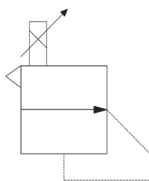


EPR Series

Electro Pneumatic Regulator



Symbol



- Max. Flow rate
(Supply pressure: 1.0MPa / Set pressure: 0.6MPa)
→ EPR1 : 200ℓ/min
→ EPR2 : 1,500ℓ/min
→ EPR3 : 4,000ℓ/min
- High precision pressure control
→ Achieve high precision pressure control with microcomputer PID and silicon piezoelectric sensor
→ Achieve step-less control of air pressure proportional with closed loop control method
- High stability
→ Linearity : Less than $\pm 1.0\%$ F.S. /
Repeatability : Less than $\pm 0.5\%$ F.S. /
→ Hysteresis : Less than 0.5% F.S. /
Sensitivity : Less than 0.2% F.S.
- Comply with IP65 and CE certification
- Compatible with secondary battery

How to order

2B — EPR 1 5 — 5 1 1 — N 02 B S — M

1 2 3 4 5 6 7 8 9 10 11

1 Secondary Battery type

Blank : Normal type
2B : Secondary battery type

2 Model

1 : 10 type
2 : 20 type
3 : 30 type

3 Pressure range

5 : 0.5MPa
9 : 0.9MPa

4 Power supply voltage

5 : DC 24V

5 Input signal

1 : 4~20mA
2 : 0~5V
3 : 0~10V

6 Monitor Output

1 : Analog output DC 1~5V

7 Thread Type

Blank : Rc
N : NPT

8 Port size

01 : 1/8(10 type)
02 : 1/4(10, 20, 30 type)
03 : 3/8(20, 30 type)
04 : 1/2(30 type)

9 Bracket (Optional)

Blank : Without bracket
B : Flat bracket
C : L-bracket

10 Cable connector (Optional)

Blank : Without cable connector
S : Straight type 3m
L : Right angle type 3m

11 Manifold type (custom made)

Blank : Without manifold
M : Manifold type

How to order for Bracket

EPR A — B

1 2

1 Accessory

2 Bracket type
B : Flat bracket
C : L-bracket

How to order for Cable

EPR C — M12 S

1 2 3

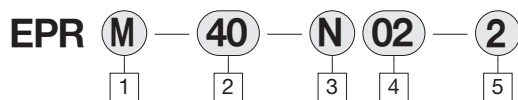
1 Cable

2 Connector socket(4Pin)
: M12

3 Connector type
S : Straight type (3m)
L : Right angle type (3m)

How to order for Manifold (EPR10, 20)

• Manifold



1 Manifold
※ EPR10・20

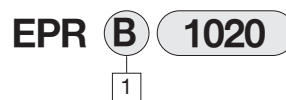
2 Base mounted type

3 Thread type
Blank : Rc
N : NPT

4 Port size(OUT)
02 : 1/4
03 : 3/8
※ IN is 1/2(fixed)

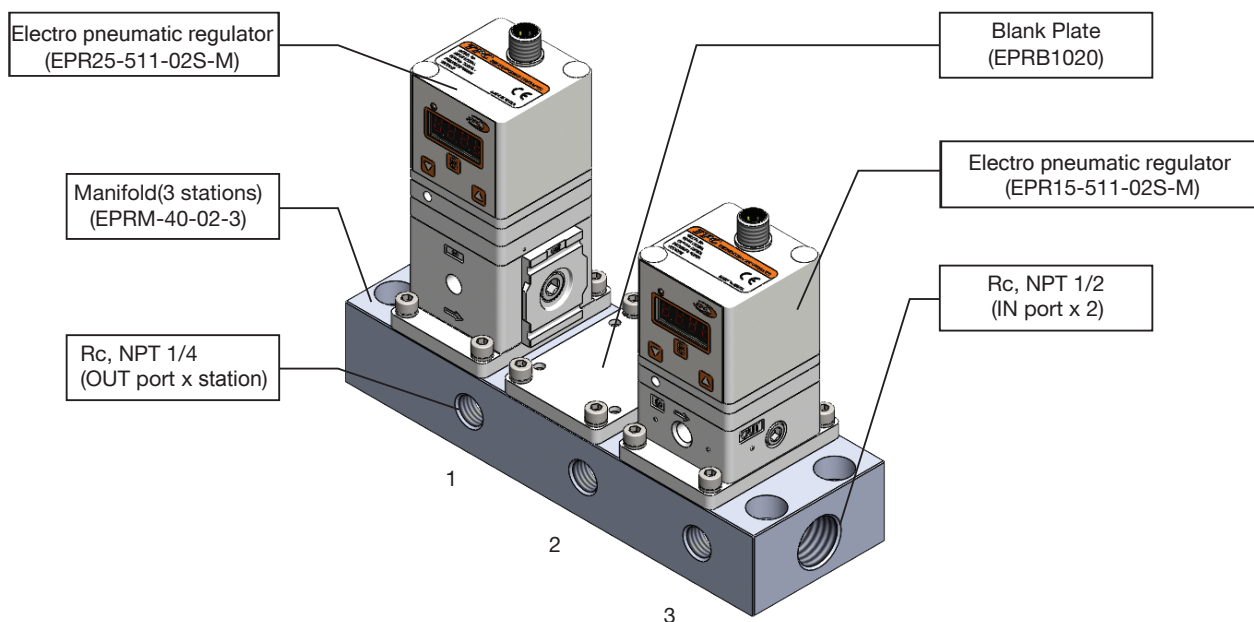
5 Number of station
2 : 2 stations
:
8 : 8 stations

• Blank Plate



1 Blank Plate

• Manifold Ass'y (example)



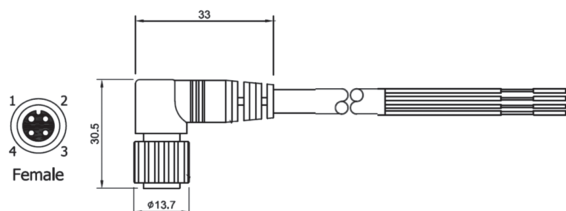
※ Mixed manifold table

	EPR15	EPR19	EPR25	EPR29
EPR15	●		●	
EPR19		●		●
EPR25	●		●	
EPR29		●		●

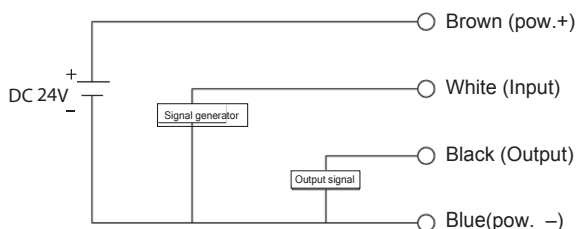
Specification

Model		EPR Series					
		EPR1		EPR2		EPR3	
		EPR15	EPR19	EPR25	EPR29	EPR35	EPR39
Min. supply pressure		Set pressure +0.1MPa					
Max. supply pressure		0.7 MPa / 1.0 MPa					
Setting pressure range		0.01~0.5 MPa / 0.01~0.9 MPa					
Power consumption	Voltage	DC 24V ±10%					
	Current	Less than 0.12A					
Signal input	Current type	DC 4~20mA					
	Voltage type	DC 0~5V, DC 0~10V					
Signal output		DC 1~5V(Analog output)					
Linearity		Within ±1.0% F.S.					
Hysteresis		Within 0.5% F.S.					
Repeatability		Within ±0.5% F.S.					
Sensitivity		Within 0.2% F.S.					
Output pressure display		±2% F.S. ±1 digit					
Ambient and Fluid temperature		0~50℃(No condensation)					
Protected strucure		IP65					
Weight		280g		470g		570g	
Port size (PT, NPT)		1/8, 1/4		1/4, 3/8		1/4, 3/8, 1/2	
Set pressure unit		MPa, bar, kgf/cm², psi, kPa					

Wiring



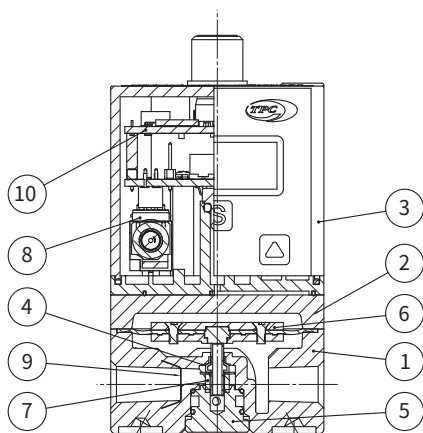
Pin no.	Color	Item	Spec.		
1	Brown	Power(+)	24V		
2	White	Input	0-10V	0-5V	4-20mA
3	Blue	COM	0V		
4	Black	Output	Analog 1-5V		



Input signal : DC0~5V / DC0~10V / DC4~20mA
Output signal : 1~5V

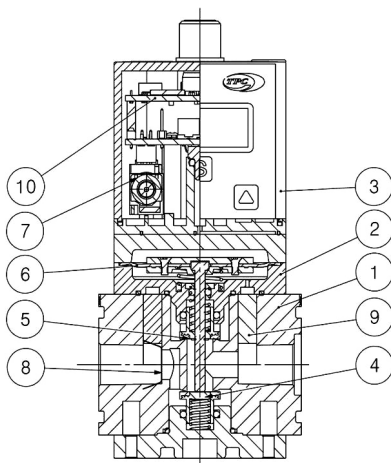
Structure

• EPR10



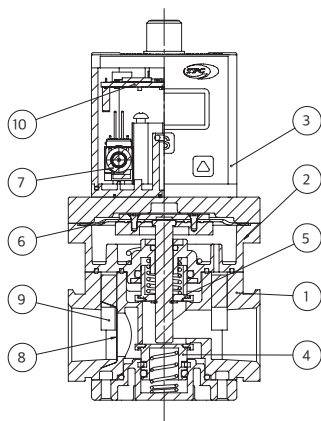
No.	Part name	Material
1	Body	Aluminum
2	Chamber	Aluminum
3	Case	Plastic
4	Valve	Stainless steel / H-NBR
5	Valve guide	Aluminum
6	Diaphragm	Stainless steel / H-NBR
7	Damper	Stainless steel / H-NBR
8	Solenoid valve	-
9	Mesh net	Stainless steel
10	Control part	-

• EPR20



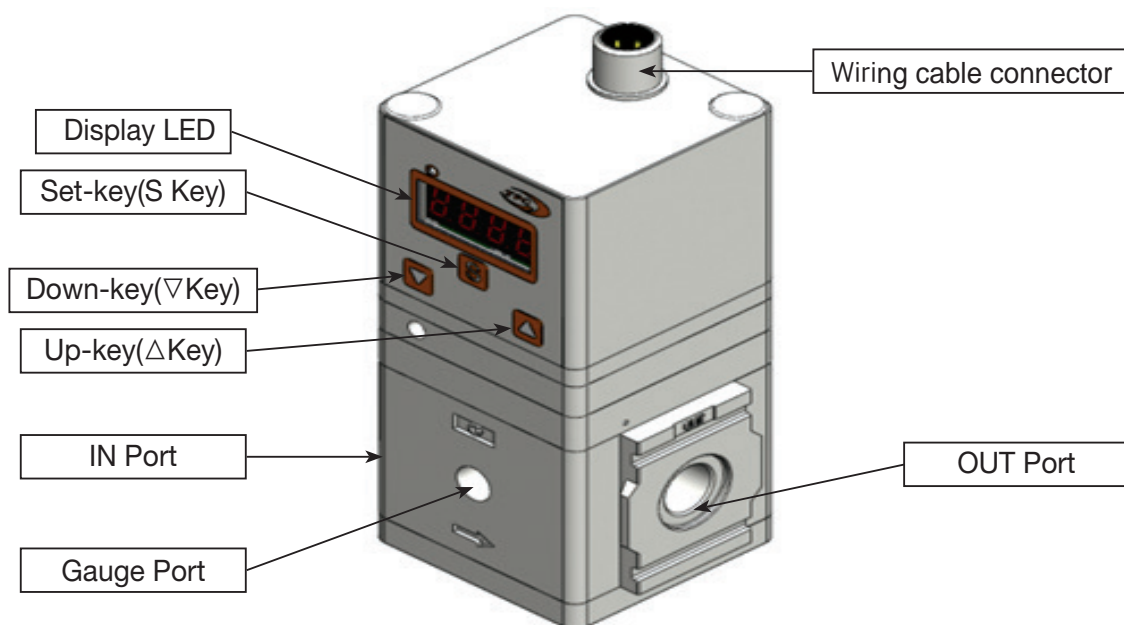
No.	Part name	Material
1	Body	Aluminum
2	Chamber	Aluminum
3	Case	Plastic
4	Air supply poppet valve	Stainless steel / H-NBR
5	Exhaust poppet valve	Stainless steel / H-NBR
6	Diaphragm	H-NBR
7	Solenoid valve	-
8	Mesh net	Stainless steel
9	Element	PE
10	Control part	-

• EPR30

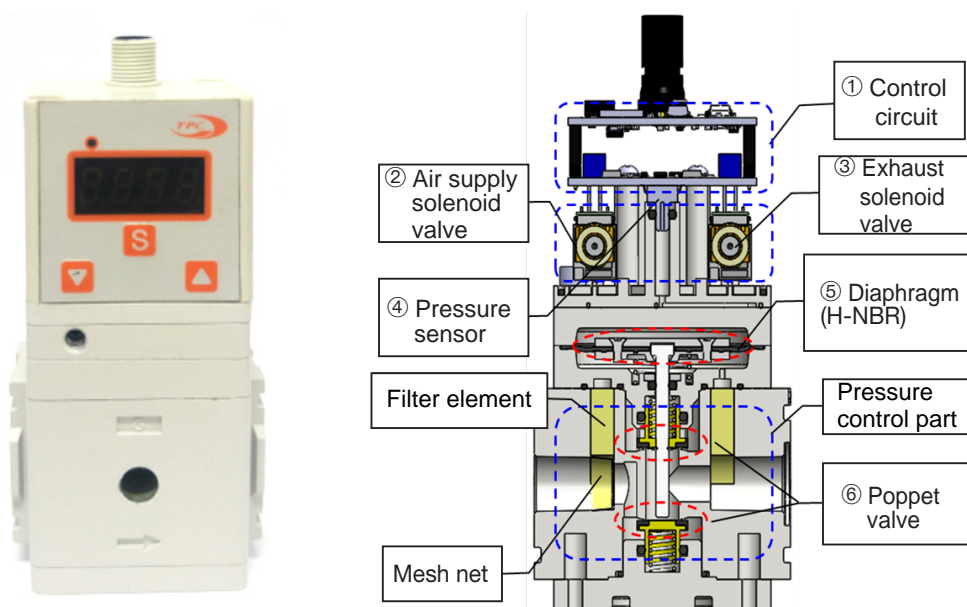


No.	Part name	Material
1	Body	Aluminum
2	Chamber	Aluminum
3	Case	Plastic
4	Air supply poppet valve	Stainless steel / H-NBR
5	Exhaust poppet valve	Stainless steel / H-NBR
6	Diaphragm	H-NBR
7	Solenoid valve	-
8	Mesh net	Stainless steel
9	Element	PE
10	Control part	-

Part name



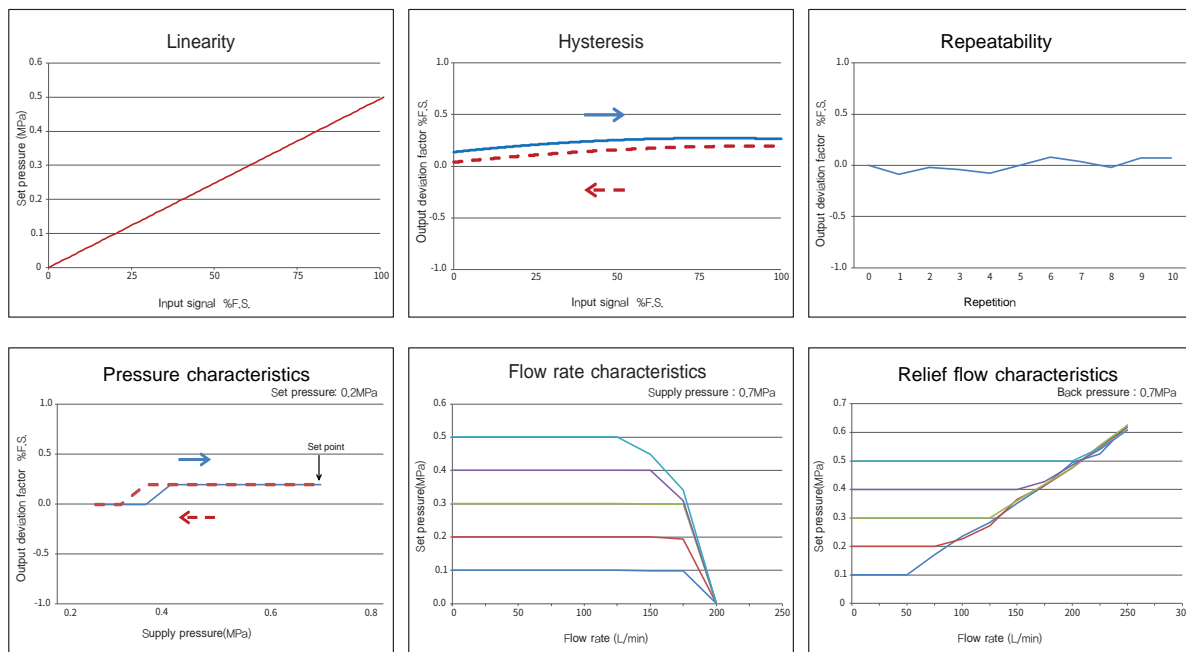
Working principle



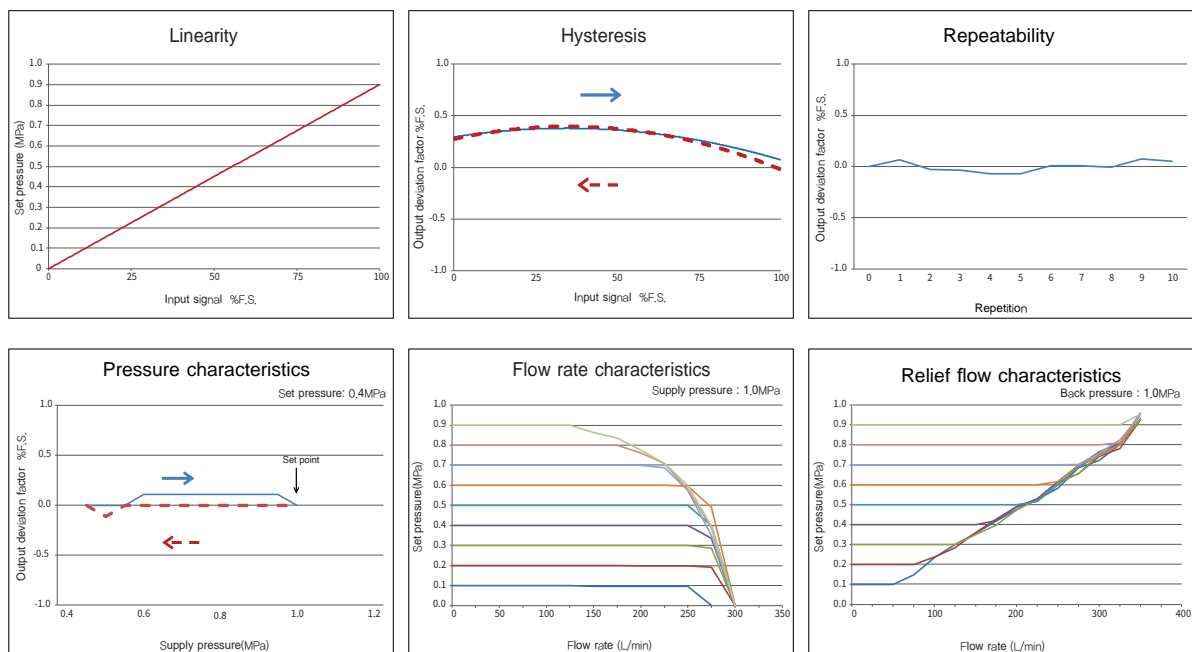
When the input signal rises, → ②the air supply solenoid valve turns ON → the supply pressure passes through the air supply solenoid valve and is applied to the pilot chamber and it increases and operates on the upper surface of the diaphragm → ⑥the air supply poppet valve linked to the diaphragm OPEN → The output pressure feeds back to the control circuit via ④pressure sensor → a corrective operation for , the air supply and exhaust solenoid valve functions until the output pressure is proportional to the input signal → it is possible to always obtain output pressure proportional to the input signal

Performance graph

• EPR15

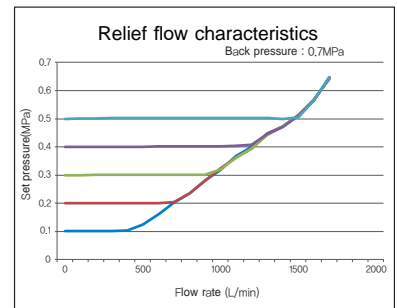
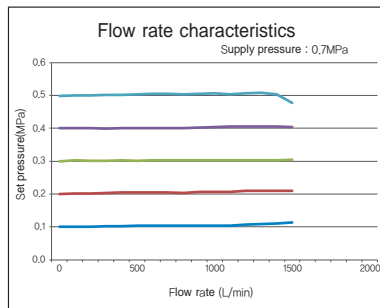
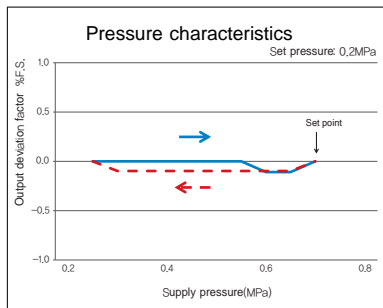
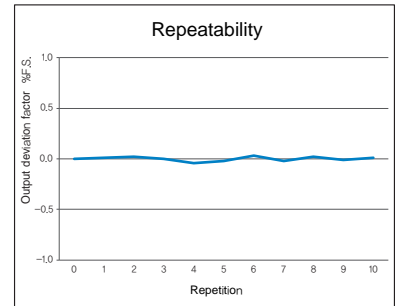
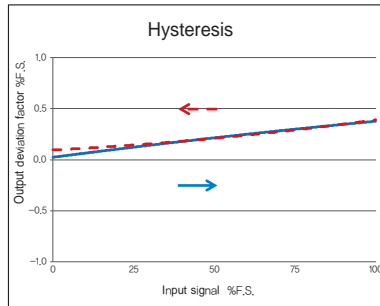
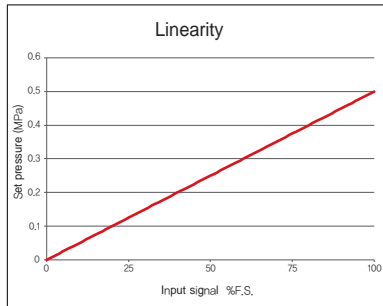


• EPR19

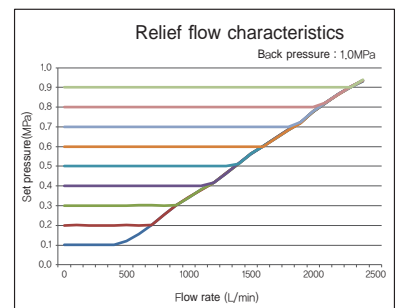
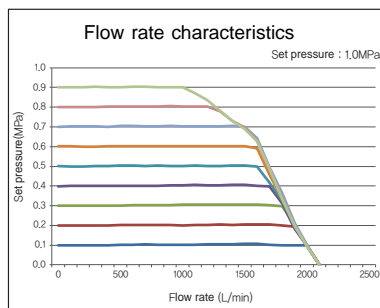
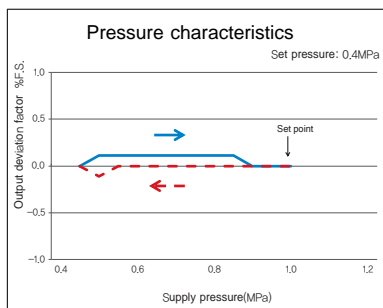
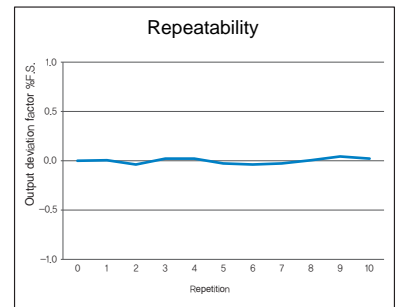
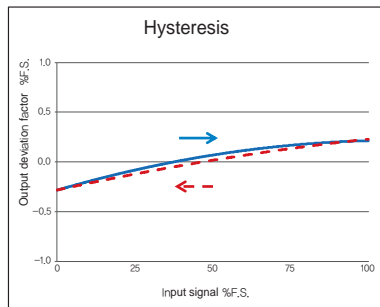
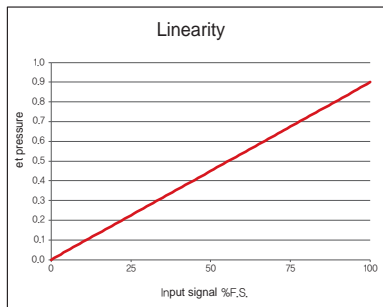


Performance graph

• EPR25

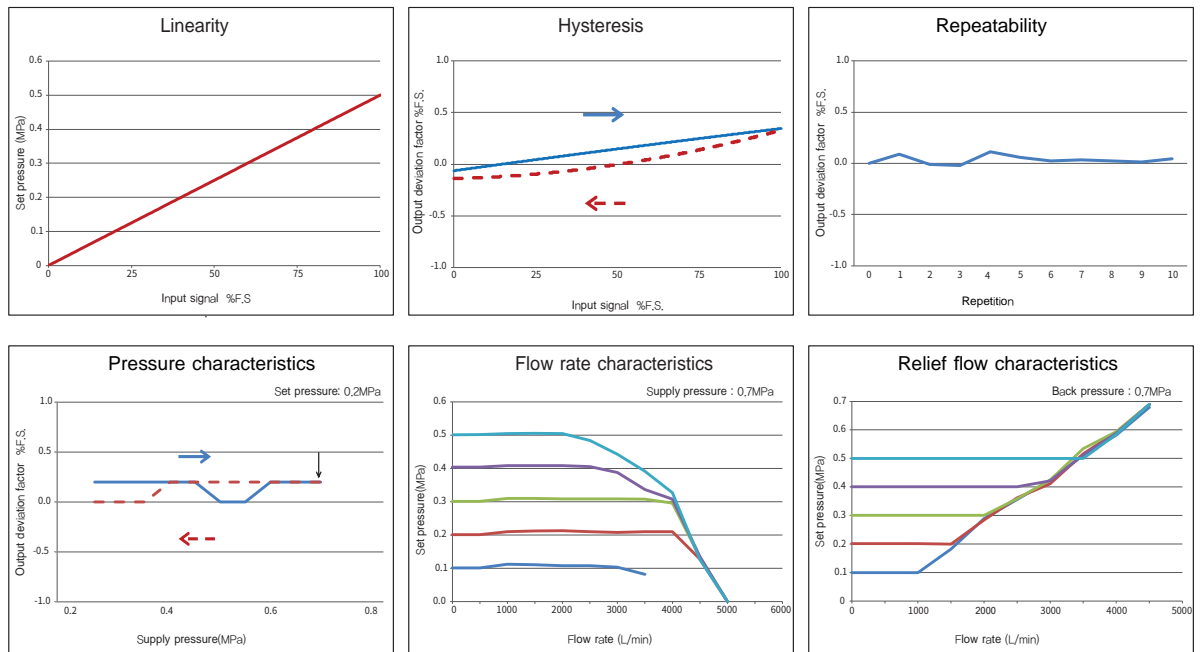


• EPR29

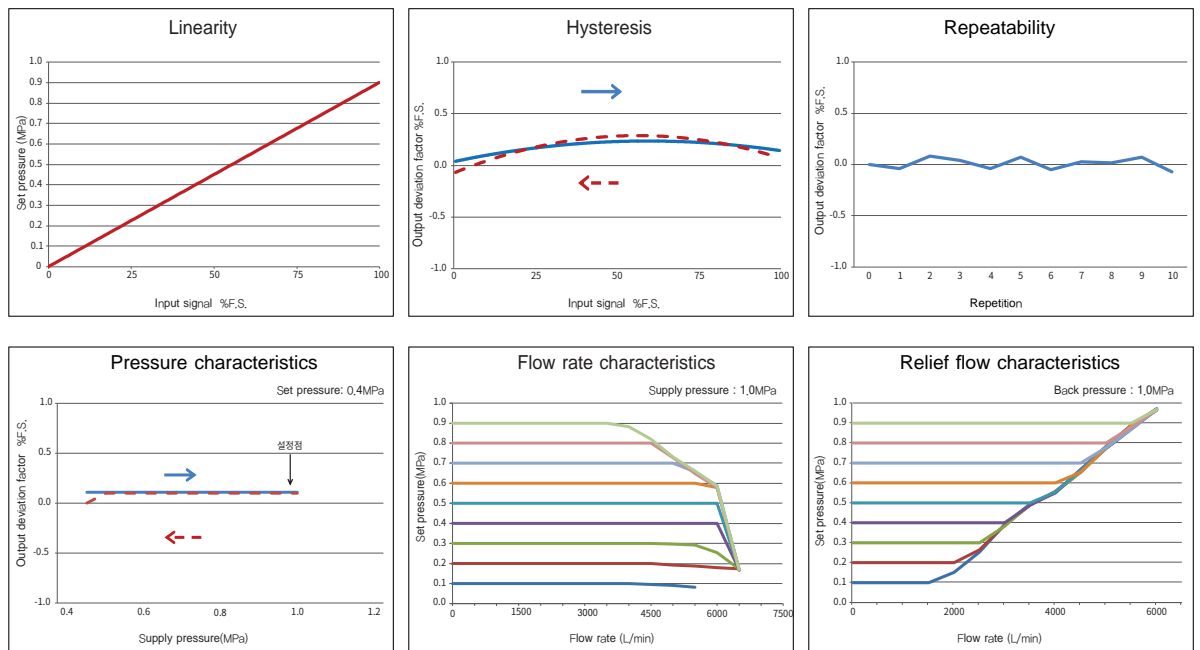


Performance graph

• EPR35



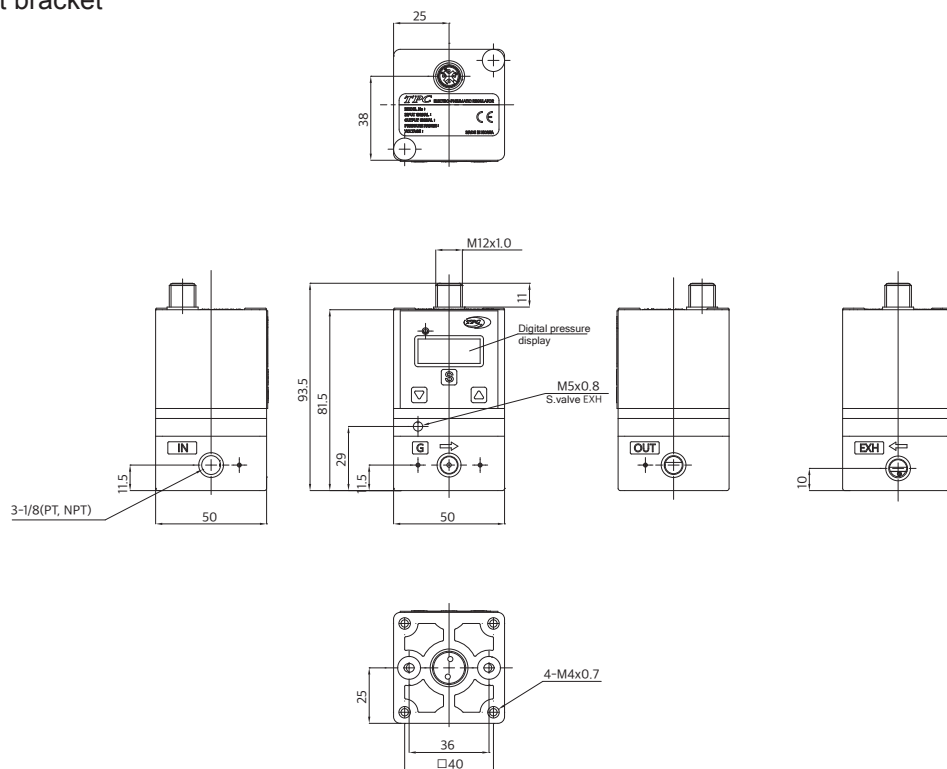
• EPR39



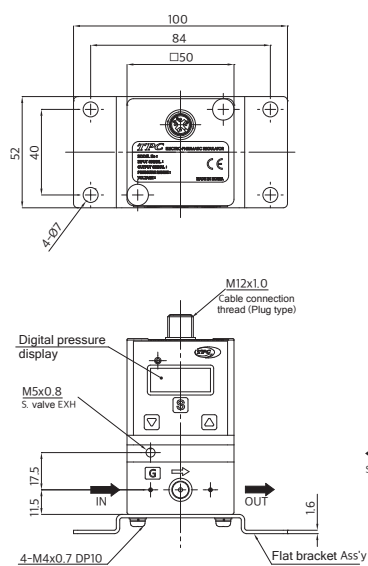
Dimensions

• EPR10

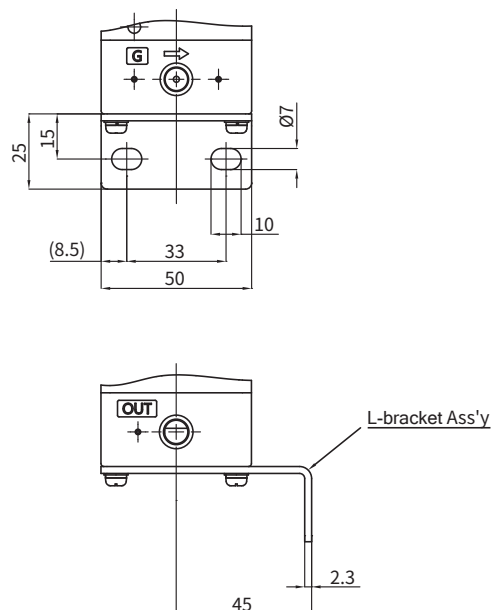
- Without bracket



- Flat type bracket



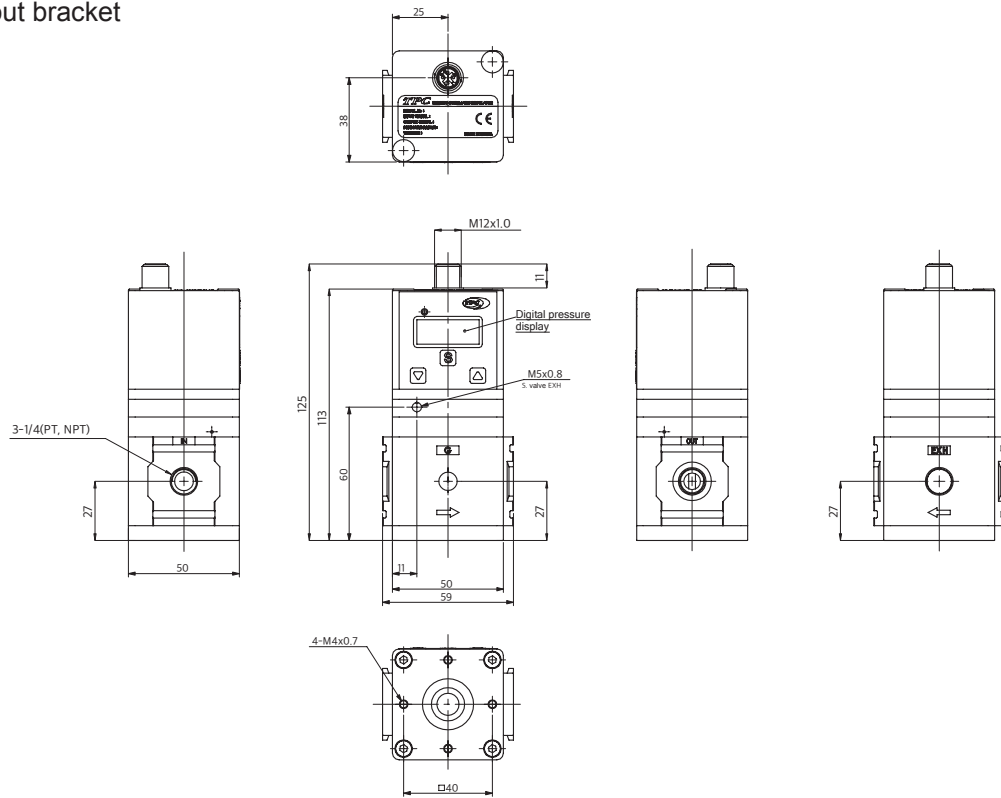
- L-bracket



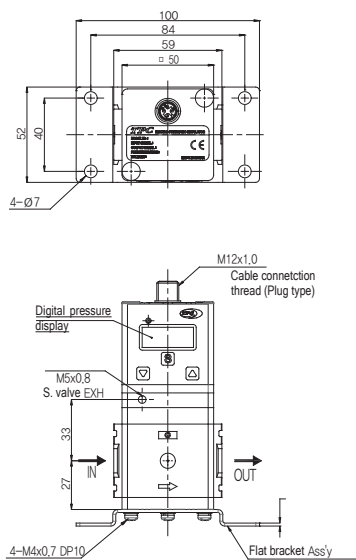
Dimensions

• EPR20

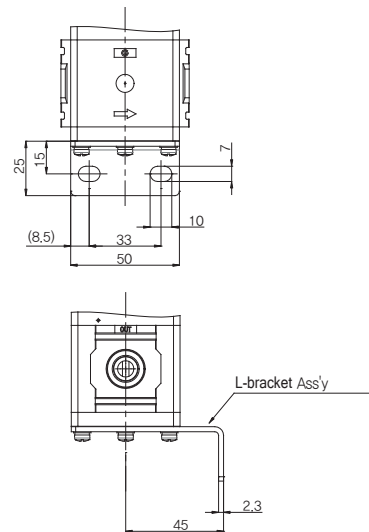
- Without bracket



- Flat type bracket



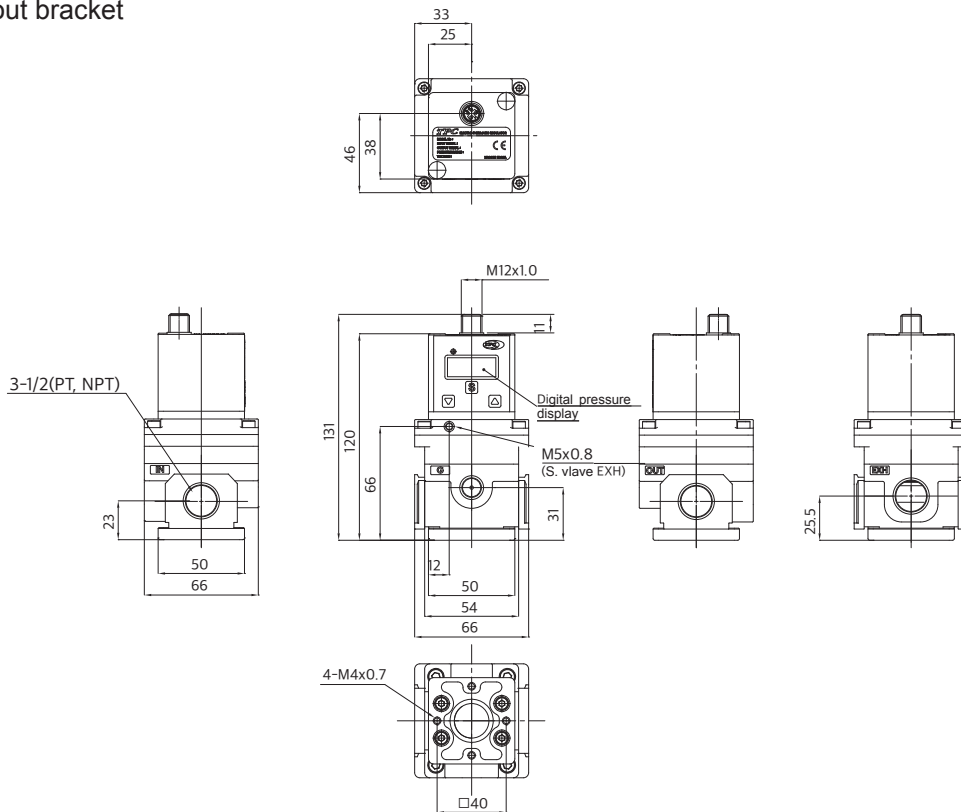
- L-bracket



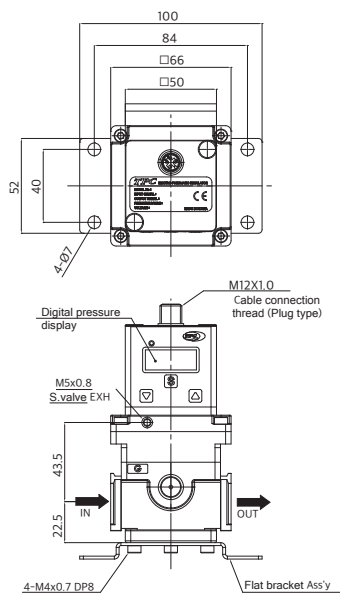
Dimentions

• EPR30

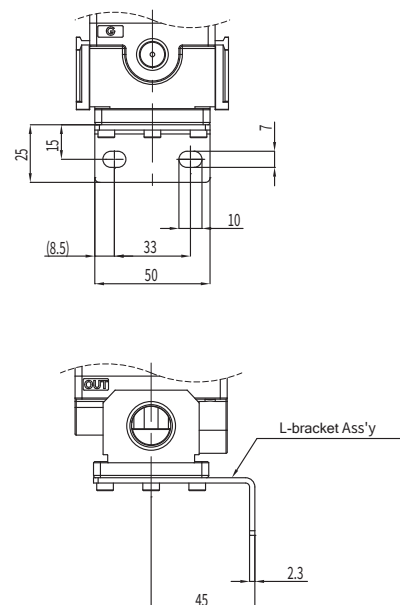
- Without bracket

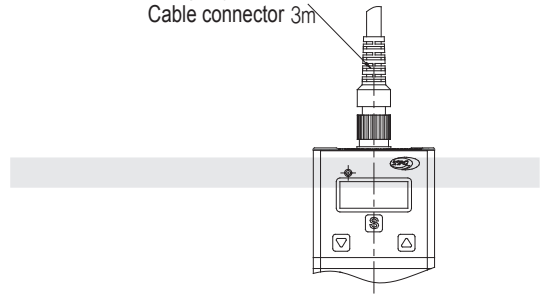
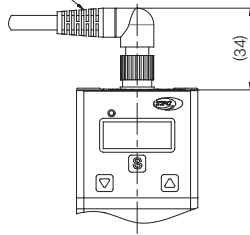


- Flat type bracket



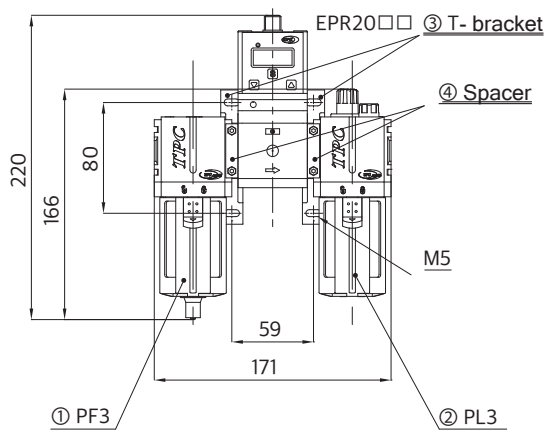
- L-bracket





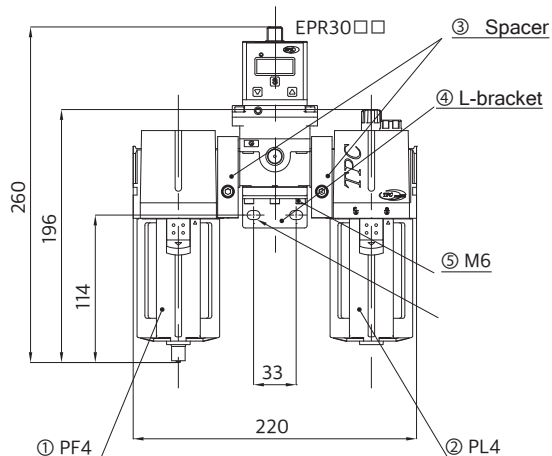
Modular application and accessory combination

- PF3_EPR20_PL3



Ass'y list	Part number
① Air filter	PF3
② Lubricator	PL3
③ T-bracket ASS'Y	PC2A-33A001
④ Clamp spacer	PC2A-33A002

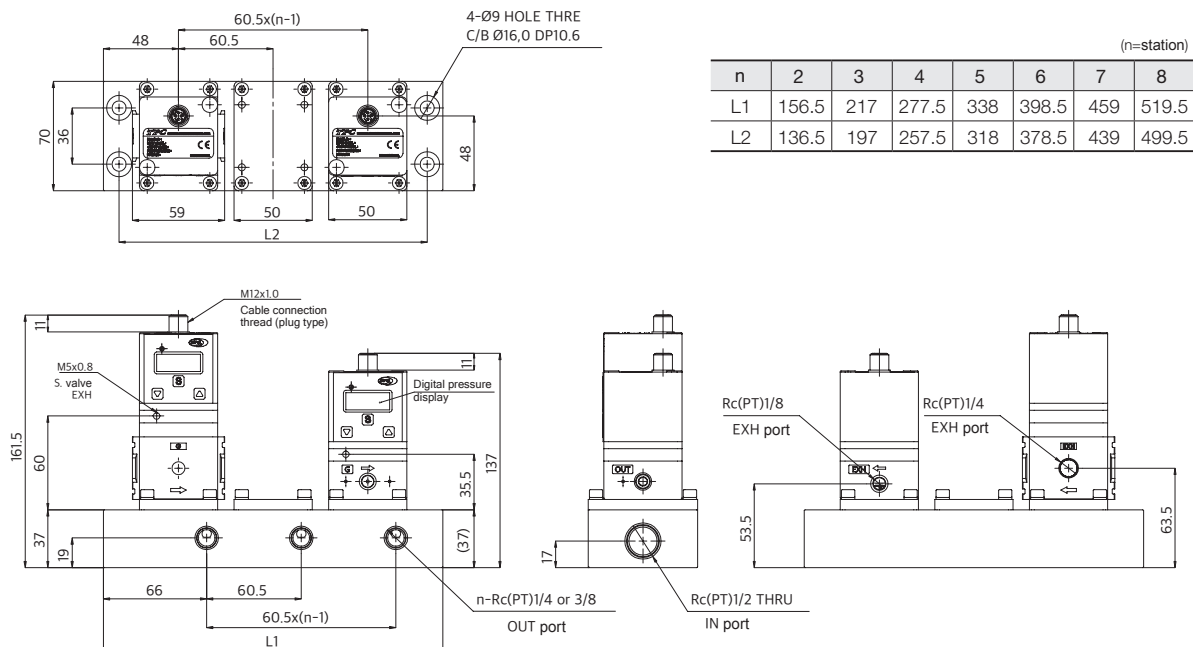
- PF4_EPR30_PL4



Ass'y list	Part number
① Air filter	PF4
② Lubricator	PL4
③ L-bracket ASS'Y	EPRA-C
④ Clamp spacer	PC4A-33A002
⑤ Bracket thread(M4X0.7X10L)	-

Dimensions

• Manifold type



Precautions

Be sure to read this before handling the products.

Caution for design

- 1) Operate these products only within the specified voltage. Using voltages beyond the specified levels could cause faults or malfunctions.
- 2) With a thorough understanding of the features for the compressed air, design the pneumatic circuit. There might be leakage and eruption due to the compressibility and expansibility of the air.
- 3) In locations where the body is exposed to water, steam, dust, etc., there is a possibility that moisture or dust could enter the body through the EXH port, solenoid valve EXH port and / or built in regulator EXH port, thereby causing problems.
- 4) Do not operate in locations where there is explosive gas.
- 5) If electric power is shut off while pressure is being applied, pressure will be retained on the output side. Please shut off the power when you do not use.
- 6) As time goes on, there will be a change to the repeatability and precision. So, please do examination for the system before you use it.
- 8) If the power to this product is cut off due to a power failure etc, when it is in a controlled state, output pressure will be retained temporarily.
- 9) Change of the operating pressure could impact on the control pressure. Please install the regulator in the forward side for the stable reproducibility.
- 10) Please install an air filter on the supply side close to the product to prevent to make the air contaminated.
- 11) The set pressure should be remain over +0.1MPa.
- 12) If the input signal over the specification is applied, it can cause malfunction. So, please use it with the input signal within the specification.
- 13) Even when pressure is set to 0 MPa, secondary side pressure will not be completely released with less than 1%F.S. remaining. If precisely 0 MPa is required, bleed the secondary side or install a residual pressure EXH valve on the secondary side to switch.

Caution for piping

- 1) Before piping is connected, it should be thoroughly blown out with air(flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.
- 2) When screwing together pipes and fittings, etc., be certain that chips from the pipe threads and sealing material do not get inside the piping.
- 3) To prevent any damage and air leakage, please screw piping together with the recommended proper torque.
- 4) When piping is connected and the compressed air is supplied, be sure that there's no air leakage on all connecting ports.

Connection thread	Torque(N·m)
1/4	8~12
3/8	15~20

Caution for wiring

- 1) Wrong wiring may cause the damage or malfunction of the production, Be sure to check the wiring diagram before wiring work.
- 2) Turn off the power before connecting or removing the cable to the connector.
- 3) A right angle type connector is attached facing left (toward the SUP port). Do not attempt to rotate, as the connector does not turn.

Caution for handling

- 1) Avoid using this regulator where it will be subject to direct sunlight, water or oil, etc.
- 2) Use the compressed air for the fluid.
- 3) IF electric power is shut off while pressure is being applied, pressure will be retained on the output side. However, this output pressure is held only temporarily and is not guaranteed..
- 4) If supply pressure to this product is interrupted while the power is still on, the internal solenoid valve will continue to operate and a humming noise may be generated. Since the life of the product may be shortened, shut off the power supply also when supply pressure is shut off.
- 5) Do not use input signal exceeding specifications. This product could malfunction if input signal exceeding the working range is applied.
- 6) If an abnormality occurs during operation, immediately turn off the power and air pressure and stop using it.
- 7) Proceed carefully, as incorrect wiring can cause damage.

How to control

1 Power supply

Screen display	Description
0- 10	Displayed input signal for 1 sec. (4-20mA, 0-10V, 0-5V) and then turns on the next screen
9bAr	Displayed the signal for 1 sec.(9bar, 5bar) and then turns on the next screen
LoC	Displayed the signal for 1sec. and then turns on the next screen
0000	Displayed the current input signal

*When the power is supplied initially, the screen is locked and you cannot to operate it at this stage

2 Screen Lock / Unlock

Screen lock function is on to prevent improper handling for the product. If you need to control the functions of the product, unlock the screen and operate it.

2.1 Unlock the screen

Screen display	Description
0000	Push ▼ button for more than 1 sec.
UnL	Displayed for 0.5 sec. and then turns on the next screen
0000	Unlock the screen and available to control the functions.

2.2 Lock the screen

Display screen	Description
0000	Push ▲ button for more than 1 sec.
LoC	Displayed for 0.5 sec. and then turns on the next screen
0000	Lock the screen and not available to control the functions.

3 Set functions

With unlocked screen, push S button and you may enter the function selection screen. and you can choose the function by pushing ▼▲ buttons and you can start the function by pushing S button.

Going down	Screen display	Going up	Description
	0000		Set pressure is displayed(Screen unlocked) and you may entered the function selection screen by pushing S button
▼	LO_P ↔ 00 (Current set value)	▲	Set the min. pressure
	h i_P ↔ 1000 (Current set value)		Set the max. pressure
	GA in ↔ L0.5 (Current set value)		Adjust the gain
	0CLr		Zero clear
	Un it ↔ 1.0PA (Current set value))		Change the display unit
	EX it		Exit the function selection screen
	0000		Current set pressure is displayed (Screen locked)

How to control

3.1 Min. pressure setting mode

With unlocked screen, push S button and then you may enter the function selection screen. and you can choose the function by pushing ▼▲ buttons and you can start the function by pushing S button.

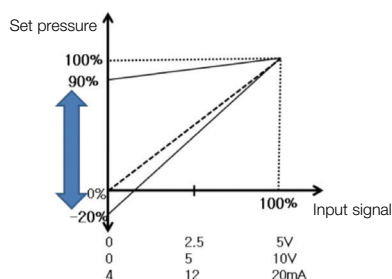
Screen display	Description
$L O_P \longleftrightarrow 00$ (Current set value[%])	Enter to min. pressure setting mode by pushing S button quickly(Refer to the description from No. 3, "Set functions")
00	Set value currently saved is displayed (Min. pressure is displayed as percentage against F.S)
-200	By pushing ▼, ▲ buttons, change the min. pressure value and then save the value by pushing S button for more than 2 sec. (If you push S button too quick, it cannot be saved and return to the the previous value)
$L O_P \longleftrightarrow -200$ (Set value saved[%])	Changed value is displayed

3.2 Max. pressure setting mode

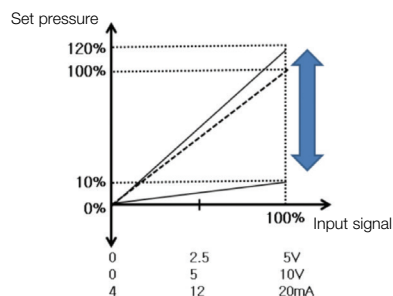
Screen display	Description
$h i_P \longleftrightarrow 1000$ (Current set value[%])	Enter to max. pressure setting mode by pushing S button quickly(Refer to the description from No. 3, "Set functions")
1000	Set value currently saved is displayed (Max. pressure is displayed as percentage against F.S)
800	By pushing ▼, ▲ buttons, change the max. pressure value and then save the value by pushing S button for more than 2 sec. (If you push S button too quick, it cannot be saved and return to the the previous value)
$h i_P \longleftrightarrow 800$ (Changed set value[%])	Changed value is displayed

■ Set pressure range

Set range for min. pressure



Set range for max. pressure



- Min. pressure can be adjusted as -20%~90% against the rated pressure. (Initial value : 0%)
- If you set the min. pressure as below 0%, value below 0% cannot be displayed.
- Max. pressure can be adjusted as 10%~120% against the rated pressure. (Initial value : 100%)
- If you set the max. pressure as above 100%, value above 100% cannot be displayed.
- Min. pressure value cannot be adjusted as over max. pressure value.

How to control

3.3 Gain setting mode

By adjusting gain value, you can adjust the lead time the control pressure reaches to the set pressure value.

If you adjust the gain bigger, it can reach to the set pressure fast, but it can occur over shoot.

If you adjust the gain smaller, it can reach to the set pressure slowly.

Screen display	Description
GA in ↔ Lu.5 (Current set value)	Enter to gain setting mode by pushing S button quickly (Refer to the description from No. 3, "Set functions")
Lu.5	Set value currently saved is displayed
Lu.2	By pushing ▼, ▲ buttons, change the gain value and then save the value by pushing S button for more than 2 sec. (If you push S button too quick, it cannot be saved and return to the the previous value)
GA in ↔ Lu.2 (Changed set value)	Changed value is displayed

■ Correlation between gain setting and repeatability

Repeatability	Slow —————> Fast									
Gain setting	Lu.0	Lu.1	Lu.2	Lu.3	Lu.4	Lu.5	Lu.6	Lu.7	Lu.8	Lu.9

*Initial value : Lu

3.4 Zero clear mode

Zero clear function makes the value to be "0".

Zero clear adjustment blocks the supply pressure and it should be conducted after the pressure at the secondary side is relieved

Screen display	Description
0CLR	Enter to zero clear mode by pushing S button quickly (Refer to the description from No. 3, "Set functions")
CLR	Push S button for more than 2 sec. for implementing Zero clear mode (If you push S button too quick, it cannot be saved and return to the the previous value)
done	Zero clear mode is displayed for 1sec and turns on the next screen
0000	Changed value is displayed

How to control

3.5 Display unit change mode

Screen display	Description
Unit \leftrightarrow MPa (Current set value)	Enter to display unit change mode by pushing S button quickly (Refer to the description from No. 3, "Set functions")
MPa	Set value currently saved is displayed
kgf	Bypushing ∇ , \blacktriangle buttons, change the display unit and then save the value by pushing S button for more than 2 sec. (If you push S button too quick, it cannot be saved and return to the the previous value)
Unit \leftrightarrow kgf (Changed set value)	Changed unit is displayed

■ Display unit

Going down	Screen display	Going up	Description
∇	MPa	\blacktriangle	MPa
	kgf		kgf/cm ²
	bar		Bar
	PSI		Psi
	kPa		kPa

■ Pressure display and display range

Set unit	Pressure display	Display range	
		EPR25	EPR29
MPa	0000	000 ~ 0500	0000 ~ 0900
kgf	000F	000F ~ 5.10F	000F ~ 9.18F
bar	000b	000b ~ 500b	000b ~ 900b
PSI	0000	0000 ~ 0725	0000 ~ 1305
kPa	000K	000K ~ 500K	000K ~ 900K