

# 10-IR1000-A/2000-A/3000-A series Precision Regulator

RoHS

## How to Order

10-IR **1** **0** **0** **0** - **01** **BG** - **01** - A

1 2 3 4 5 6 7

Precision regulator

- Option/Semi-standard: Select one each for **a** to **e**.
- Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.

	Symbol	Description	① Body size		
			1	2	3
②	Set pressure range	0	0.005 to 0.2 MPa	●	●
		1	0.01 to 0.2 MPa	—	●
		2	0.01 to 0.4 MPa	●	●
		2	0.01 to 0.8 MPa	●	●
③	Exhaust direction	+			
		0	Bottom exhaust	●	●
		1	Front exhaust	—	●
		2	Rear exhaust	—	●
④	Pipe thread type	+			
		Nil	Rc	●	●
		N	NPT	●	●
		F	G	●	●
⑤	Port size	+			
		01	1/8	●	—
		02	1/4	—	●
		03	3/8	—	●
⑥	Option (Note 1)	+			
		a	Mounting		
		Nil	Without mounting option	●	●
		B (Note 2)	With bracket	●	●
⑦	Semi-standard	+			
		H	With hexagon panel nut (for panel mount)	●	●
		b	Pressure gauge		
		Nil	Without pressure gauge	●	●
⑧	Option (Note 1)	+			
		G	Round type pressure gauge	●	●
		EA	NPN open collector 1 output	●	●
		EB	PNP open collector 1 output	●	●
⑨	Option (Note 1)	+			
		EC	NPN open collector 2 outputs + Analog voltage output	●	●
		ED	NPN open collector 2 outputs + Analog current output	●	●
⑩	Option (Note 1)	+			
		c	Flow direction		
		Nil	Flow direction: Left to right	●	●
		R	Flow direction: Right to left	●	●
⑪	Option (Note 1)	+			
		d	Knob		
		Nil	Upward	●	●
		V	Downward	●	●
⑫	Option (Note 1)	+			
		e	Pressure unit (Note 3)		
		Nil	Name plate and pressure gauge in SI units: MPa	●	●
		Z	Name plate and pressure gauge in imperial units: psi	●	●
⑬	Option (Note 1)	+			
		ZA	Digital pressure switch: With unit conversion function	●	●

Note 1) Options are shipped together with the product, but not assembled. B and H cannot be selected at the same time. The existing bracket cannot be used for this product.

Note 2) Assembly of a bracket and set nuts.

Note 3) See pressure unit table below.

	Pipe thread type	Units on name plate	Units on pressure gauge		Sales (Note 6)
			G	EA, EB, EC, ED	
Nil	Rc	MPa	MPa	Fixed SI unit	Japan, Overseas
	NPT				
	G				
Z (Note 4)	Rc	psi	psi	With unit conversion function (Initial value psi)	Only overseas
	NPT				
	G				
ZA (Note 5)	Rc	MPa	—	With unit conversion function	Only overseas
	NPT				
	G				

Note 4) For pipe thread type: NPT

Note 5) For options: EA, EB, EC, ED

Note 6) According to the new Measurement Act, only the SI unit type is provided for use in Japan.

**Standard Specifications**

Model	Basic type (Knob)		
	10-IR10□0-A	10-IR20□0-A	10-IR30□0-A
<b>Fluid</b>	Air		
<b>Proof pressure</b>	1.5 MPa		
<b>Max. supply pressure</b>	1.0 MPa		
<b>Min. supply pressure</b> <small>Note 1)</small>	Set pressure + 0.05 MPa		
<b>Set pressure range</b>	10-IR1000-A: 0.005 to 0.2 MPa	10-IR2000-A: 0.005 to 0.2 MPa	10-IR3000-A: 0.01 to 0.2 MPa
	10-IR1010-A: 0.01 to 0.4 MPa	10-IR2010-A: 0.01 to 0.4 MPa	10-IR3010-A: 0.01 to 0.4 MPa
	10-IR1020-A: 0.01 to 0.8 MPa	10-IR2020-A: 0.01 to 0.8 MPa	10-IR3020-A: 0.01 to 0.8 MPa
<b>Sensitivity</b>	Within 0.2% of full span		
<b>Repeatability</b> <small>Note 2)</small>	Within ±0.5% of full span		
<b>Air consumption</b> <small>Note 3)</small>	1 L/min (ANR) or less		
<b>Port size</b>	1/8	1/4	1/4, 3/8, 1/2
<b>Pressure gauge port</b>	1/8 (2 locations)		
<b>Ambient and fluid temperatures</b> <small>Note 4)</small>	-5 to 60°C (No freezing)		
<b>Weight (kg)</b> <small>Note 5)</small>	0.14	0.26	0.52
<b>Cleanliness class (ISO class)</b>	Class 3		
<b>Bleed port</b>	With M5 fitting (applicable tubing O.D. ø6)		
<b>EXH port</b>	With M5 fitting (applicable tubing O.D. ø6)	With R1/8 fitting (applicable tubing O.D. ø6)	Rc1/2 female thread
<b>Grease</b>	Fluorine grease		

Note 1) When there is no flow rate on the outlet. (Refer to Operation ⑬ on page 1100-8.)

Note 2) Other characteristics such as aging deterioration and temperature characteristics are not included.

Note 3) Measuring conditions: supply pressure 1.0 MPa, set pressure 0.2 MPa

Note 4) -5 to 50°C for the products with the digital pressure switch

Note 5) Without accessories

Directional Control Valves

Air Cylinders

Rotary Actuators

Air Grippers

Air Preparation Equipment

Modular F. R.

Pressure Control Equipment

Fittings &amp; Tubing

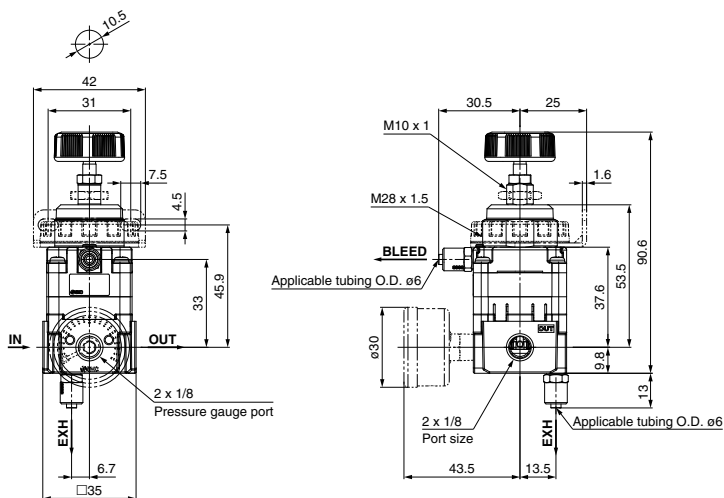
Flow Control Equipment

Pressure Switches/Pressure Sensors

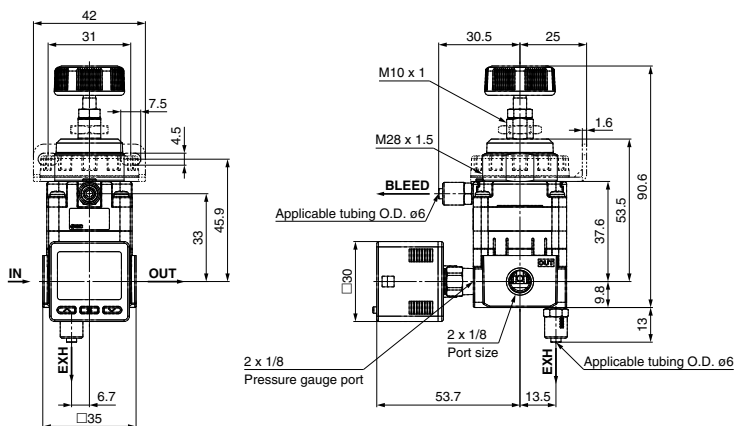
## Dimensions

### Basic type (Knob): 10-IR10□0-□01□-A

Hexagon panel nut mounting  
hole dimension



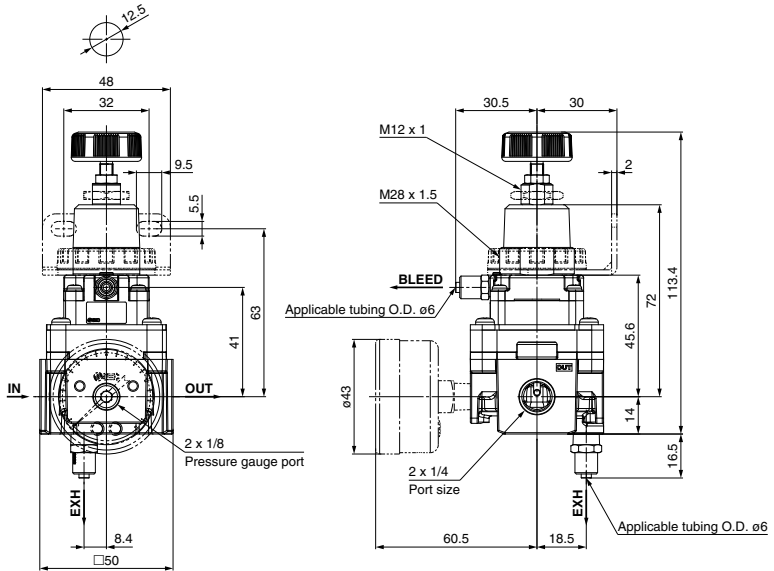
### With digital pressure switch: 10-IR10□0-□01□E□-A



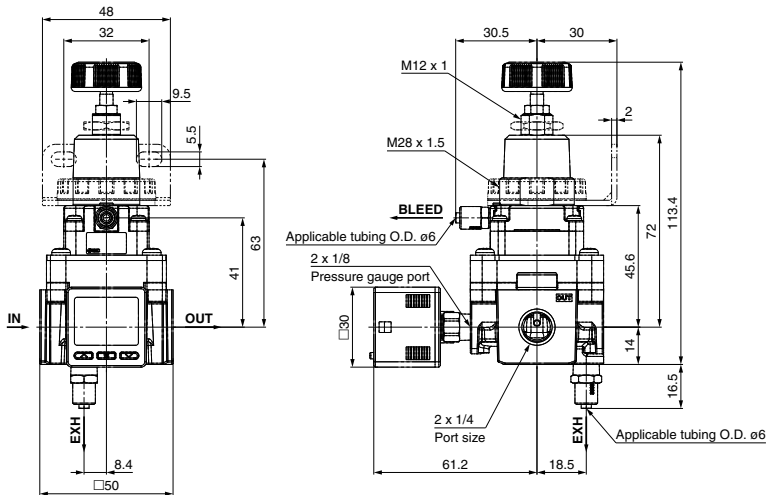
## Dimensions

### Basic type (Knob): 10-IR20□0-□02□-A

Hexagon panel nut mounting  
hole dimension



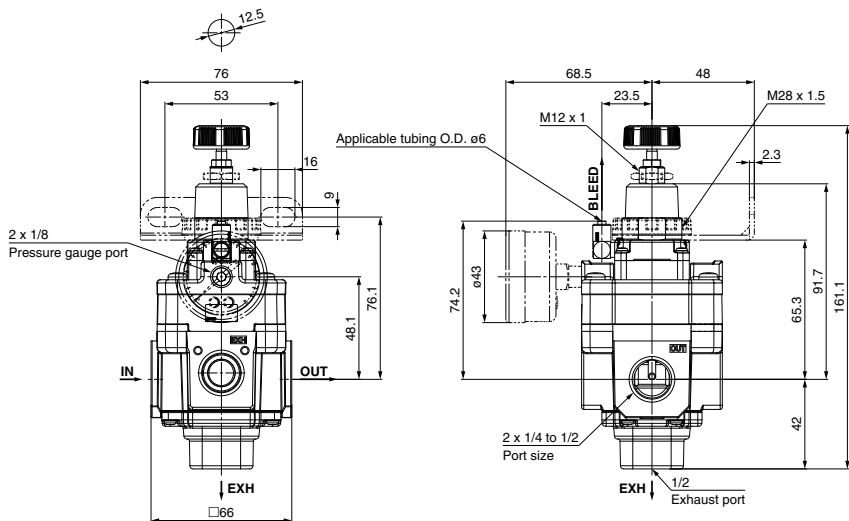
### With digital pressure switch: 10-IR20□0-□02□E□-A



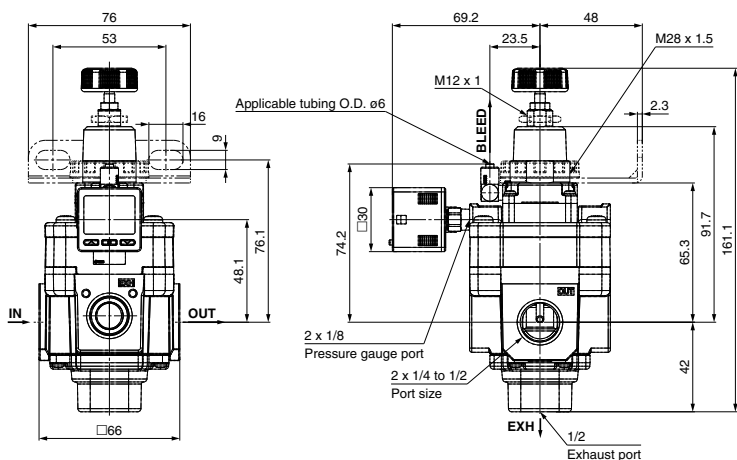
## Dimensions

**Basic type (Knob): 10-IR30□0-□0□□-A**

**Hexagon panel nut mounting  
hole dimension**



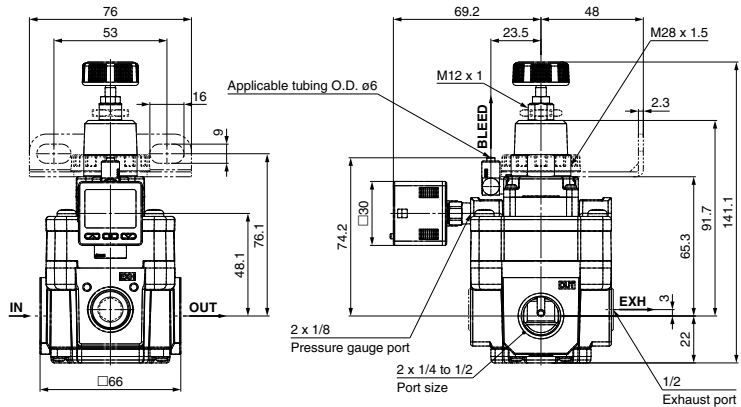
**With digital pressure switch: 10-IR30□0-□0□□E□-A**



**Basic type (Knob):** 10-IR30□<sub>2</sub><sup>1</sup>-□0□□-A

[illegible]

**With digital pressure switch: 10-IR30<sup>1</sup><sub>2</sub>-□0□□E□-A**





# 10-IR1000-A/2000-A/3000-A Series

## Specific Product Precautions 1

Be sure to read this before handling the products.  
Refer to page 1382 for Safety Instructions.

### Piping

#### ⚠ Warning

1. **Screw piping together with the recommended proper torque while holding the side with the female threads.**

Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive.

Furthermore, if the side with the female threads is not held while tightening, excessive force will be applied directly to piping brackets, etc., causing damage or other problems.

#### Recommended Proper Torque [N·m]

Connection thread	1/8	1/4	3/8	1/2 (Note)
Torque	7 to 9	12 to 14	22 to 24	28 to 30

(Note) Tightening force for connecting to the EXH port of 10-IR30□-A is 8 to 10 N·m.

2. **Do not allow twisting or bending moment to be applied other than the weight of the equipment.**

Provide separate support for external piping, as damage may otherwise occur.

3. **Piping materials without flexibility such as steel tube piping are prone to be effected by excess moment load and vibration from the piping side. Use flexible tubing in between to avoid such an effect.**

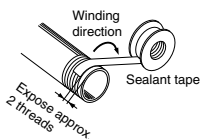
#### ⚠ Caution

1. **Preparation before piping**

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. **Winding of sealant tape**

When screwing piping or fittings into ports, ensure that metal chips from the pipe threads or sealing material do not enter the piping. Also, when the sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



### Air Supply

#### ⚠ Warning

1. **Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt or corrosive gases, etc., as this can cause damage or malfunction.**
2. **If condensate in the drain bowl is not emptied on a regular basis, the bowl will overflow and allow the condensate to enter the outlet side. This will cause a malfunction of pneumatic equipment.**

When removing drain is difficult, use of a filter with an auto drain is recommended.

#### ⚠ Caution

1. **Condensate, dust, etc., in the supply pressure line can cause malfunctions. Use an air filter (SMC AF series) or a mist separator (SMC AM or AFM series) depending on the conditions.**

Refer to SMC's "Air Preparation Equipment Model Selection Guide" for details on air quality, and select a model that is suitable for the desired air cleanliness.

2. **When a lubricator is used at the supply side of the product, it can cause malfunctions. Do not use a lubricator at the supply side of the product.**

If lubrication is required for terminal devices, connect a lubricator on the output side of the regulator.



# 10-IR1000-A/2000-A/3000-A Series

## Specific Product Precautions 2

Be sure to read this before handling the products.  
Refer to page 1382 for Safety Instructions.

### Maintenance

#### ⚠ Warning

- When the product is removed for maintenance, reduce the set pressure to "0" and shut off the supply pressure completely beforehand.
- When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to "0".
- When using the regulator between a solenoid valve and an actuator, check the pressure gauge periodically. Sudden pressure fluctuations may shorten the durability of the pressure gauge.  
A digital pressure gauge is recommended for such situation or as deemed necessary.

### Handling

#### ⚠ Caution

- When the precision regulator with pressure gauge is used, do not apply impact to the product by dropping it, etc. during transportation or installation.  
This may cause misalignment of the pressure gauge pointer.

### Operation

#### ⚠ Caution

- Do not use a precision regulator outside the range of its specifications as this can cause failure. (Refer to the specifications.)
- When mounting is performed, make connections while confirming port indications.
- When mounting the bracket or tightening the hexagon panel nut on the panel, tighten them to the recommended proper torque.

Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive.

#### Recommended Proper Torque (N·m)

Set nut (for bracket)

10-IR10□0-A	10-IR20□0-A	10-IR30□0-A
2.0±0.2		

Hexagon panel nut (for knob type only)

10-IR10□0-A	10-IR20□0-A	10-IR30□0-A
3.5±0.5		

- After pressure adjustment, be sure to tighten the lock nut. When tightening the nut, tighten so that the knob does not move due to friction caused by tightening.
- When pressure is applied to the inlet of a regulator, make sure that the output is connected to the circuit. Air blow occurs from the outlet and it depends on the operating conditions.
- The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust with the knob.

### Operation

#### ⚠ Caution

- If the directional control valve (solenoid valve, mechanical valve, etc.) is mounted and ON-OFF is repeated for a long time, the set pressure may vary. If the setting value varies, adjust with the knob.
- There may be pulsation or noise depending on the pressure conditions, piping conditions and ambient environment. In this case, it is possible to improve the problem by changing the pressure conditions and piping conditions.  
If the problem is not improved, contact your SMC sales representative.
- The capacity of the output side is large, and when used for the purpose of a relief function, the exhaust sound will be loud when being relieved. Therefore, operate with a silencer (SMC AN series, etc.) mounted on the exhaust passage.
- When installing a pressure gauge to the product, do not apply pressure more than the maximum display pressure. This will cause a malfunction.
- When using a precision regulator between a solenoid valve and cylinder, caution should be taken regarding the following points.
  - The residual pressure of the cylinder will be exhausted from the regulator's exhaust port. (Depending on the conditions, partial backflow may occur.)
  - When holding pressure at the intermediate position of a closed center solenoid valve, due to reduced pilot pressure the pressure inside the cylinder will not be able to be held because the regulator will perform an exhaust operation. If it is necessary for the pressure inside the cylinder to be held, please consider using in combination with a separate shut-off valve.
  - When releasing pressure at the intermediate position of an exhaust center solenoid valve, depending on the conditions, vacuum pressure may remain inside the cylinder. If the introduction of atmospheric pressure is required, please consider using in combination with a separate atmospheric pressure introduction valve.
- When using the 10-IR3000-A series in balancing applications, abnormal noises may occur depending on the pressure and circuit conditions. In such cases, the noise will often cease if changes are made to the pressure or piping conditions or if a high noise reduction type silencer (such as SMC's ANA1 series, etc.) is installed.
- The min. supply pressure is the min. required supply pressure for when there is no flow on the output side. If flow is to be used, or if the volume on the outlet side is large, supply pressure with sufficient margins in regards to the set pressure if responsiveness is required.
- When a precision regulator is used in applications in which back pressure is frequently applied or when it is used in environments where vibration is present or pulsations are present in the set pressure, wear of the exhaust valve may be accelerated, resulting in increased premature exhaust leakage.

Directional Control Valves

Air Cylinders

Rotary Actuators

Air Grippers

Air Preparation Equipment

Modular F. R.

Pressure Control Equipment

Fittings & Tubing

Flow Control Equipment

Pressure Switches/Pressure Sensors



# 10-IR1200-A/2200-A/3200-A series Regulator

RoHS

## How to Order

10-IR **1** **2** **0** **0** - **01** **BG** - **01** - A

1 2 3 4 5 6 7

Regulator

- Option/Semi-standard: Select one each for **a** to **e**.
- Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.

	Symbol	Description	① Body size		
			1	2	3
②	Set pressure range	0	0.02 to 0.2 MPa	●	●
		1	0.02 to 0.4 MPa	●	●
		2	0.02 to 0.8 MPa	●	●
③	Exhaust direction	+			
		0	Bottom exhaust	●	●
		1	Front exhaust	—	—
④	Pipe thread type	+			
		Nil	Rc	●	●
		N	NPT	●	●
⑤	Port size	+			
		01	1/8	●	—
		02	1/4	—	●
⑥	Option (Note 1)	+			
		a	Mounting	Nil	Without mounting option
		B	With bracket	●	●
⑦	Semi-standard	+			
		H	With hexagon panel nut (for panel mount)	●	●
		b	Pressure gauge	Nil	Without pressure gauge
⑧	Option (Note 1)	+			
		G	Round type pressure gauge	●	●
		EA	NPN open collector 1 output	●	●
⑨	Option (Note 1)	+			
		EB	PNP open collector 1 output	●	●
		EC	NPN open collector 2 outputs + Analog voltage output	●	●
⑩	Option (Note 1)	+			
		ED	NPN open collector 2 outputs + Analog current output	●	●
⑪	Option (Note 1)	+			
		c	Flow direction	Nil	Flow direction: Left to right
		R	Flow direction: Right to left	●	●
⑫	Option (Note 1)	+			
		d	Knob	Nil	Upward
		V	Downward	●	●
⑬	Option (Note 1)	+			
		e	Pressure unit (Note 3)	Nil	Name plate and pressure gauge in SI units: MPa
		Z	Name plate and pressure gauge in imperial units: psi	●	●
⑭	Option (Note 1)	+			
		ZA	Digital pressure switch: With unit conversion function	●	●

Note 1) Options are shipped together with the product, but not assembled. B and H cannot be selected at the same time. The existing bracket cannot be used for this product.

Note 2) Assembly of a bracket and set nuts.

Note 3) See pressure unit table below.

	Pipe thread type	Units on name plate	Units on pressure gauge		Sales (Note 6)
			G	EA, EB, EC, ED	
Nil	Rc	MPa	MPa	Fixed SI unit	Japan, Overseas
	NPT				
	G				
Z (Note 4)	Rc	psi	psi	With unit conversion function (Initial value psi)	Only overseas
	NPT				
	G				
ZA (Note 5)	Rc	MPa	—	With unit conversion function	Only overseas
	NPT				
	G				

Note 4) For pipe thread type: NPT

Note 5) For options: EA, EB, EC, ED

Note 6) According to the new Measurement Act, only the SI unit type is provided for use in Japan.

## Standard Specifications

Model	Basic type (Knob)		
	10-IR12□0-A	10-IR22□0-A	10-IR32□0-A
Fluid	Air		
Proof pressure	1.5 MPa		
Max. supply pressure	1.0 MPa		
Min. supply pressure <small>Note 1)</small>	Set pressure + 0.05 MPa		Set pressure + 0.1 MPa
Set pressure range	10-IR1200-A: 0.02 to 0.2 MPa	10-IR2200-A: 0.02 to 0.2 MPa	10-IR3200-A: 0.02 to 0.2 MPa
	10-IR1210-A: 0.02 to 0.4 MPa	10-IR2210-A: 0.02 to 0.4 MPa	10-IR3210-A: 0.02 to 0.4 MPa
	10-IR1220-A: 0.02 to 0.8 MPa	10-IR2220-A: 0.02 to 0.8 MPa	10-IR3220-A: 0.02 to 0.8 MPa
Repeatability <small>Note 2)</small>	Within ±1% of full span		
Port size	1/8	1/4	1/4, 3/8, 1/2
Pressure gauge port	1/8 (2 locations)		
Ambient and fluid temperatures <small>Note 3)</small>	-5 to 60°C (No freezing)		
Weight (kg) <small>Note 4)</small>	0.14	0.26	0.52
Cleanliness class (ISO class)	Class 3		
Bleed port	With M5 fitting (applicable tubing O.D. ø6)		
EXH port	With M5 fitting (applicable tubing O.D. ø6)	With R1/8 fitting (applicable tubing O.D. ø6)	Rc1/2 female thread
Grease	Fluorine grease		

Note 1) When there is no flow rate on the outlet. (Refer to Operation ③ on page 1100-16.)

Note 2) Other characteristics such as aging deterioration and temperature characteristics are not included.

Note 3) -5 to 50°C for the products with the digital pressure switch

Note 4) Without accessories

Directional  
Control Valves

Air Cylinders

Rotary Actuators

Air Grippers

Air Preparation  
Equipment

Modular F. R.

Pressure Control  
Equipment

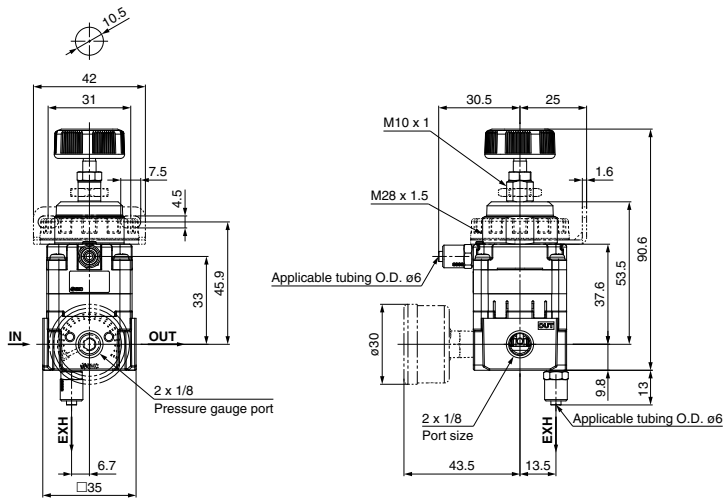
Fittings &amp; Tubing

Flow Control  
EquipmentPressure Switches/  
Pressure Sensors

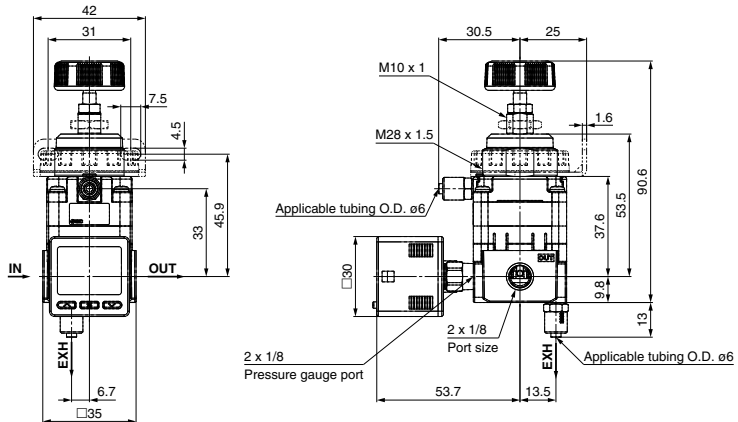
## Dimensions

### Basic type (Knob): 10-IR12□0-□01□-A

Hexagon panel nut mounting  
hole dimension



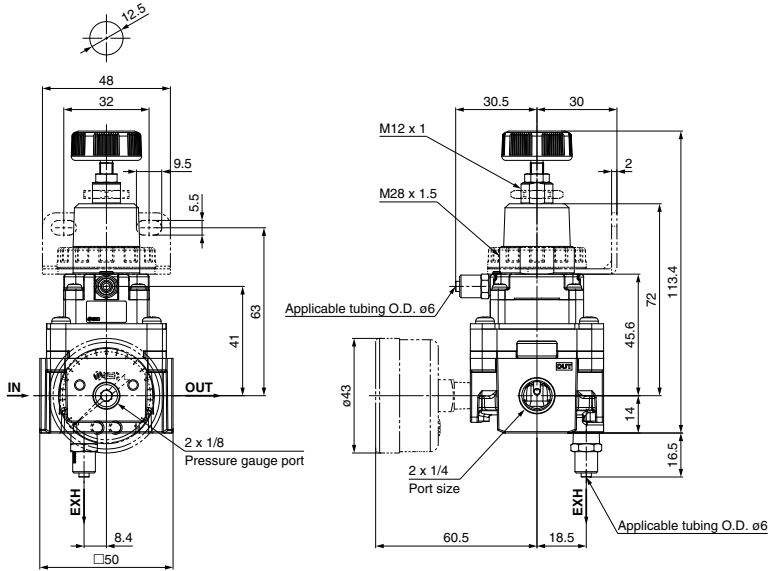
### With digital pressure switch: 10-IR12□0-□01□E□-A



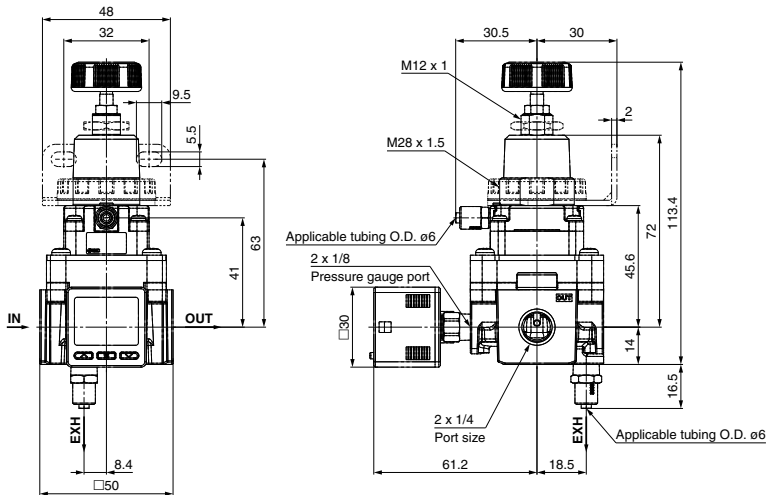
## Dimensions

### Basic type (Knob): 10-IR22□0-□02□-A

Hexagon panel nut mounting  
hole dimension

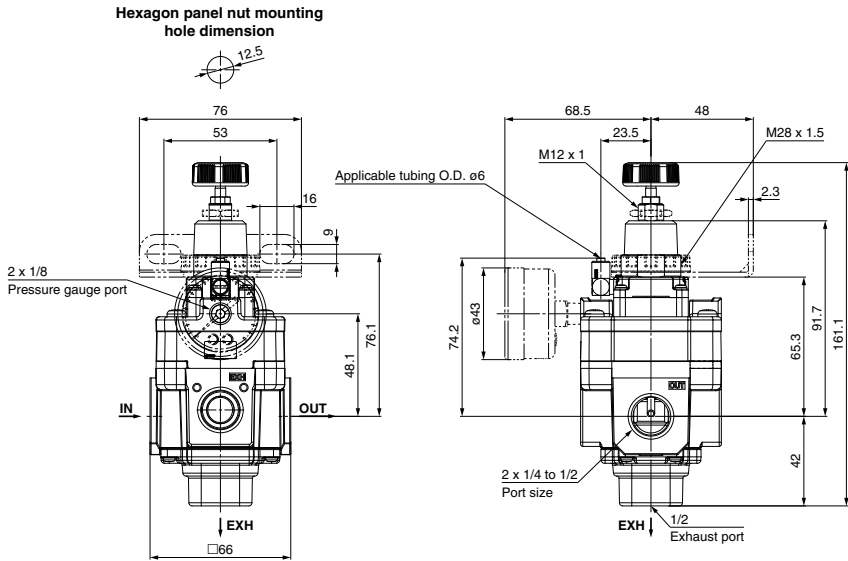


### With digital pressure switch: 10-IR22□0-□02□E□-A

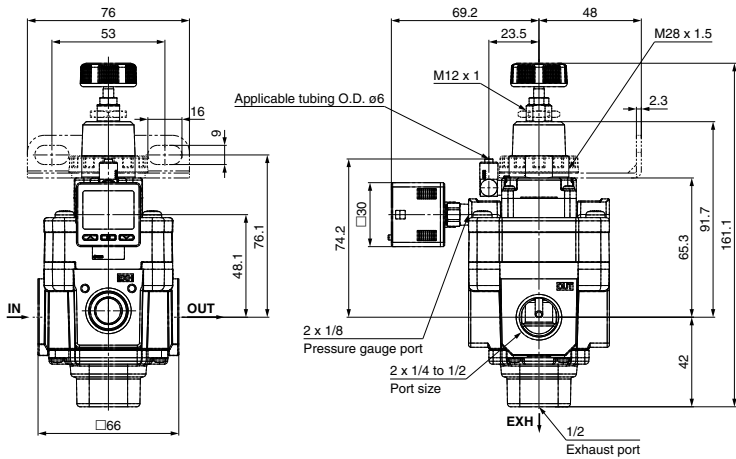


## Dimensions

### Basic type (Knob): 10-IR32□0-□□□-A

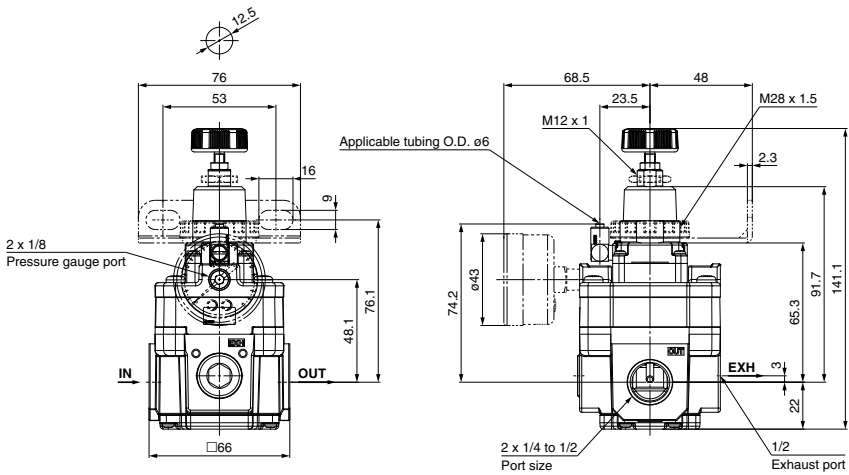
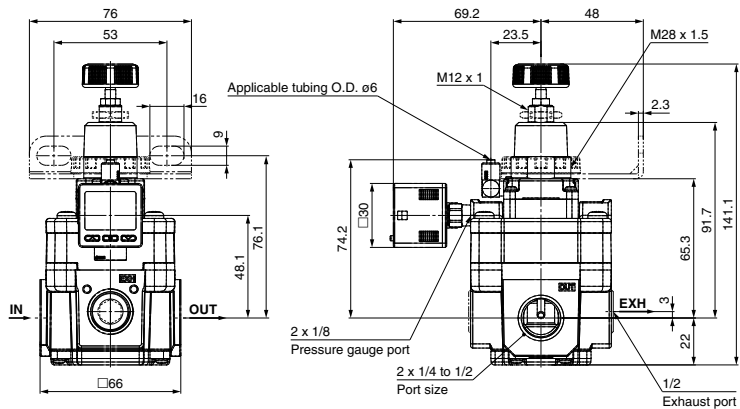


### With digital pressure switch: 10-IR32□0-□□□E□-A



**Dimensions****Basic type (Knob): 10-IR32□<sub>2</sub>-□□□-A**

Hexagon panel nut mounting  
hole dimension

**With digital pressure switch: 10-IR32□<sub>2</sub>-□0□□E□-A**



# 10-IR1200-A/2200-A/3200-A Series

## Specific Product Precautions 1

Be sure to read this before handling the products.  
Refer to page 1382 for Safety Instructions.

### Piping

#### ⚠ Warning

1. **Screw piping together with the recommended proper torque while holding the side with the female threads.**

Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive.

Furthermore, if the side with the female threads is not held while tightening, excessive force will be applied directly to piping brackets, etc., causing damage or other problems.

#### Recommended Proper Torque

[N·m]

Connection thread	1/8	1/4	3/8	1/2 (Note)
Torque	7 to 9	12 to 14	22 to 24	28 to 30

Note) Tightening force for connecting to the EXH port of 10-IR32□-A is 8 to 10 N·m.

2. **Do not allow twisting or bending moment to be applied other than the weight of the equipment.**

Provide separate support for external piping, as damage may otherwise occur.

3. **Piping materials without flexibility such as steel tube piping are prone to be effected by excess moment load and vibration from the piping side. Use flexible tubing in between to avoid such an effect.**

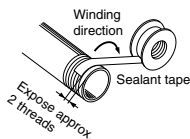
#### ⚠ Caution

1. **Preparation before piping**

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. **Winding of sealant tape**

When screwing piping or fittings into ports, ensure that metal chips from the pipe threads or sealing material do not enter the piping. Also, when the sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



### Air Supply

#### ⚠ Warning

1. **Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt or corrosive gases, etc., as this can cause damage or malfunction.**
2. **If condensate in the drain bowl is not emptied on a regular basis, the bowl will overflow and allow the condensate to enter the outlet side. This will cause a malfunction of pneumatic equipment.**

When removing drain is difficult, use of a filter with an auto drain is recommended.

#### ⚠ Caution

1. **Condensate, dust, etc., in the supply pressure line can cause malfunctions. Use an air filter (SMC AF series) or a mist separator (SMC AM or AFM series) depending on the conditions.**

Refer to SMC's "Air Preparation Equipment Model Selection Guide" for details on air quality, and select a model that is suitable for the desired air cleanliness.

2. **When a lubricator is used at the supply side of the product, it can cause malfunctions. Do not use a lubricator at the supply side of the product.**

If lubrication is required for terminal devices, connect a lubricator on the output side of the regulator.



# 10-IR1200-A/2200-A/3200-A Series

## Specific Product Precautions 2

Be sure to read this before handling the products.  
Refer to page 1382 for Safety Instructions.

### Maintenance

#### Warning

- When the product is removed for maintenance, reduce the set pressure to "0" and shut off the supply pressure completely beforehand.
- When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to "0".
- When using the regulator between a solenoid valve and an actuator, check the pressure gauge periodically. Sudden pressure fluctuations may shorten the durability of the pressure gauge.  
A digital pressure gauge is recommended for such situation or as deemed necessary.

### Handling

#### Caution

- When the regulator with pressure gauge is used, do not apply impact to the product by dropping it, etc. during transportation or installation.  
This may cause misalignment of the pressure gauge pointer.

### Operation

#### Caution

- Do not use a regulator outside the range of its specifications as this can cause failure. (Refer to the specifications.)
- When mounting is performed, make connections while confirming port indications.
- When mounting the bracket or tightening the hexagon panel nut on the panel, tighten them to the recommended proper torque.  
Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive.

#### Recommended Proper Torque (N·m)

Set nut (for bracket)

10-IR12□0-A	10-IR22□0-A	10-IR32□□-A
2.0±0.2		

Hexagon panel nut (for knob type only)

10-IR12□0-A	10-IR22□0-A	10-IR32□□-A
3.5±0.5		

- To set the pressure using the knob, turn the knob in the direction that increases pressure and be sure to tighten the lock nut after the pressure is adjusted. When tightening the nut, tighten so that the knob does not move due to friction caused by tightening.
- If the pressure is set in the direction that decreases pressure, the pressure may drop from the original set pressure. Turning the knob clockwise increases the outlet pressure, and turning it counterclockwise reduces the pressure.
- When pressure is applied to the inlet of a regulator, make sure that the output is connected to the circuit. Air blow occurs from the outlet and it depends on the operating conditions.

### Operation

#### Caution

- The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust with the knob.
- If the directional control valve (solenoid valve, mechanical valve, etc.) is mounted and ON-OFF is repeated for a long time, the set pressure may vary. If the setting value varies, adjust with the knob.
- There may be pulsation or noise depending on the pressure conditions, piping conditions and ambient environment. In this case, it is possible to improve the problem by changing the pressure conditions and piping conditions.  
If the problem is not improved, contact your SMC sales representative.
- The capacity of the output side is large, and when used for the purpose of a relief function, the exhaust sound will be loud when being relieved. Therefore, operate with a silencer (SMC AN series, etc.) mounted on the exhaust passage.
- When installing a pressure gauge to the product, do not apply pressure more than the maximum display pressure. This will cause a malfunction.
- When using a regulator between a solenoid valve and cylinder, caution should be taken regarding the following points.
  - The residual pressure of the cylinder will be exhausted from the regulator's exhaust port. (Depending on the conditions, partial backflow may occur.)
  - When holding pressure at the intermediate position of a closed center solenoid valve, due to reduced pilot pressure the pressure inside the cylinder will not be able to be held because the regulator will perform an exhaust operation. If it is necessary for the pressure inside the cylinder to be held, please consider using in combination with a separate shut-off valve.
  - When releasing pressure at the intermediate position of an exhaust center solenoid valve, depending on the conditions, vacuum pressure may remain inside the cylinder. If the introduction of atmospheric pressure is required, please consider using in combination with a separate atmospheric pressure introduction valve.
- When using the 10-IR3200-A series in balancing applications, abnormal noises may occur depending on the pressure and circuit conditions. In such cases, the noise will often cease if changes are made to the pressure or piping conditions or if a high noise reduction type silencer (such as SMC's ANA1 series, etc.) is installed.
- The min. supply pressure is the min. required supply pressure for when there is no flow on the output side. If flow is to be used, or if the volume on the outlet side is large, supply pressure with sufficient margins in regards to the set pressure if responsiveness is required.
- When a regulator is used in applications in which back pressure is frequently applied or when it is used in environments where vibration is present or pulsations are present in the set pressure, wear of the exhaust valve may be accelerated, resulting in increased premature exhaust leakage.

Directional  
Control Valves

Air Cylinders

Rotary Actuators

Air Grippers

Air Preparation  
Equipment

Modular F. R.

Pressure Control  
Equipment

Fittings & Tubing

Flow Control  
Equipment

Pressure Switches/  
Pressure Sensors



# Series 10-IR1000/2000/3000

Precision Regulator

RoHS

## How to Order

Clean series

10-IR 2 0 0 0 - 02 - R

Precision regulator

Body size

1	IR1000 type
2	IR2000 type
3	IR3000 type

Type of setting

0	Basic (Knob)
1	Air operated (Only for IR 2000/3000)

Set pressure range

10-IR1000/2000

0	0.005 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air operated type is IR2120 only.

10-IR3000

0	0.01 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air operated type is IR3120 only.

Suffix

Nil	Flow direction: Left → Right
R (Note)	Flow direction: Right → Left

Note) The flow direction of the suffix is the direction when viewing with the name plate of the precision regulator in front.

Accessory

Nil	None
B	With bracket
G	With pressure gauge*

\* Pressure gauge is included, (but not assembled).

Port size

Symbol	Port size	Application		
		10-IR1000	10-IR2000	10-IR3000
01	1/8	●		
02	1/4		●	●
03	3/8			●
04	1/2			●

Thread type

Nil	Rc
N (Note)	NPT
F (Note)	G

\* Semi-standard

Note) For thread type NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

## Standard Specifications

Model	Basic type			Air operated type	
	10-IR10□0	10-IR20□0	10-IR30□0	10-IR2120	10-IR3120
Max. supply pressure	Max. 1.0 MPa				
Min. supply pressure (Note 1)	Set pressure + 0.05 MPa		Set pressure + 0.1 MPa	Set pressure + 0.05 MPa	Set pressure + 0.1 MPa
Set pressure range	<b>10-IR1000:</b> 0.005 to 0.2 MPa <b>10-IR1010:</b> 0.01 to 0.4 MPa <b>10-IR1020:</b> 0.01 to 0.8 MPa	<b>10-IR2000:</b> 0.005 to 0.2 MPa <b>10-IR2010:</b> 0.01 to 0.4 MPa <b>10-IR2020:</b> 0.01 to 0.8 MPa	<b>10-IR3000:</b> 0.01 to 0.2 MPa <b>10-IR3010:</b> 0.01 to 0.4 MPa <b>10-IR3020:</b> 0.01 to 0.8 MPa	0.01 to 0.8 MPa	0.01 to 0.8 MPa
Input signal pressure (Note 2)	—			0.01 to 0.8 MPa	0.01 to 0.8 MPa
Sensitivity (Note 3)	Within 0.2% of full span				
Repeatability (Note 3)	Within ±0.5% of full span				
Linearity (Note 4)	—			Within ±1% of full span	
Air consumption (Note 5) (Supply pressure: 1.0 MPa)	Within 4.4 L/min (ANR)	Within 4.4 L/min (ANR)	Within 11.5 L/min (ANR)	Within 4.4 L/min (ANR)	Within 11.5 L/min (ANR)
Port sizes	Rc1/8	Rc1/4	Rc1/4, 3/8, 1/2	Rc1/4	Rc1/4, 3/8, 1/2
Pressure gauge port	Rc1/8 (2 positions)				
Ambient & fluid temperatures	-5 to 60°C (with no freezing)				
Weight (kg)	0.16	0.32	0.66	0.37	0.73
Cleanliness class (ISO class)	Class 3				
Bleed port	With M5 fitting (applicable tubing O.D. ø6)				
EXH port	With M5 fitting (applicable tubing O.D. ø6)		Rc1/2 female thread	With M5 fitting (applicable tubing O.D. ø6)	Rc1/2 female thread
Grease	Fluorine grease				

Note 1) With the condition of no flow on the output side. Together with the set pressure, be sure to maintain a minimum differential pressure of 0.05 MPa for models IR1000 and IR2000, and 0.1 MPa for model IR3000.

Note 2) Applicable only to air operated types IR2120 and IR3120. The basic type is excepted.

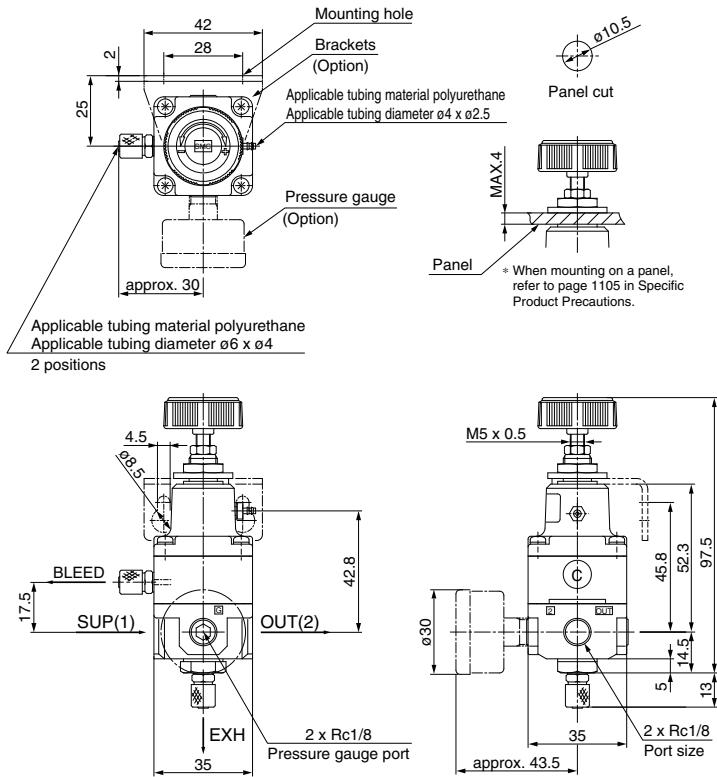
Note 3) Characteristic values do not contain any secular change and temperature change.

Note 4) Indicates the linearity of the output pressure with respect to the input signal pressure.

Note 5) Air is normally being discharged to the atmosphere.

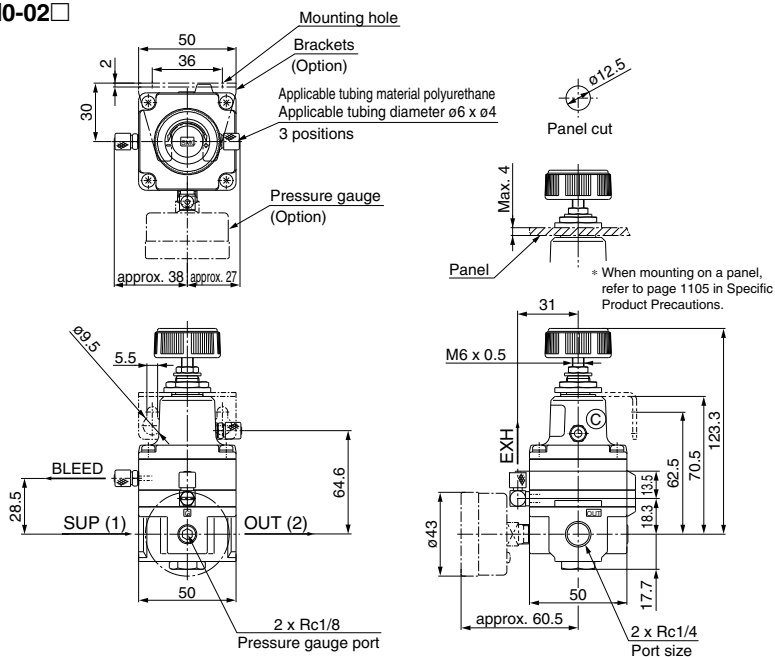
## Dimensions

**10-IR10□0-01□**

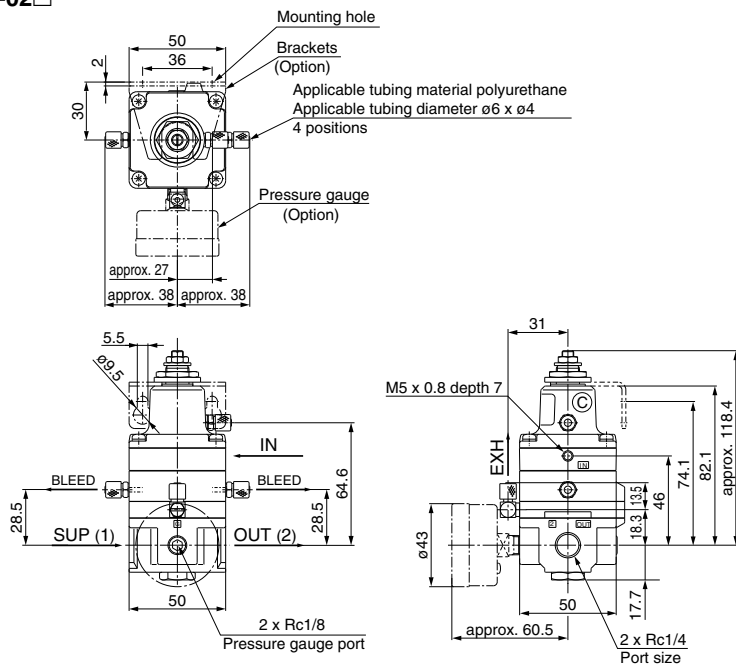


## Dimensions

### 10-IR20□0-02□

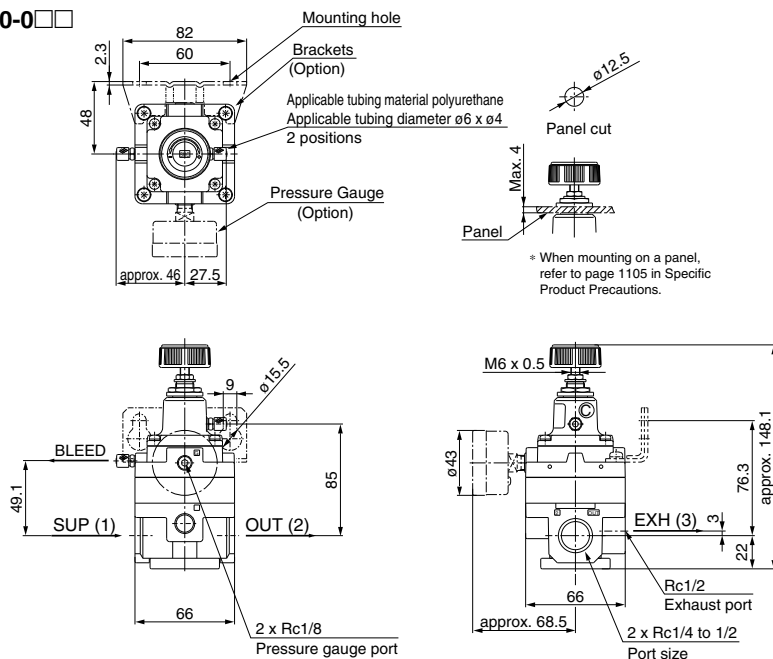


### 10-IR2120-02□

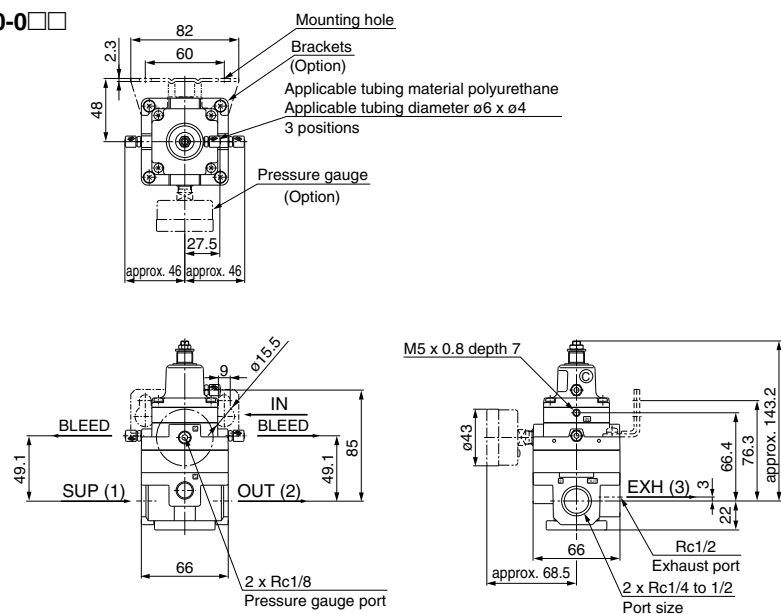


## Dimensions

### 10-IR30□0-0□□



### 10-IR3120-0□□



**⚠ Specific Product Precautions****Air Supply****⚠ Warning**

1. Do not use compressed air that contains chemicals, synthetic oils that include organic solvents, salt, corrosive gases, etc., as it can cause damage or malfunction.
2. If the drain removal from air filter and mist separator is missed, drain will be flown out to the outlet side and may result in a malfunction of the pneumatic equipment. When removing drain is difficult, use of a filter with an auto-drain is recommended.

**⚠ Caution**

1. Condensate and dust in on the supply (upstream) side piping can clog the fixed orifice, which may lead to operation failure\*. Make sure to install a mist separator (SMC AFM series/Filtration of 0.3 μm) as well as an air filter (SMC AF series), and exhaust the condensate or replace the element regularly.

To maintain good air condition, refer to "Air Preparation Equipment Model Selection Guide" select the C or higher (D, E, F, G or H) level.

2. Never use a lubricator on the supply side of the precision regulator, as this will positively cause the fixed throttle to become clogged and result in a malfunction\*. If lubrication is required for terminal devices, connect a lubricator on the output side of the precision regulator.

\* The following may occur if the fixed throttle is clogged or is getting clogged.

- No output
- Set pressure drops.
- Set pressure is unstable.
- Outlet pressure slowly rises.

**Maintenance****⚠ Warning**

1. When the valve guide is to be removed during maintenance, first reduce the set pressure to "0" and completely shut off the supply pressure.
2. When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to "0".

**Handling****⚠ Caution**

1. Do not apply force when transferring, mounting and dropping the precision regulator with a pressure gauge. This may cause misalignment of the pressure gauge pointer.

**Handling****⚠ Caution**

1. Do not use a precision regulator outside of the specifications range as this can cause failure. (Refer to specifications.)
2. When mounting is performed, make connections while confirming port indications.
3. Screw a panel nut with the recommended proper torque when mounting onto a panel. Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will occur if the torque is excessive.

**Recommended Proper Torque [N·m]**

10-IR1000	10-IR2000	10-IR3000
12.5	21	21

**Handling****⚠ Caution**

4. If a directional switching valve (solenoid valve, mechanical valve, etc.) is mounted on the supply side of the precision regulator and repeatedly switched ON and OFF, wear of the nozzle/flapper section will be accelerated and a discrepancy in the setting value may occur. Therefore, avoid using a directional switching valve on the supply side. In the event a directional switching valve will be used, install it on the output side of the precision regulator.
5. The accessory pressure gauge is supplied with the precision regulator in the unassembled status. Before using the precision regulator, be sure to install the pressure gauge at the gauge port of the regulator. At this time, the recommended tightening torque of the pressure gauge is 7 to 9 N·m.
6. Air is normally released from the bleed port (the hole on the side of the body's mid-section). This is a necessary consumption of air based on the construction of the precision regulator, and is not an abnormality.
7. When connecting the tubing to the M5 fitting, a buzzing noise may be generated from the precision regulator depending on the operating conditions. However, this does not affect the characteristics.
8. Make sure to tighten the lock nut after pressure adjustment.
9. There may be pulsation or noise depending on the pressure conditions, piping conditions and ambient environment. In this case, it is possible to improve the problem by changing the pressure conditions and piping conditions. If the problem is not improved, contact your SMC sales representative.
10. After the pressure is supplied from the upstream side or the set pressure has been adjusted, the set pressure may gradually vary depending on the secular change of internal parts. If the variation in the set pressure has become large, readjust the set pressure using the setting knob.
11. The set pressure may vary if it is influenced by the variation in ambient temperature or fluid temperature. If the set pressure varies due to the influence of temperature, consider the management of ambient and fluid temperatures.

**Precautions for 10-IR30□0 and IR3120 only****⚠ Caution**

1. When the supply pressure is relatively high (approx. 0.5 MPa or more), the set pressure is low (approx. 0.1 MPa or less), and operated with the output side released to the atmosphere, there may be pulsations in the setting pressure. In this kind of situation, operate with the supply pressure reduced as much as possible, or increase the set pressure somewhat and restrict the output line (add and adjust a stop valve, etc.).
2. If the product is used for a relief function with a large capacity on the output side, there will be a large exhaust sound at the time of relief. Therefore, install a silencer (SMC AN series) on the exhaust passage. The connection is Rc1/2.

**Precautions for 10-IR2120 and IR3120 (air-operated types) only****⚠ Caution**

1. Since the output series of IR2120 and IR3120 are the same pressure as the input signal pressure, select a type of regulator (general purpose or precision type) for input signal pressure adjustment according to the application.
2. The screw on the topmost section is a zero point adjustment screw that is locked at the factory. Adjusting the adjustment screw can cause the product to malfunction. Use the product without adjusting the adjustment screw.