Doc. no.DIY-60L00-OM002-B

Operation Manual

PRODUCT NAME

Electro-Pneumatic Regulator Manifold type
(Plug-in)

MODEL / Series / Product Number

ITV23 Series

SMC Corporation

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Details of the fieldbus system EX600 series are available from the SMC website.
(URL http://www.smcworld.com)

E-P Regulator Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1:Robots
etc.

Danger	**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
Warning	**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
Caution	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

E-P Regulator Safety Instructions

⚠ Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing business.
Use in non-manufacturing business is not covered.
Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.
The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.
Read and accept them before using the product.

Limited warranty and Disclaimer

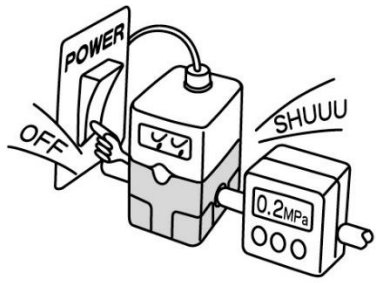
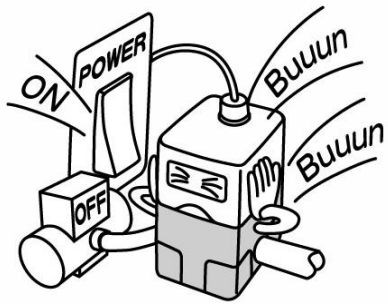
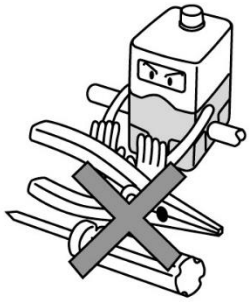
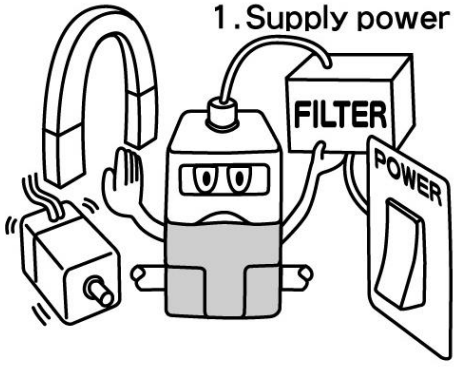
1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.[*2)]
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

***2) Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Handling precautions

⚠ Caution	
	If the power supply to this product is turned off due to a power failure during normal operation, the output on the secondary side will be held and air will flow continuously.
	If supply pressure to this product is interrupted or shut off, while the power is still on, the internal solenoid valve will continue to operate, and a humming noise will be generated. Turn off the power supply when supply pressure is interrupted or shut off, since the life of the product may be shortened.
	This product is adjusted to specification at the time of shipment from the factory. Avoid careless disassembly or removal of parts, as this can lead to malfunction.
	Take the following steps to avoid malfunction due to noise. 1. Install a line filter etc. to the AC power line to reduce / eliminate power supply noise. 2. Avoid malfunction due to noise by installing this product and it's wiring away from strong electric fields, such as those of motors and power cables, etc. 3. Be sure to implement protective measures against load surge for inductive loads (solenoid valves, relays etc.). 4. Turn off the power supply before inserting or removing the connector.

Internal communication specification

■Process data

Process data is cyclic data exchanged periodically by [E-P regulator - PLC].
Process data consists of PD_IN (process data input): 4 byte and PD_OUT (process data output): 2 bytes.

The endianness type varies depending on the transmission method of the higher-level communication, so please pay attention to the byte order.
Please refer to the table below for the main endianness types of higher-level communication.

Endian type	Upper communication protocol
Big-Endian type	PROFINET etc.
Little-Endian type	EtherNET/IP™, EtherCAT etc.

Process data input: 4byte [E-P Regulator - PLC]

bit offset	Item	Note
0	SSC1	Turns ON when the output pressure is within +/-10%F.S. of the set pressure.
1 and 2	Disabled	Not used. The value is not reflected.
3	Diagnostic information (notification) Refer to P6	0: Normal 1: Notification (defined per bit)
4 to 10	Diagnostic information (warning) Refer to P6	0: Normal 1: Notification (defined per bit)
11 to 15	Diagnostic information (abnormal) Refer to P6	0: Normal 1: Notification (defined per bit)
16 to 31	Output pressure value Refer to P5	No symbol 16-bit

Output pressure value

Output pressure value of the product is sent.

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	bit
Output pressure value (16-bit)																value

Monitoring of output pressure

The output pressure can be monitored by the PLC receiving the output data from the E-P regulator where the output pressure is 13-bit. (The upper 3-bit (29th to 31st) are 0).

<Relation between the output pressure value (16-bit) and output pressure>

Output pressure value	0 x 0000	0 x 0FFF
Output pressure	0%	100%

Check the values from the 16th to 28th bit of the 32-bit (4-byte) process data.
(When F_1=0%F.S. and F_2=100%F.S.)

(Ex.) When the output pressure is 100%, the set pressure value is 0x0FFF.

Diagnostic information

This product can detect the device error by diagnostic bit in the process data.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	bit
Abnormal					Warning							Notification	Disabled		SSC1	value

bit offset	Item	Note
0	SSC1	1: Output pressure value is within +/-10% of the target value. 0: Other than the above case.
1	Disabled	0: Vacant.
2	Disabled	0: Vacant.
3	Notification of the accumulated energizing time	1: When the cumulative energization time reaches the set value. 0: other than that.
4	Residual pressure error	1: When the output pressure value exceeds the specified value at the time of zero-clear.
5	Target value over range	1: When the target value exceeds the specified value.
6	Pressure value under range (LLL)	1: When the output pressure value is less than the specified value.
7	Pressure value over range (HHH)	1: When the output pressure value exceeds the specified value.
8	Decline in the power supply voltage	1: When the power supply voltage is less than the specified value.
9	Excessive power supply voltage	1: When the power supply voltage exceeds the specified value.
10	Alarm generation	1: When 4-bit to 9-bit are “0” 0: other than that.
11	Internal communication error	1: When an error is generated in processing the internal communication.
12	Built-in solenoid valve error	1: When an error is generated in the built-in solenoid valve.
13	Internal system error	1: When an internal system error is generated.
14	EEPROM error	1: When an EEPROM error is generated.
15	Error	1: When 11-bit to 14-bit are “0” 0: other than that.

Process data output: 2byte [PLC - E-P Regulator]

The product adjusts the pressure to the set value.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	bit
Set pressure value (16-bit)																value

* Data is adjustable up to 120%F.S. (However, the warranty range is up to 100% F.S.)

Pressure setting mode.

The pressure can be set by sending input data with a full span of 12-bit from the PLC to the electro-pneumatic regulator. Values outside the specification range (including 13-bit to 15- bit) are recognized as large values and may cause [Er.1], so please do not use them.

<Relationship between the set pressure (16-bit) and output pressure>

Output pressure value	0 x 0000	0 x 0FFF
Output pressure	0%	100%

Input data shall be entered from 0 to 12-bit of the 16-bit process data (2 byte).

(When F_1=0%F.S. and F_2=100%F.S.)

(Ex.) When the output pressure is 100%, the set pressure value is 0x0FFF.

(Calculation example 1)

Part number : ITV2340-□□ (Pressure range 0.7MPa)

When you want to set to 0.5 MPa (12bit = 4095 divisions)

0.7 = 4095 : 0.5 = ●●

●● = 4095/0.7×0.5 = 2925

Convert 2925 to hexadecimal → Set pressure value : 0 x 0B6D

(Calculation example 2)

Part number : ITV2350-□□ (Pressure range 0.9MPa)

When you want to set to 0.5 MPa (12bit = 4095 divisions)

0.9 = 4095 : 0.5 = ●●

●● = 4095/0.9×0.5 = 2275

Convert 2275 to hexadecimal → Set pressure value : 0 x 08E3

Setting parameters via communication

The output at the time of communication error, gain adjustment, sensitivity adjustment, minimum pressure, maximum pressure, and notification of accumulated time can also be set via communication.
Do not configure settings using the button operation and communication at the same time. If settings are made by both methods, unintended settings may be configured.

Item	communication		button	
Output at the time of communication error	○	P8	-	-
Gain setting	○	P9	○	P17
Sensitivity setting	○	P10	○	P18
Setting of Min. pressure, Max. pressure	○	P11	○	P15
Notification setting of the accumulated energizing time	○	P12	-	-
Key locking function	-	-	○	P14
Zero clear	-	-	○	P19
Initialize	-	-	○	P20
Reset function	-	-	○	P20

Parameter name	Output at the time of communication error (Hold/Clear setting)
Function	This is the output pressure setting when a communication error occurs. Initial value : Pressure Clear
Value	* 0 Pressure Clear 1 Pressure Hold

* Indicates the initial value.

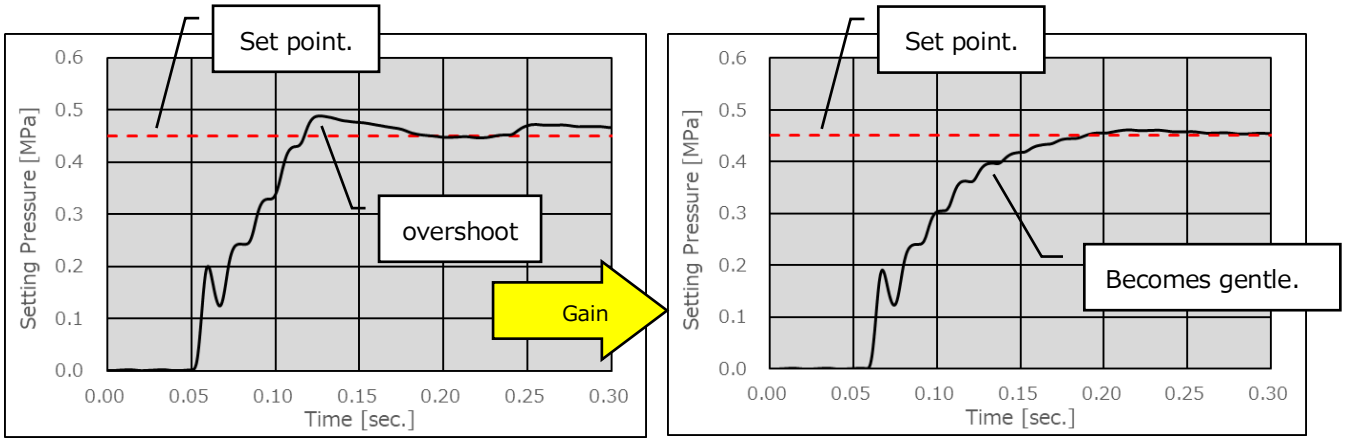
Parameter name	Gain setting
Function	The response time can be changed by tuning the gain. If the over-shoot is large, decreasing the gain tends to improve it, but the responsiveness becomes slower. Conversely, when the gain is increased, the response time tends to be faster, but stability will be lost, which may cause hunting (unstable pressure). In normal use, use the product in the condition when shipped, it is not always necessary to adjust the gain. Initial value：Gain 9
Value	

	Setting	
	0	Gain 0
	1	Gain 1
	2	Gain 2
	3	Gain 3
	4	Gain 4
	5	Gain 5
	6	Gain 6
	7	Gain 7
	8	Gain 8
*	9	Gain 9
	10	Gain A
	11	Gain B
	12	Gain C
	13	Gain D
	14	Gain E
	15	Gain F

Slow

Quick

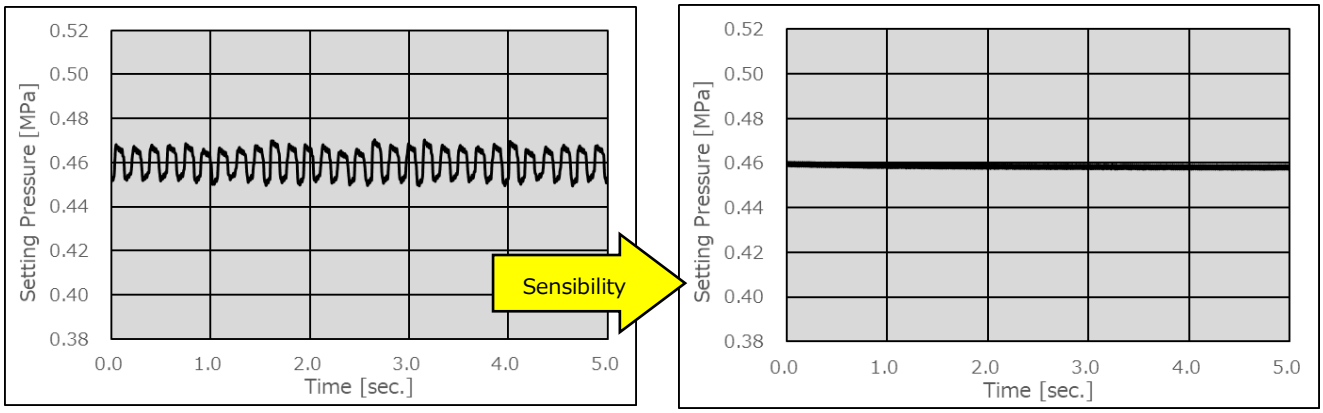
* Indicates the initial value.



Parameter name	Sensitivity setting
Function	Adjusting the sensitivity changes the pressure correction operation near the set pressure point. When the load capacity on the secondary side is large and hunting (unstable pressure) occurs, decreasing the sensitivity tends to improve the hunting. However, as the pressure correction is reduced, moderate pressure instability may occur. In normal use, use the product in the condition when shipped, it is not always necessary to adjust the sensitivity. Initial value：Sensibility 0
Value	*

Setting		
0	Sensibility -	Sharp
1	Sensibility ¯	↑
2	Sensibility 0	
3	Sensibility 1	
4	Sensibility 2	
5	Sensibility 3	
6	Sensibility 4	↓
7	Sensibility 5	Dull

* Indicates the initial value.

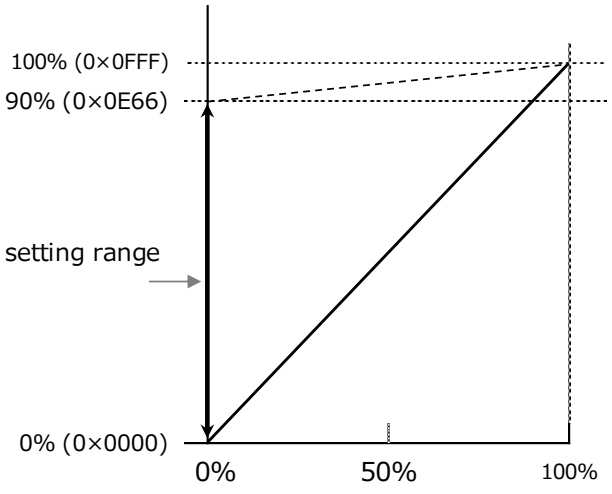


<table>
<tr><td>Parameter name</td><td>Setting of Min. pressure, Max. pressure</td></tr>
<tr><td>Function</td><td>It is possible to change the minimum pressure (hereinafter referred to as "F_1") and the maximum pressure (hereinafter referred to as "F_2"). In normal use, use the product in the condition when shipped, it is not always necessary to adjust the setting of minimum pressure, and the setting of maximum pressure.

<table>
<tr><td rowspan="2">Initial value：F_1 (0%)</td><td>Hexadecimal</td><td>0x0000</td></tr>
<tr><td>Decimal number</td><td>0</td></tr>
<tr><td rowspan="2">Initial value：F_2 (100%)</td><td>Hexadecimal</td><td>0x0FFF</td></tr>
<tr><td>Decimal number</td><td>4095</td></tr>
</table></td></tr>
<tr><td>Value</td><td>Relationship between F_1/F_2 and setting pressure (Hexadecimal)
<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="2">Min. pressure F_1</td><td colspan="2">Max. pressure F_2</td></tr>
<tr><td>Min.</td><td>Max.</td><td>Min.</td><td>Max.</td></tr>
<tr><td rowspan="2">Input value</td><td>Hex.</td><td>0x0000</td><td>0x0E66</td><td>0x019A</td><td>0x1332</td></tr>
<tr><td>Dec.</td><td>0</td><td>3686</td><td>410</td><td>4914</td></tr>
<tr><td colspan="2">Setting pressure</td><td>0%F.S.</td><td>90%F.S.</td><td>10%F.S.</td><td>120%F.S.</td></tr>
</table></td></tr>
</table>

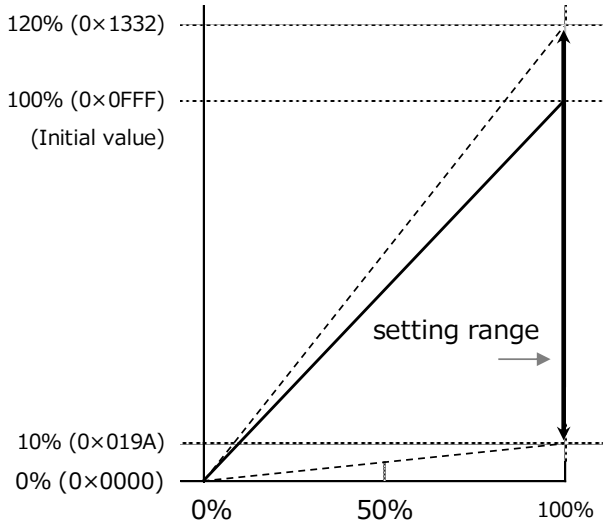
You can change the relationship between the signal and the output pressure (slope and intercept) as follows.

Minimum pressure (F_1) setting range



* Image when the maximum pressure (F_2) is 100%.

Maximum pressure (F_2) setting range



* Image when the minimum pressure (F_1) is 0%.

(Note 1) F_1 is adjustable in a range from 0% to 90% of the rated value. (Default value：0%)
(Note 2) The pressure of less than 0% is not output, even if F_1 is adjusted to less than 0%.
(Note 3) F_2 is adjustable in a range from 10 to 120% of the rated value. (Default value：0%)
(Note 4) Do not input the signal as like output the pressure of more than 100%.
Please use in a range of rating.
(Note 5) The difference between F_1 and F_2 is adjustable in a range of 10% of the rated value.
(Note 6) The adjustment like making the relation of F_1>F_2 is not available.

<table>
<tr><td>Parameter name</td><td>Notification setting of the accumulated energizing time</td></tr>
<tr><td>Function</td><td>This function uses process data to notify the user that the accumulated energizing time of the electro-pneumatic regulator reached the time set with this function.
The default value is "0," which means no notification is output.
If the value is "1" or greater, the notification setting is enabled.

Initial value：Notification disabled</td></tr>
<tr><td>Value</td><td>
<table>
<tr><th colspan="2"></th><th colspan="2" rowspan="2">Setting</th><th colspan="2" rowspan="2">Content</th></tr>
<tr></tr>
<tr><th></th><th>Hex.</th><th>Dec.</th><th colspan="2"></th></tr>
<tr><td>*</td><td>0x00000000</td><td>0</td><td colspan="2">Notification disabled</td></tr>
<tr><td></td><td>0x00000001</td><td>1</td><td rowspan="5">Notification enabled</td><td>1hour</td></tr>
<tr><td></td><td>…</td><td>…</td><td>…</td></tr>
<tr><td></td><td>0x00002238</td><td>8760</td><td>Approx. 8,760 hours (Approx.1year)</td></tr>
<tr><td></td><td>…</td><td>…</td><td>…</td></tr>
<tr><td></td><td>0xFFFFFFFF</td><td>4294967295</td><td>4,294,967,295hour</td></tr>
</table>
</td></tr>
</table>

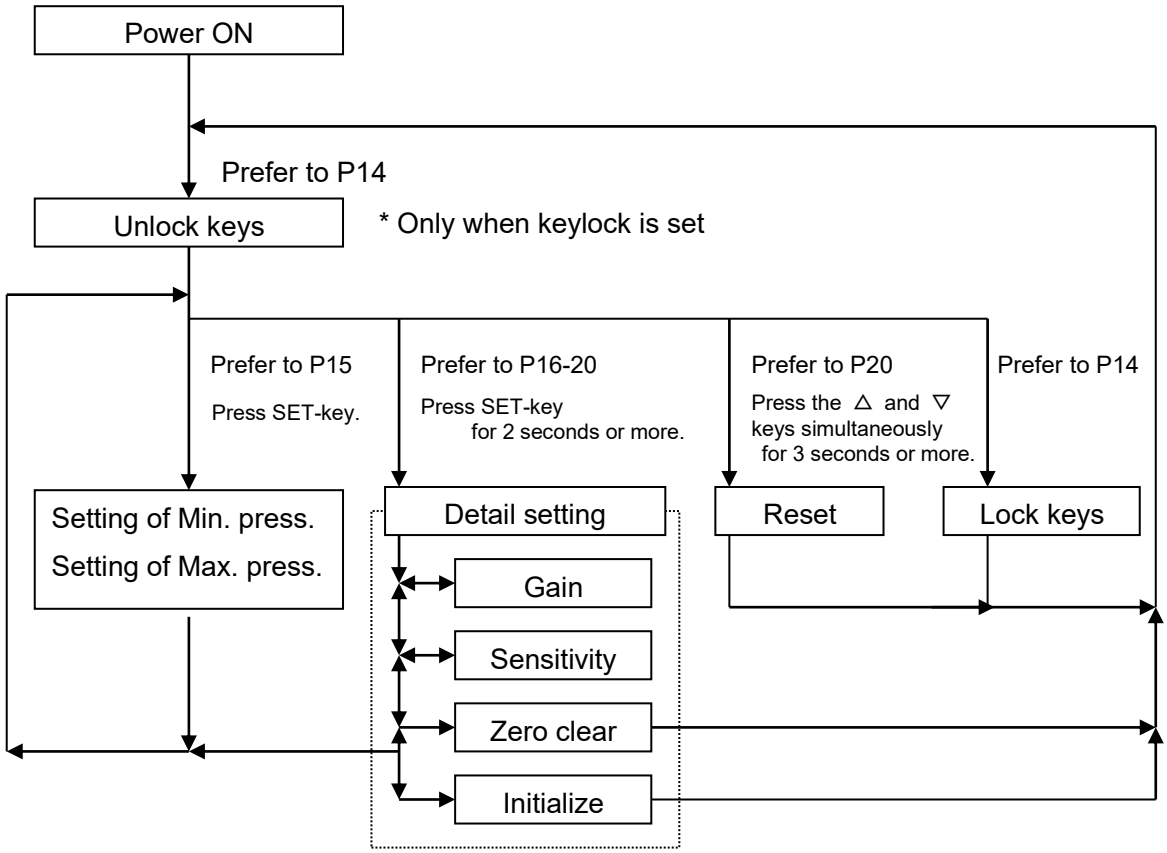
* Indicates the initial value.

Setting using buttons

⚠ Caution

(1) If the incorrect key is pressed or incorrect information is displayed during setting, power must be shut off and the procedure started again.
(2) It is recommended that the settings are changed without supply pressure.
The product operates immediately maximum and minimum pressures are set and the SET-key is pressed.
(3) Even if no input signal is input, when air is supplied to the inlet, the pressure set to "Min. pressure" will be output to the secondary side, so be careful.
(4) Output pressure from this product and state of operation are changed by changing of each setting and function.
Each setting and function should be operated by trained and experienced operator.
(5) Do not configure settings using the button operation and communication at the same time. If settings are made by both methods, unintended settings may be configured.

Flow of the setting



Please refer to each content about operation method.

Key locking function

⚠ Caution
The key lock function is preserved in the EEPROM (non-volatile memory). Its settings are reflected even after power cycling (The key lock is deactivated by default at shipment). However, when buttons are operated, the button operations take priority and the settings via communication are processed exclusively.

Unlocking the keys

No	Key operation	LED Display
(1)		(current) pressure is displayed
(2)	Press ▽ key for 2 seconds or more.	LOC is displayed
(3)		LOC flashes on the display
(4)	Press SET-key	
(5)		UNL is displayed for approx. 1 second
(6)	Key lock is released	(current) pressure is displayed

*(4) Press △ key to cancel.

Locking the keys

No	Key operation	LED Display
(1)		(current) pressure is displayed
(2)	Press △ key for 2 seconds or more.	UNL is displayed
(3)		UNL flashes on the display
(4)	Press SET-key	
(5)		LOC is displayed for approx. 1 second
(6)	Keys are locked	(current) pressure is displayed

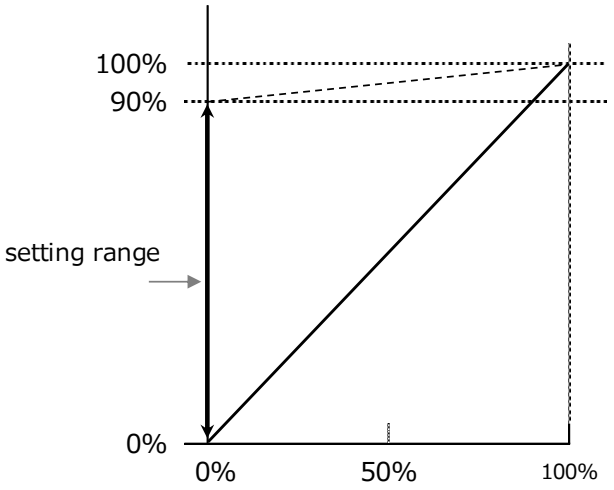
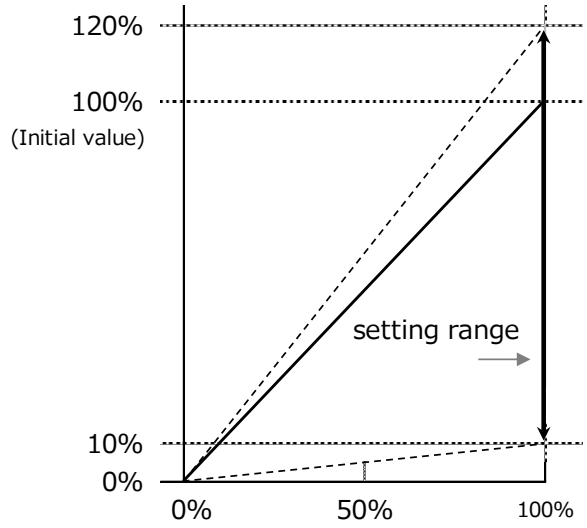
*(4) Press ▽ key to cancel.

Setting of Min. pressure, Max. pressure

These interlock with the communication parameters.
It is possible to change the minimum pressure (hereinafter referred to as "F_1") and the maximum pressure (hereinafter referred to as "F_2").
In normal use, use the product in the condition when shipped, it is not always necessary to adjust the setting of minimum pressure, and the setting of maximum pressure.

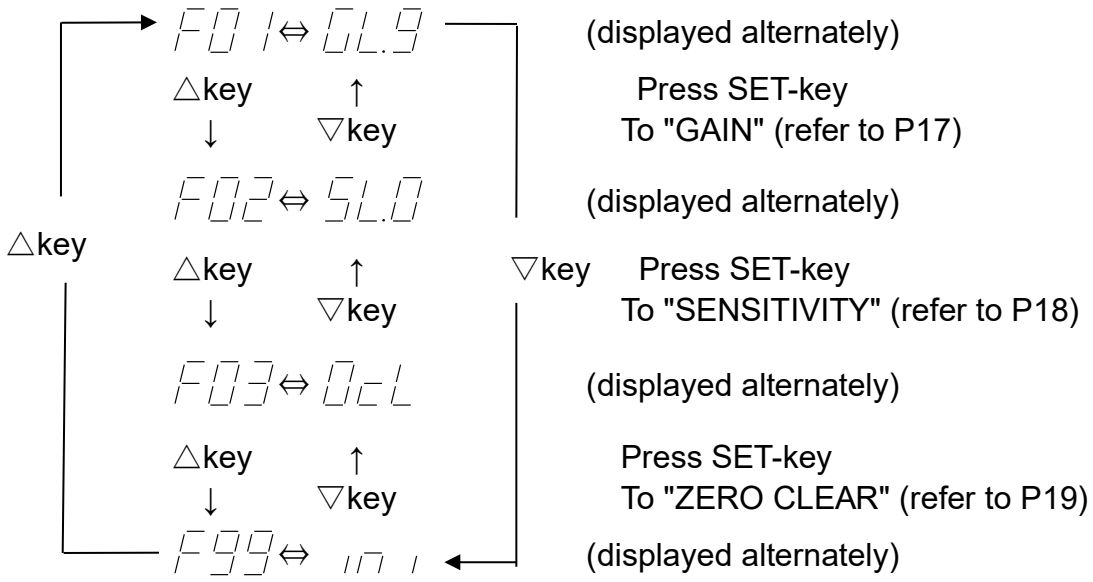
No	Key operation	LED Display
(1)	Deactivate the key lock if necessary (refer to P14).	
(2)	Press SET-key	
(3)	Set the minimum pressure by using the △ and ▽ keys.	F_1⇔.000 (displayed alternately) *Adjusting range: Refer to note 1 to 6
(4)	Press SET-key	
(5)	Set the maximum pressure by using the △ and ▽ keys.	F_2⇔.900 (displayed alternately) *Adjusting range: Refer to note 1 to 6
(6)	Activate the key lock if necessary (refer to P14).	

You can change the relationship between the signal and the output pressure (slope and intercept) as follows.

Minimum pressure (F_1) setting range	Maximum pressure (F_2) setting range
	
* Image when the maximum pressure (F_2) is 100%.	* Image when the minimum pressure (F_1) is 0%.

(Note 1) F_1 is adjustable in a range from 0% to 90% of the rated value. (Default value：0%)
(Note 2) The pressure of less than 0% is not output, even if F_1 is adjusted to less than 0%.
(Note 3) F_2 is adjustable in a range from 10 to 120% of the rated value. (Default value：0%)
(Note 4) Do not input the signal as like output the pressure of more than 100%.
Please use in a range of rating.
(Note 5) The difference between F_1 and F_2 is adjustable in a range of 10% of the rated value.
(Note 6) The adjustment like making the relation of F_1>F_2 is not available.
(Note 7) Please enter pressure values in F_1 and F_2. (In case of 0.9MPa .900)

Detail setting mode

No	Key operation and LED display
(1)	Deactivate the key lock if necessary (refer to P14).
(2)	Press SET-key for 2 seconds or more.
(3)	
(4)	In state of 3, press SET-key for 2seconds or more.
(5)	Return to (current) pressure display.
(6)	Activate the key lock if necessary (refer to P14).

Gain setting

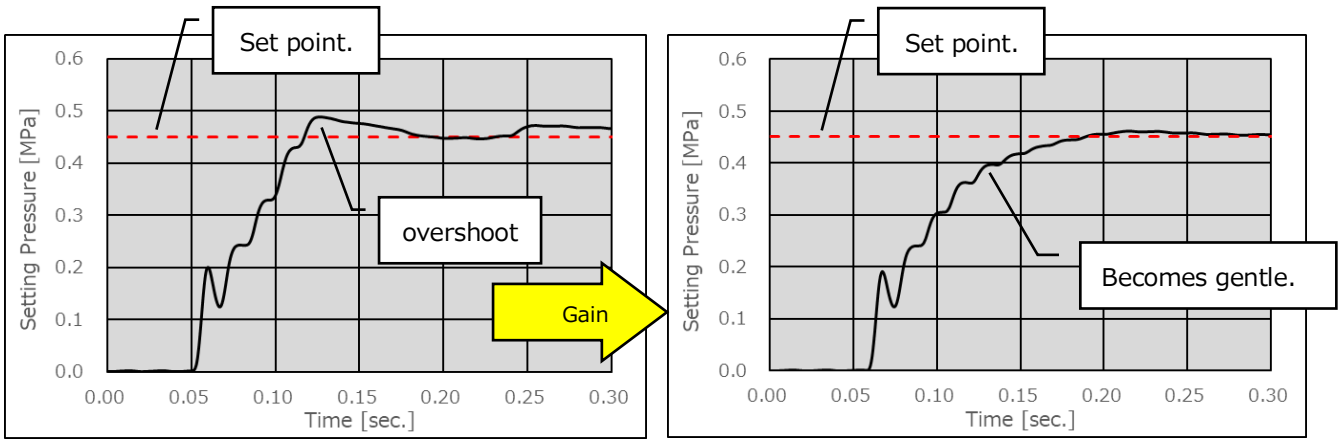
This setting can also be configured using the communication.
The response time can be changed by tuning the gain.
If the over-shoot is large, decreasing the gain tends to improve it, but the responsiveness becomes slower.
Conversely, when the gain is increased, the response time tends to be faster, but stability will be lost, which may cause hunting (unstable pressure).
In normal use, use the product in the condition when shipped, it is not always necessary to adjust the gain.

No	Key operation	LED Display
(1)	Deactivate the key lock if necessary (refer to P14).	
(2)	Press SET-key for 2 seconds or more, then go to detail setting mode.	
(3)	To "F01" by using the △ and ▽ keys.	F01 ⇔ GL.9 (displayed alternately)
(4)	Press SET-key.	
(5)	Set the GAIN by using the △ and ▽ keys.	GL.9 (Blink and change the rightest digit)
(6)	Press SET-key.	F01 ⇔ GL.9 (displayed alternately)
(7)	Press SET-key for 2 seconds or more, then go out from detail setting mode. (Select the menu with △ or ▽ keys, then jump to another item.)	
(8)	Activate the key lock if necessary (refer to P14).	

Relation between setting of gain and response time

Response	Slow ←											→ Quick
Setting of GAIN	GL.0	GL.1	GL.2	to	GL.7	GL.8	GL.9	GL.A	GL.b	GL.c	GL.d	GL.E	GL.F

* Indicates the initial value. GL.9



Sensitivity setting

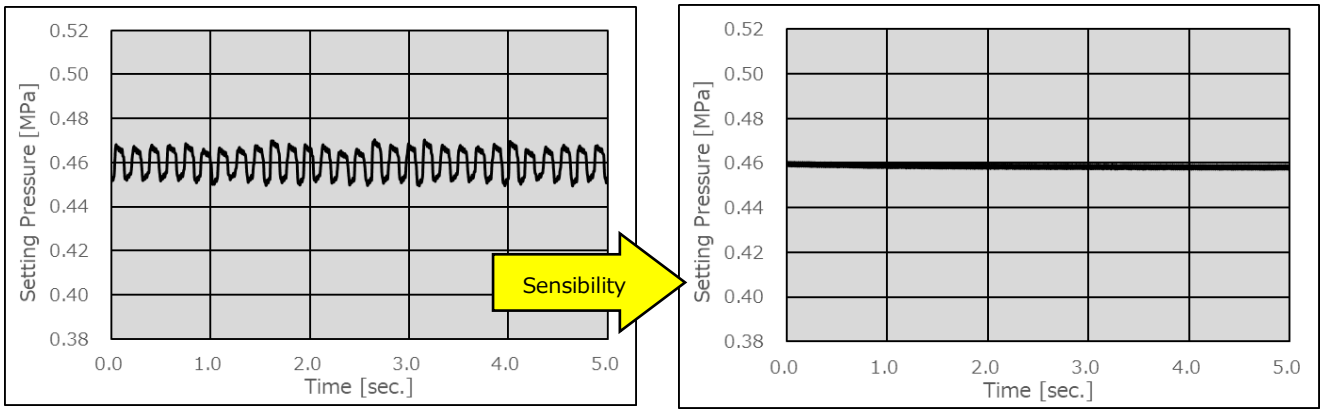
This setting can also be configured using the communication.
Adjusting the sensitivity changes the pressure correction operation near the set pressure point. When the load capacity on the secondary side is large and hunting (unstable pressure) occurs, decreasing the sensitivity tends to improve the hunting. However, as the pressure correction is reduced, moderate pressure instability may occur.
In normal use, use the product in the condition when shipped, it is not always necessary to adjust the sensitivity.

No	Key operation	LED Display
(1)	Deactivate the key lock if necessary (refer to P14).	
(2)	Press SET-key for 2 seconds or more, then go to detail setting mode.	
(3)	To "F02" by using the △ and ▽ keys.	F02⇔SL.0 (displayed alternately)
(4)	Press SET-key.	
(5)	Set the SENSITIVITY by using the △ and ▽ keys.	SL.0 (Blink and change the rightest digit)
(6)	Press SET-key.	F02⇔SL.0 (displayed alternately)
(7)	Press SET-key for 2 seconds or more, then go out from detail setting mode. (Select the menu with △ or ▽ keys, then jump to another item.)	
(8)	Activate the key lock if necessary (refer to P14).	

Relation between setting and sensitivity

Sensitivity	Sharp ← → Dull							
Setting of sensitivity	SL.-	SL.⁻	SL.0	SL.1	SL.2	SL.3	SL.4	SL.5

* Indicates the initial value. SL.0



Zero clear

The display can be set to zero again by executing "zero clear".
When "zero clear" is executed with residual pressure in the secondary piping, the pressure is assumed to be zero. Please execute the operation of "zero clear" with the supply pressure is intercepted, and the piping of the second side removed.

No	Key operation	LED Display
(1)	Deactivate the key lock if necessary (refer to P14).	
(2)	Press SET-key for 2 seconds or more, then go to detail setting mode.	
(3)	To "F03" by using the △ and ▽ keys.	F03 ⇔ 0CL (Displayed alternately)
(4)	Press SET-key.	0CL flashes on the display
(5)	Press △ and ▽ keys for 3 seconds or more. (Press SET-key to (3))	0CL is displayed
(6)	"Zero clear" is executed, after 3 seconds. (Release keys till less than 3 seconds to (4))	CLr is displayed for approx. 1 second.
(7)	Returns to the state immediately after turning on of the power supply. Activate the key lock if necessary (refer to P14).	

(note) The adjustable range is within ±5%F.S from the state of the factory shipment.
When more than this range, Er.6 is displayed and zero-clear is not executed.

Initialize

"Initialize" is a function to return all the settings that the internal control constant is included to an initial value. Please execute "initialize" only when the error is displayed, and this product doesn't operate at all.
Please execute the "reset" function, when you want to return the pressure setting and the switch setting to an initial value.

No	Key operation	LED Display
(1)	Deactivate the key lock if necessary (refer to P14).	
(2)	Press SET-key for 2 seconds or more, then go to detail setting mode.	
(3)	To "F99" by using the △ and ▽ keys.	F99 ⇔ 1100 (Displayed alternately)
(4)	Press SET-key.	1100 flashes on the display
(5)	Press △ and S keys for 5 seconds or more. (Press SET-key to (3))	1100 is displayed
(6)	"Initialize" is executed, after 5 seconds. (Release keys till less than 5 seconds to (4))	Turning off for 1 second
(7)	Returns to the state immediately after turning on of the power supply. Activate the key lock if necessary (refer to P14).	

Reset function

Clears the minimum and maximum pressure settings.

Operation

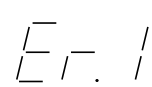
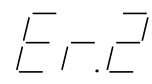
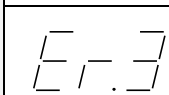
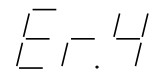
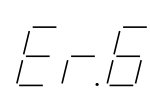
No	Key operation	LED Display
(1)	Deactivate the key lock if necessary (refer to P14).	
(2)	Press the △ and ▽ keys simultaneously for 3 seconds or more.	(current) pressure is displayed
(3)		rES is displayed for approx. 1 second
(4)	The settings are reset and returned to the condition before power was supplied. Activate the key lock if necessary (refer to P14).	

Reset contents.

Item	Reset contents
F_1	0%F.S.
F_2	100%F.S.

*(Note) Gain (G.L.) and sensitivity (S.L.) are not reset.

Error indicating function

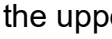
Error name	LED display	Contents of error	Countermeasure
Over range of input signal		Input signal exceeds the rated value range.	Reduce input signal to within the rated range and restart the power supply.
System error		Reading or writing errors occurred in EEPROM.	Please execute "initialize (refer to P20)" when ITV do not operate normally after restarting the power supply. Please contact us, when ITV do not operate normally after initialize.
		Reading and writing errors occurred in memory.	Please contact us when ITV do not operate normally after restarting the power supply.
Solenoid valve error		Solenoid valve failure.	Replace the solenoid valve. For the replacement procedure contact SMC.
Residual pressure error		Out of range error of zero clear	Please operate "zero clear" within the range of 5%F.S.. Please operate "zero clear" after the secondary pressure of ITV is became to atmosphere.

LED display

The range of the LED pressure display is different according to the pressure range and the unit of the display.

Unit	ITV2340-□	ITV2350-□
MPa	.000～.840	.000～.A80
bar	0.00～8.40	0.00～A.80
PSI	0～120	0～156

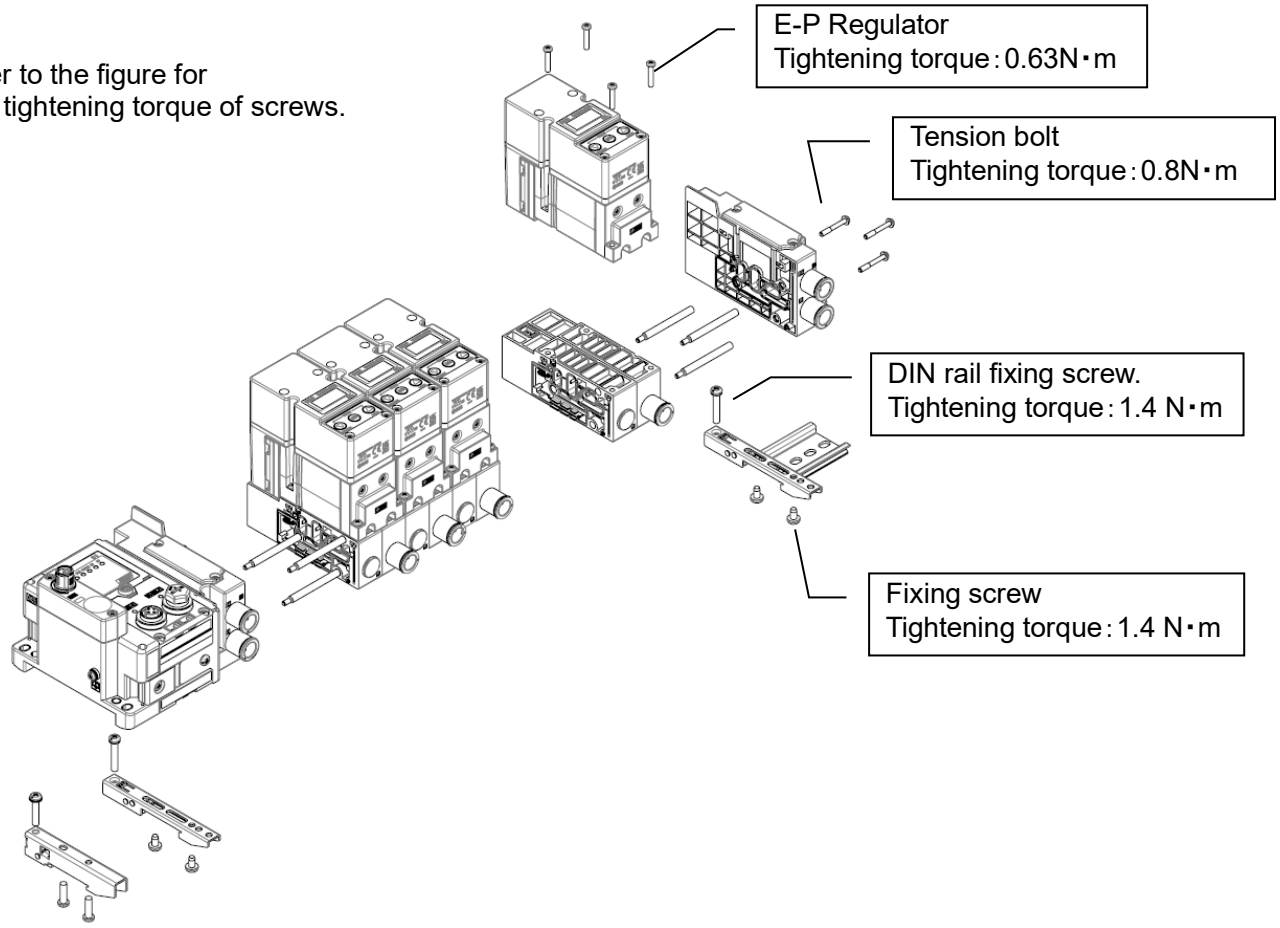
(note1) When the digit overflows, the following of "9" are substituted by "A".
(Ex.) A.00 [MPa] is displayed next to 0.99 [MPa], meaning 1.00 [MPa].

(note2) When the display exceeds the upper bound value, "  " is displayed.

Maintenance

- Before performing maintenance, turn off the power supply, stop the air supply, exhaust the residual compressed air in the piping, and verify the release of air to atmosphere.
- Foreign matter caught in the inlet of piping or exhaust may interfere with normal operation. Periodically conduct cleaning.
- Do not use solvents such as benzene and thinner to clean the product enclosure including the switch protective cover. Wipe off dirt from the enclosure with a soft dry cloth.

Refer to the figure for the tightening torque of screws.



Revision history
A : Change of Safety instructions. (Feb.15 2024)
B : Correction of process data wording. (Mar.17.2026)

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