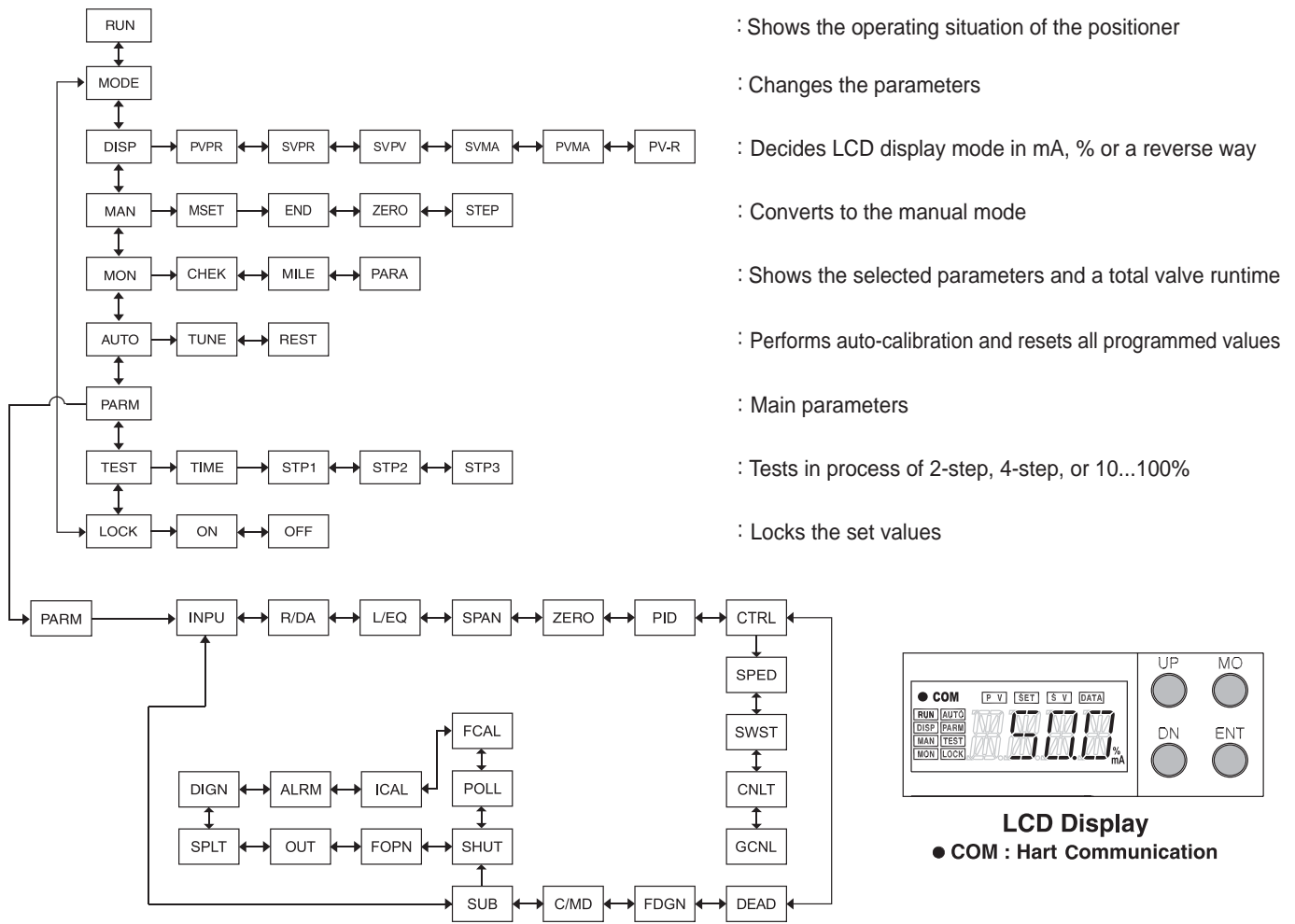
Characteristic Curves



Quick Start and Checking

	Button	Action
Auto - Calibration	MO	Push 5 seconds for auto-calibration
Span	VDN → ENT or VDN → ΔUP ENT → MO	Push VDN 5 seconds to change a measured span (Try this option only when a valve doesn't reach a desired position)
Ambient Temp.	ENT	Confirm an ambient temperature surrounding this smart valve positioner

Parameters Diagram

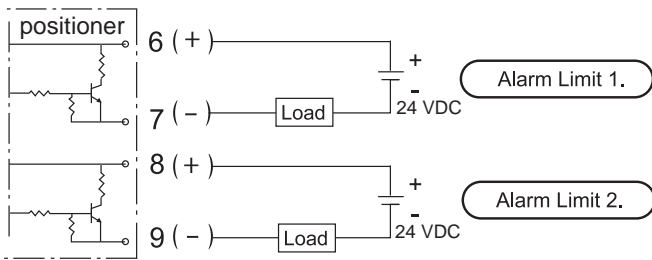


LCD Display

● COM : Hart Communication

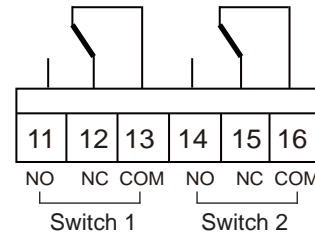
Parameter	Description	Fcution	Default
INPU	Input signal	4 ~ 20mA or 20 ~ 4mA	4 ~ 20mA
R/DA	RA/DA	Reverse acting or direct acting	Auto-set
L/EQ	Characteristic	Linear, E.Q.%(1:25 or 1:50), Quick open or User set(17points)	Linear
SPAN	Span adjustment	0 ~ 100%	100%
ZERO	Zero adjustment	0 ~ 99%	0%
PID	P-GN / I-GN / D-GN	Proportional / Integral / Differential gain value	Auto-set
SPED	Response speed	1 ~ 1000	1000
SWST	Slow start	Smooth operation (ON or OFF)	Auto-set
CNLT	Control limit	50 ~ 1250	Auto-set
GCNL	Gap control limit	50 ~ 1250	Auto-set
DEAD	Dead band	0 ~ 9.99%	0.5%
FDGN	D-gain setting for hard mode	D-Gain setting for hard mode	Auto-set
C/MD	NORM / HARD / SMAL	Standard actuator, strong valve packing friction, small actuator	NORM
SHUT	Shut-off	0 ~ 9.9%	0.3%
FOPN	Full-open	0 ~ 9.9%	0.3%
OUT	Output signal	4 ~ 20mA or 20 ~ 4mA	4 ~ 20mA
SPLT	Split range	4 ~ 12mA or 12 ~ 20mA	4 ~ 20mA
DIGN	Display place	Movement to one or two decimal places	1
ALAM	Alarm limit low, high	AL1L / AL1H / AL2L / AL2H	0 ~ 10%, 90 ~ 105%
ICAL	IN4M / IN20	Internal match with 4~20mA input signals from a calibrator	Factory setting
FCAL	FB4M / FB20	Internal match with 4~20mA output signals to a calibrator	Factory setting
POLL	Polling address	HART Communication polling address (0 ~ 15)	0

Wiring Alarm Limits



Note that 24 VDC should be supplied for power.

Micro Switches (SPDT)

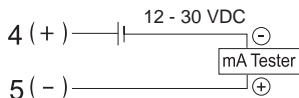


Measuring Output Signal

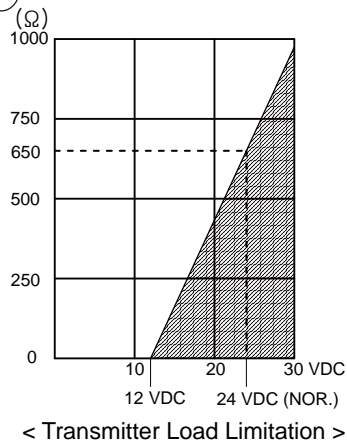
① With mA loop calibrator



② With multimeter (mA)



ZERO and SPAN of position feedback are automatically set after auto-calibration process.



Micro Switches

Type	SPDT
Rating	10.1A @ 250 VAC
Ambient Temperature	-30 ~ +85°C
Position Transmitter	
Output Signal	4 - 20 mA, 2-wire
Power Supply	12 - 30 VDC
Output Current Limit	30 mA DC
Linearity	±0.5% F.S
Operating Temperature	-30 ~ +80°C

How to Order

SS2

Actuator Operation	Protection Class	Feedback Lever	Pressure Gauges	By-pass	Position Feedback	Communication	Connection Threads	Mounting Bracket	Feedback Pin Guide Lever Set
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Description	Code
Actuator Operation :	L : Linear type R : Rotary type
Protection Class :	I : Intrinsically safe (IECEX Ex ia IIC T6/T5, ATEX Ex ia IIC T6/T5) K : Intrinsically safe (KC Ex ia IIC T6/T5) W : Weatherproof to IP66
Feedback Lever :	
- Linear type :	A : Stroke (5-30mm) B : Stroke (5-65mm) C : Stroke (5-130mm) D : Stroke (80-200mm)
- Rotary type :	F : Fork lever N : NAMUR shaft (direct mounting)
Gauge Block :	0 : Not mounted 1 : 6 bar (90 psi) 2 : 10 bar (150 psi)
By-pass :	N : None (standard) Y : Yes (auto/manual screw)

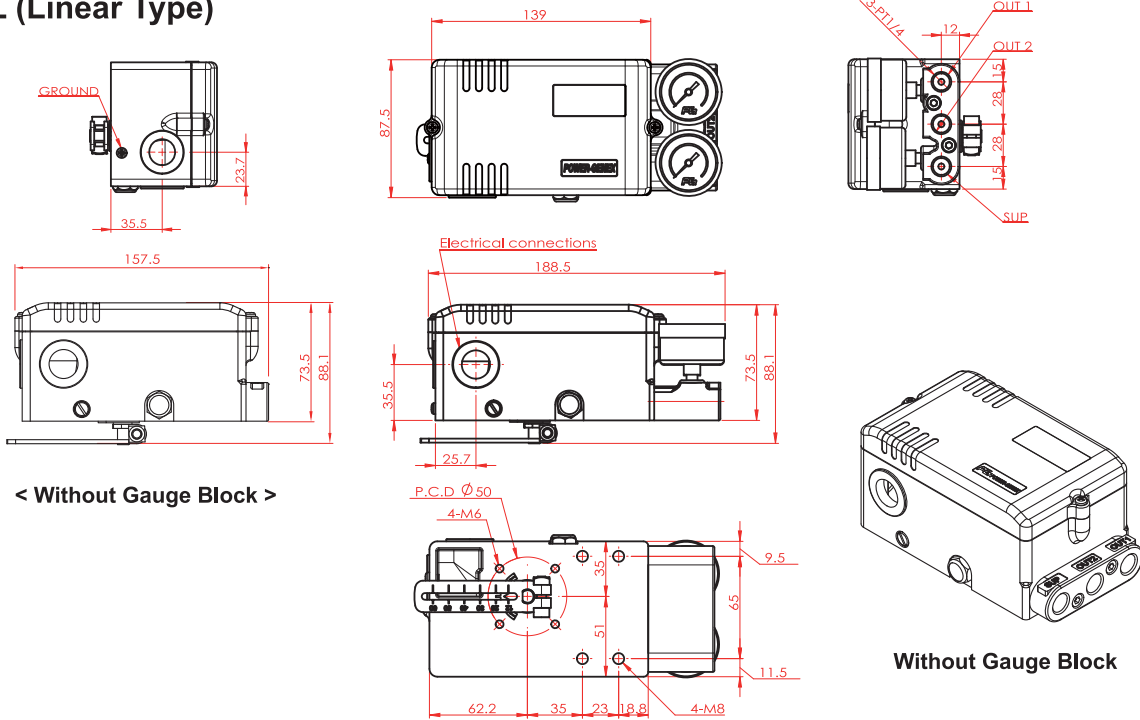
Description	Code
Position Feedback :	N : None O : Position transmitter (4-20mA output signal) L : 2 x alarm limit S : 2 x micro switch (SPDT) M : O + L Q : O + S
Communication :	N : None H : HART P : Profibus F : Fieldbus (in progress)
Connection Threads : (pneumatic - electrical)	3 : PT(Rc) 1/4 - PF(G) 1/2 4 : NPT 1/4 - NPT 1/2 5 : PT(Rc) 1/4 - M20 x 1.5
Mounting Bracket :	N : None L : IEC 60534-6-1 (for SS2L) R : IEC 60534-6-2 (for SS2R) VDI/VDE 3845
Feedback Pin Guide Lever Set : (only for linear type SS2L)	0 : Not included 1 : Included

SS2 Linear / Rotary

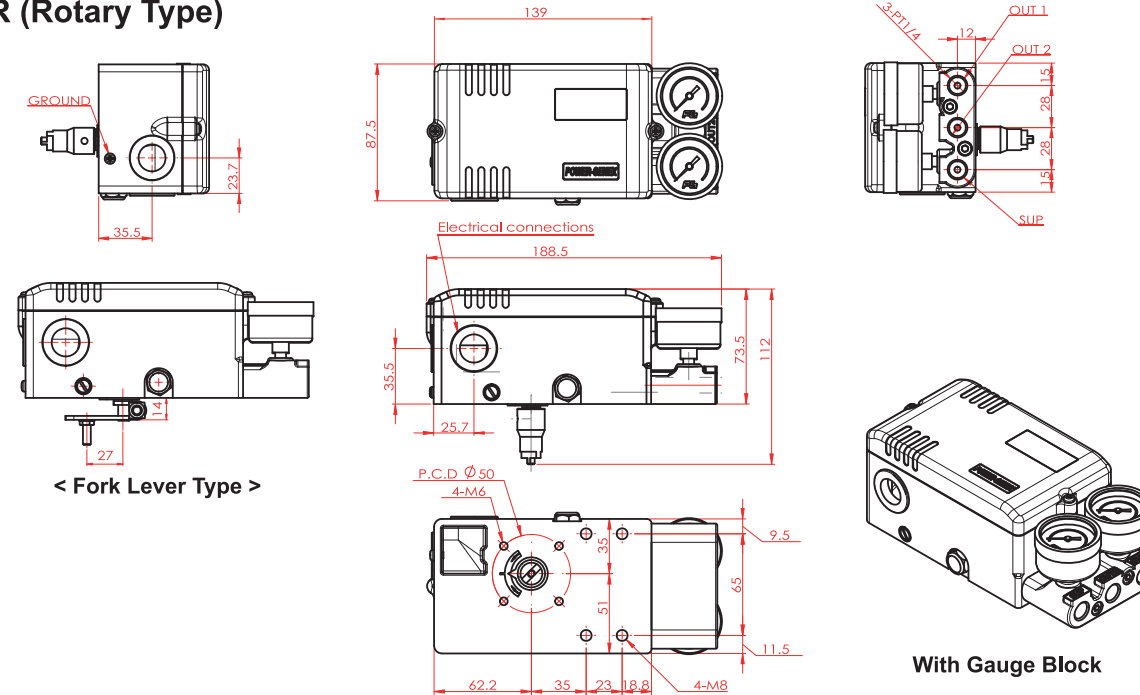
Smart Valve Positioner

Dimensions

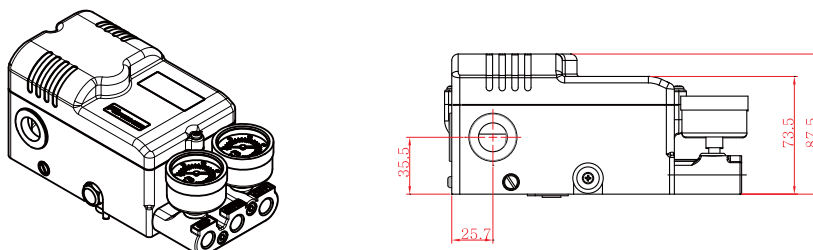
- SS2L (Linear Type)



- SS2R (Rotary Type)



- SS2 with 2 x SPDT Micro S/W



Smart Valve Positioner (remote type)

SS2 Linear / Rotary

NOTE : All specifications and characteristics are the same with SS2

How to Order

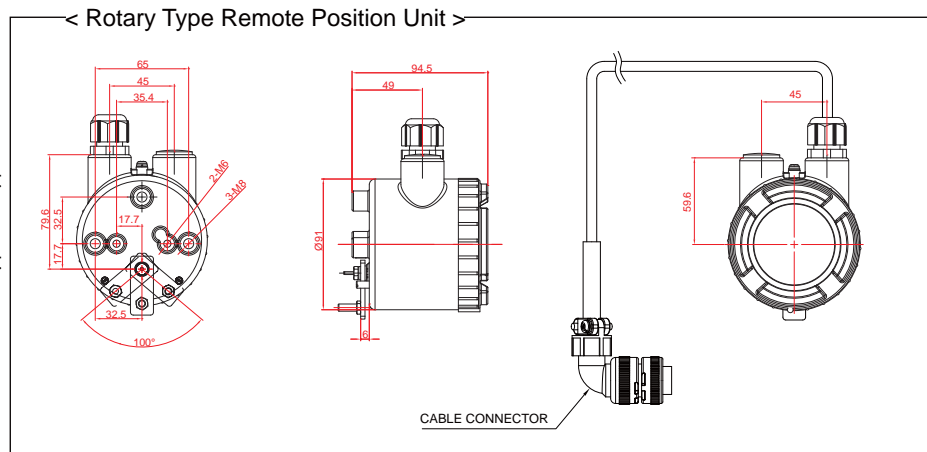
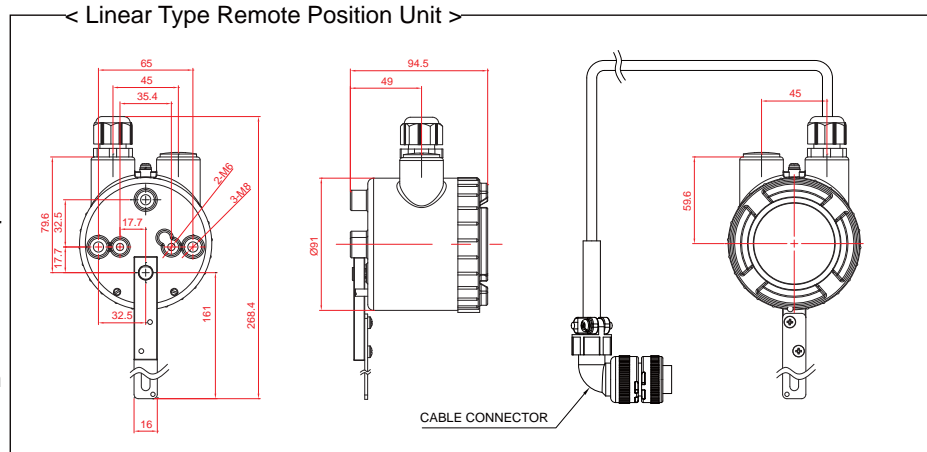
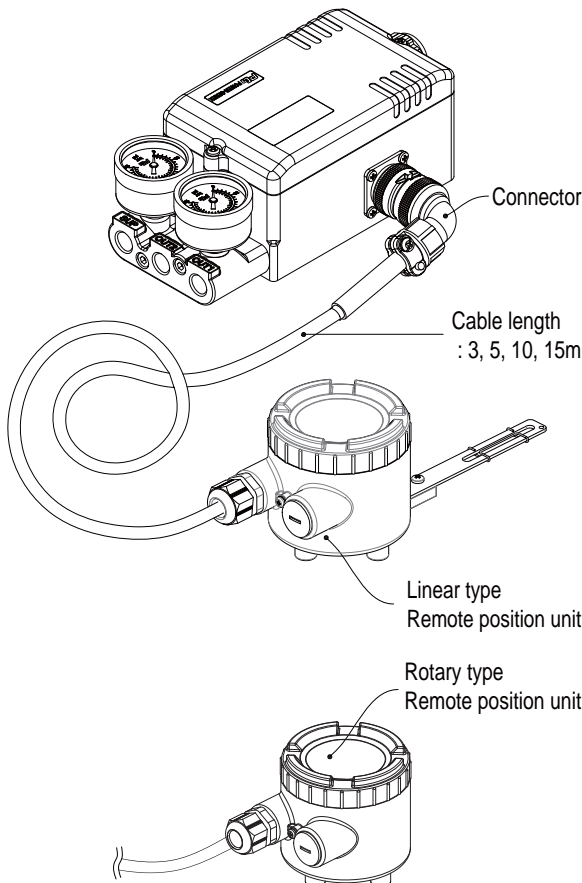
RSS2

Actuator Operation	Protection Class	Feedback Lever	Pressure Gauges	By-pass	Position Feedback	Communication	Connection Threads	Cable Length
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Description	Code
Actuator Operation :	L : Linear type R : Rotary type
Protection Class :	I : Intrinsically safe (IECEX Ex ia IIC T6/T5, ATEX Ex ia IIC T6/T5) K : Intrinsically safe (KC Ex ia IIC T6/T5) W : Weatherproof to IP66
Feedback Lever : - Linear type :	A : Stroke (5-40mm) B : Stroke (5-80mm) C : Stroke (5-150mm)
- Rotary type :	F : Fork lever
Gauge Block :	0 : Not mounted 1 : 6 bar (90 psi) 2 : 10 bar (150 psi)

Description	Code
By-pass :	N : None Y : Yes (auto/manual screw)
Position Feedback :	N : None O : Position transmitter (4-20mA output signal) L : 2 x alarm limit M : O + L
Communication :	N : None H : HART P : Profibus F : Fieldbus (in progress)
Connection Threads : (pneumatic - electrical)	3 : PT(Rc) 1/4 - PF(G) 1/2 4 : NPT 1/4 - NPT 1/2 5 : PT(Rc) 1/4 - M20 x 1.5
Cable Length :	3, 5, 10, 15m Other : On request

Dimensions



Specifications



< SS2SL & SS2SR >

Input Signal	4 - 20 mA @ 24 VDC
Min. / Max. Current	3.6 mA / 50 mA
Voltage Drop (Resistance)	Without Hart : 8.7 VDC (435Ω @ 20 mA) With Hart : 9.4 VDC (470Ω @ 20 mA)
Stroke / Angle	Linear type : 5 - 130 mm * Rotary type : 25 - 120°
Air Supply Pressure	1.4 - 7.0 bar (20 - 100 psi)
Output Pressure Range	0 - 100% of supply air pressure
Air Capacity	80 l/min = 4.8 N ^m /h = 2.8 scfm (Sup = 1.4 bar) 233 l/min = 14 N ^m /h = 8.2 scfm (Sup = 6 bar)
Air Consumption	2 l/min = 0.12 N ^m /h = 0.07 scfm (Sup = 1.4 ~ 6 bar)
Characteristic	Linearity < ±0.3% F.S Sensitivity < 0.2% F.S Hysteresis < 0.2% F.S Repeatability < 0.2% F.S
Performance Characteristic	Linear, EQ %, Quick open, User set (17 points)
LCD Indication	4-digit LCD indicator
Adjustable Speed	1 - 1000 (lowest 1, highest 1000)
Scan Time	2ms
Shut-off Value	Range 0 - 10% of position signal
Valve Action	Direct action(DA) / Reverse action(RA)
Operating Temperature	- 30 ~ +80°C (- 22 ~ +176 °F) **
Pneumatic Connections	NPT 1/4 (other on request)
Electrical Connections	NPT 1/2 (other on request)
Protection Class	IP66, intrinsically safe (IECEX / ATEX / KC Exia IIC T6/T5)
Body Material	Stainless steel 316
Weight	3.9 kg (without bracket)

* Up to 200mm on request ** -40°C on request



How to Order

SS2S

Actuator Operation	Protection Class	Feedback Lever	Pressure Gauges	By-pass	Position Feedback	Communication	Connection Threads	Mounting Bracket	Feedback Pin Guide Lever Set
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Description	Code
Actuator Operation :	L : Linear type R : Rotary type
Protection Class :	I : Intrinsically safe (IECEX Ex ia IIC T6/T5, ATEX Ex ia IIC T6/T5) K : Intrinsically safe (KC Ex ia IIC T6/T5) W : Weatherproof to IP66
Feedback Lever :	
- Linear type :	A : Stroke (5-30mm) B : Stroke (5-65mm) C : Stroke (5-130mm) D : Stroke (80-200mm)
- Rotary type :	F : Fork lever N : NAMUR shaft (direct mounting)
Gauge Block :	0 : Not mounted 1 : 6 bar (90 psi) 2 : 10 bar (150 psi)
By-pass :	N : None Y : Yes (auto/manual screw)

Description	Code
Position Feedback :	N : None O : Position transmitter (4-20mA output signal) L : 2 x alarm limit S : 2 x micro switch (SPDT) M : O + L Q : O + S
Communication :	N : None H : HART P : Profibus F : Fieldbus (in progress)
Connection Threads : (pneumatic - electrical)	4 : NPT 1/4 - NPT 1/2
Mounting Bracket :	N : None L : IEC 60534-6-1 (for SS2SL) R : IEC 60534-6-2 (for SS2SR) VDI/VDE 3845
Feedback Pin Guide Lever Set : (only for linear type SS2SL)	0 : Not included 1 : Included



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

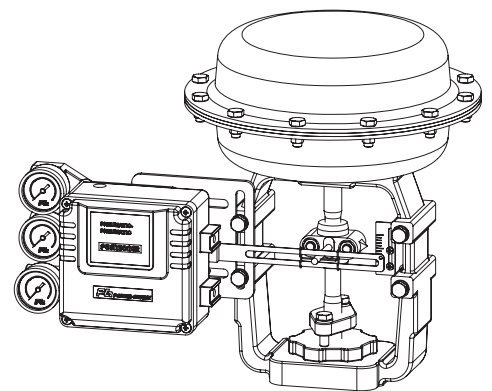
Options

- ▶ 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	PT(Rc) 1/4 or NPT 1/4	
Ambient Temperature	-20 ~ +70°C (Note. 4)	
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 split 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
 - 4) High temperature option : up to +120 °C without feedback options
up to +85 °C with feedback options



How to Order

PPL —

Feedback
Lever

Pressure
Gauge
(SUP. OUT)

Pilot
Valve
Orifice

Connection
Threads

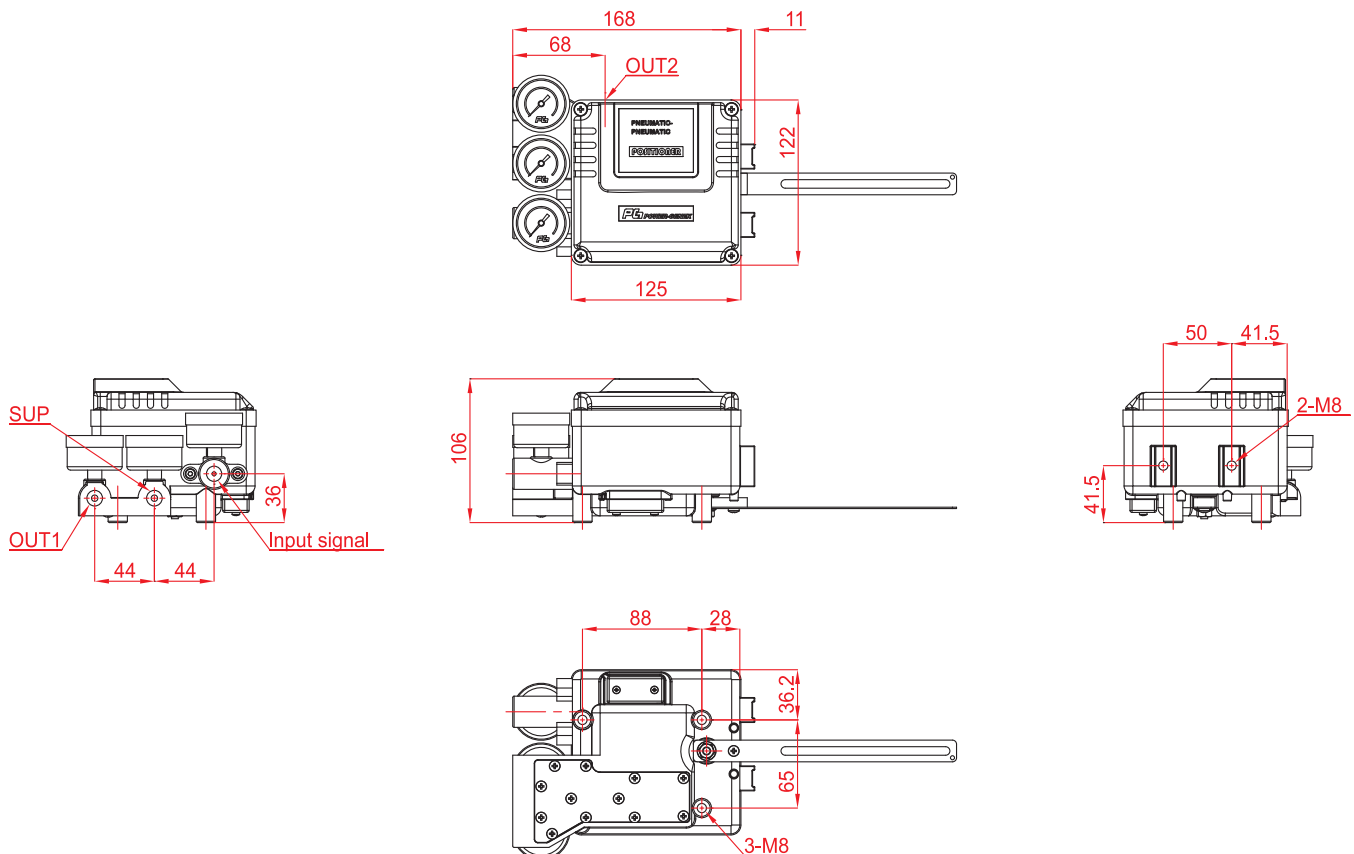
High
Temp

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 cm ³) M : Small orifice (φ 1.0 or φ 0.7) (Actuator volume 90~180 cm ³)

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

Dimensions





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	PT(Rc) 1/4 or NPT 1/4	
Ambient Temperature	-20 ~ +70°C (Note. 4)	
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 split 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°
 4) High temperature option : up to +120°C without feedback options
 up to +85°C with feedback options

How to Order

PPR

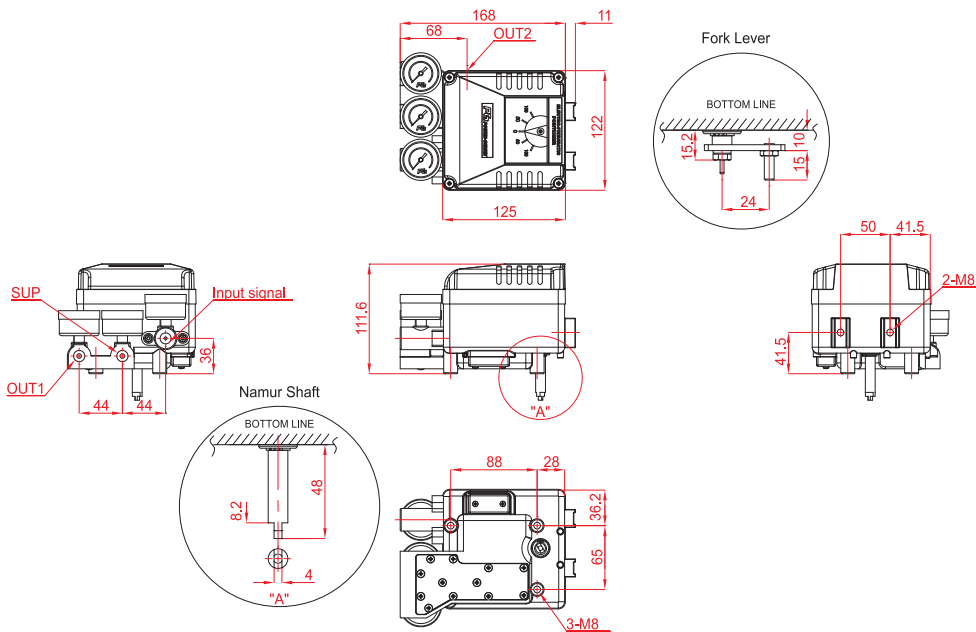
Feedback Shaft	Pressure Gauge (SUP. OUT)	Pilot Valve Orifice	Position Feedback	Connection Threads	Dome Indicator	High Temp	Mounting Bracket
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Description	Code
Feedback Shaft :	N : NAMUR shaft (direct mounting) A : Fork lever M6 x 40L B : Fork lever other 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 (φ 1.0 or φ 0.7) (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

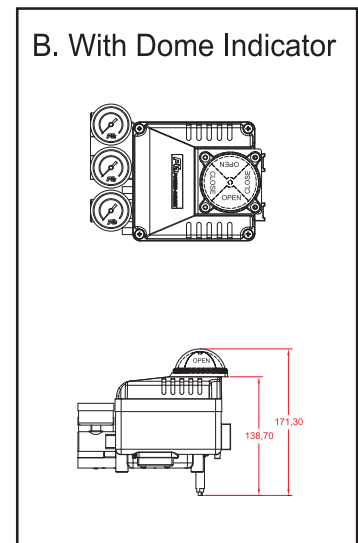
Description	Code
Connection Threads (pneumatic) :	3 : PT(Rc) 1/4 4 : NPT 1/4
Dome Indicator :	N : Flat indicator (standard) D : Dome indicator
High Temperature :	T : 70°C (standard) H : 120°C (without position feedback option) 85°C (with position feedback option)
Mounting Bracket :	N : None
• NAMUR Shaft Type :	R : Multi-size NAMUR bracket for DIN VDI/VDE 3845 (130 × 30 × 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 × 30 × 50 bracket on request)

Dimensions

A. With Flat Indicator



B. With Dome Indicator





Dependable safety valve to retain a set supply air pressure and guarantee a steady process control when a supply air is suddenly failed by accident and its pressure becomes lower than a set pressure

Specifications

	LU	
	LUS	LUD
Proof Pressure	Max 10 kgf/cm ² (150psi)	
Signal Pressure	1.4 ~ 7 kgf/cm ²	
Line Pressure	Max 7 kgf/cm ² (105psi)	
Flow Capacity (Cv)	0.9	
Operating Temperature	-20°C ~ +70°C *	
Pneumatic Connections	PT(Rc) 1/4 or NPT 1/4	
Hysteresis	Within 0.1 kgf/cm ²	
Body Material	Aluminum die-cast	
Weight	0.6 kg	0.8 kg

* High temperature option : up to +120 °C

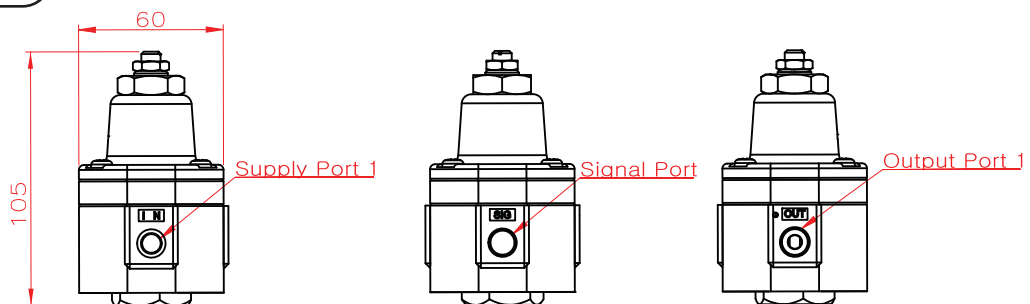
How to Order



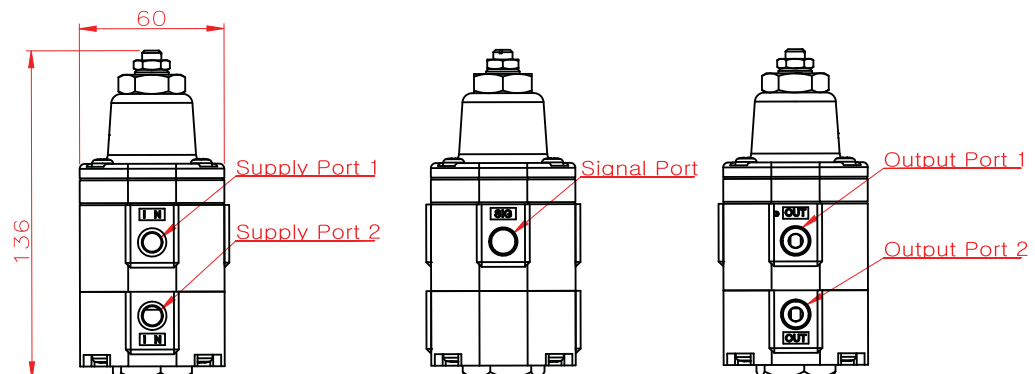
Description	Code
Acting Type :	S : Single acting D : Double acting
Pneumatic Connections :	1 : PT (Rc) 1/4 2 : NPT 1/4
Operating Temperature :	1 : -20 ~ +70°C (standard) 2 : -20 ~ +120°C (high temp.)

Dimensions

< LUS >



< LUD >





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

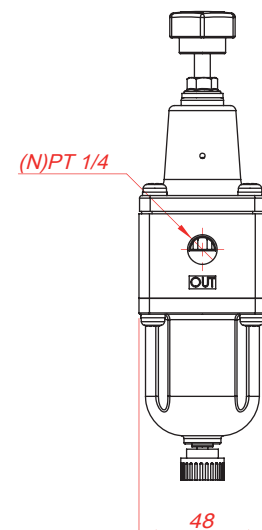
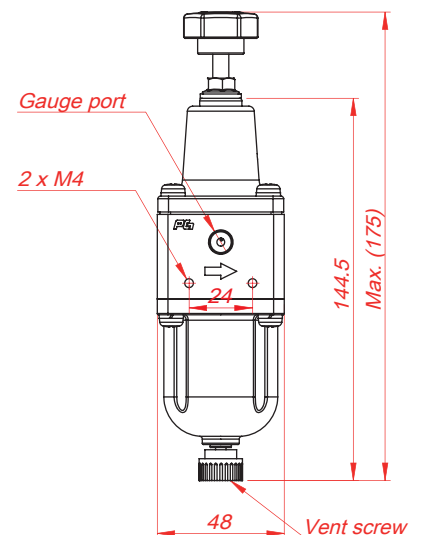
Features

- ▶ Rugged aluminum die-cast housing
- ▶ Optional stainless steel 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-11
Port Size	PT(Rc) 1/4 or NPT 1/4	NPT 1/4
Fluid	Air	
Output Pressure Range	0 - 4 bar (60 psi) / 0 - 8 bar (120 psi)	
Max. Supply Pressure	15 bar (225 psi)	
Operating and Fluid Temperature	-20°C to +70°C	
Supply Air	Filtered compressed, dry and non oiled air (up to 5 micron)	
Gauge Port Size	PT(Rc) 1/8	
Filtration	5 micron	
Housing Material	Aluminum die-cast	Stainless steel 316
Pressure Gauge Material	Stainless steel	
Weight	0.5 kg	1 kg

Dimensions

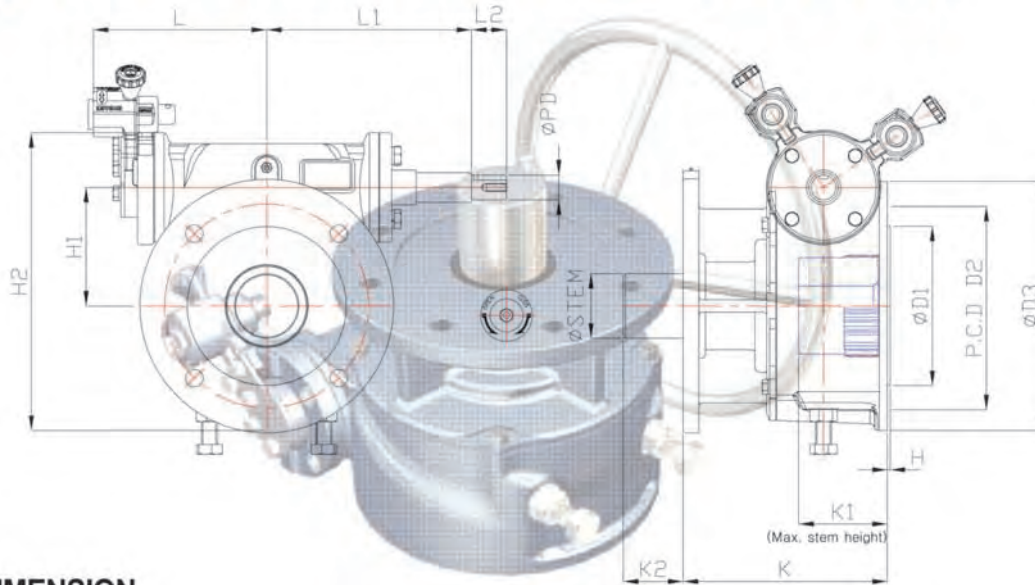


How to Order

FR Body Material - Port Size Output Pressure Range

Description	Code
Body Material	10 : Aluminum die-cast 11 : Stainless steel 316
Port Size	R : PT(Rc) 1/4 N : NPT 1/4
Output Pressure Range	1 : 0 - 4 bar (60 psi) 2 : 0 - 8 bar (120 psi)

DECLUTCH GEAR (FOR PNEUMATIC ACTUATOR)



DIMENSION

(Unit : mm)

DIM MODEL	BASE PART															EXTERNAL PART				INPUT SHAFT PART		HANDLE WHEEL
	TYPE	FLANGE	ØD1	ØD2	P.C.D. N-TP-SP	ØD3	H	H1	H2	K	K1	K2	K3	L	L1	L2	ØPD	ØEY	ØM			
TM-W10DCM	A	F-07	55	70	4-M8-13	90	2	44	126.4	115.5	37	25	162	110.5	106	35	16	5×5	160			
TM-W8DCM		F-10	70	102	4-M10-15	125	2	54.5	152	121	56.5	50	185	121.5	115	35	16	5×5	250			
TM-W6DCM		F-12	85	125	4-M12-20	150	2	64.5	182	162	64	50	233	134.5	138	35	20	6×6	300			
TM-W4DCM		F-14	100	140	4-M16-26	175	2	79	209	174	67.5	50	280.5	142	160.5	35	20	6×6	400			
TM-W2DCM		F-16	130	165	4-M20-25	210	2	94.5	254.5	199	76.5	80	337.2	161.5	197.2	35	25	8×7	500			
TM-W3DCM	B	F-20	160	205	8-M16-26	255	2	119	299	205	89	80	377.2	174	207.2	35	25	8×7	560			
TM-W35DCM		F-20	160	205	8-M16-26	255	2	127	315	223.8	99	80	377.2	174	207.2	35	25	8×7	560			
TM-W4DCM		F-25	200	254	8-M16-26	300	3	144.5	364.5	248	101	100	401	201.5	231	35	30	10×8	630			
TM-W5DCM		F-30	230	298	8-M20-35	350	3	184.5	434.5	267	125	130	434.5	236	244.5	35	30	10×8	710			
TM-W5DCM		F-30	230	298	8-M20-35	350	3	205	563.5	281	135	130	493	241.5	303	35	30	10×8	710			
TM-W6DCM		F-35	260	356	8-M30-35	415	4	230	533.5	301	151	160	517	245.5	307	45	40	12×8	800			
TM-W7DCM		F-40	300	406	8-M36-50	475	4	280.5	635	359	172	170	550	278.5	320	45	40	12×8	900			
TM-W75DCM		F-48	370	483	12-M36-50	560	4	307	688	373	200	170	585	359.5	355	45	40	12×8	1,000			
TM-W8DCM		F-48	370	483	12-M36-50	560	4	339.5	785	424	233	170	621.5	396	391.5	45	40	12×8	1,000			

The specification and image of these products can be changed without prior notice.

SPECIFICATION FOR 1/4 TURN WORM GEAR

DIM MODEL	GEAR RATIO	Allowable MAX. Stem	Mount Pattern		MAX. Torque Capacity		WEIGHT Kg
			Standard	Option	N · m	lbf · ft	
TM-W10DCM	32 : 1	ø20 (6×6)	F - 07	F - 05	294.7	217.4	8
TM-W8DCM	32 : 1	ø28 (8×7)	F - 10	F - 07	557.7	411.3	11
TM-W6DCM	36 : 1	ø35 (10×8)	F - 12	F - 10	788.8	581.8	15
TM-W4DCM	38 : 1	ø50 (14×9)	F - 14	F - 12	1,479.2	1,091.0	18
TM-W2DCM	41 : 1	ø65 (18×11)	F - 16	F - 14	2,784.4	2,053.7	30
TM-W3DCM	47 : 1	ø75 (20×12)	F - 20	F - 16	4,856.2	3,581.7	39
TM-W35DCM	52 : 1	ø80 (22×14)	F - 20	F - 16	5,832.7	4,302.0	57
TM-W4DCM	54 : 1	ø95 (25×14)	F - 25	F - 20	8,041.1	5,930.8	77
TM-W5DCM	58 : 1	ø115 (32×18)	F - 30	F - 25	16,649.8	12,280.3	103
TM-W5DCM	60 : 1	ø125 (32×18)	F - 30	F - 25	23,276.0	17,167.5	152
TM-W6DCM	62 : 1	ø140 (36×20)	F - 35	F - 30	27,185.6	20,051.1	190
TM-W7DCM	66 : 1	ø180 (45×25)	F - 40	F - 35	43,875.1	32,360.6	298
TM-W75DCM	56 : 1	ø210 (50×28)	F - 48	F - 40	69,274.2	51,094.0	442
TM-W8DCM	56 : 1	ø225 (50×28)	F - 48	F - 40	92,838.1	68,473.9	570