

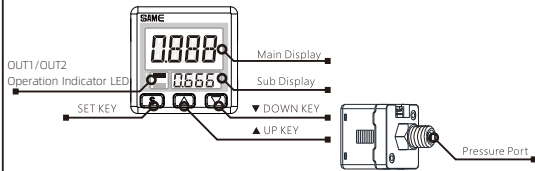
INSTRUCTION MANUAL

Digital Pressure Gauge SP-01/10 Series

◆◆◆ Precautions for Use ◆◆◆

- 1.This product is designed for use with non-corrosive gases only. Do not use this product with corrosive gases, flammable gases, or liquids.
- 2.Do not use this product as a detection device for personal safety protection.
- 3.Use this product within the rated pressure range. Otherwise, malfunction or damage may occur.
- 4.Use this product within the rated voltage range. Ensure that voltage fluctuations do not exceed the specified range.
- 5.Perform wiring according to the wiring specifications. Incorrect wiring may cause malfunction or damage to the product.
- 6.Turn off the power before wiring or assembly.
- 7.Do not use this product in environments with excessive water vapor or dust.
- 8.Avoid direct contact with water, grease, organic solvents, etc.
- 9.Do not bundle the product cable together with high-voltage power cables to avoid interference.

A. PRODUCT DIAGRAM



B. ORDERING INFORMATION

SP- 01 C 001 M

①	Series	01:Economical Type
②	Pressure Range	C: -101.3~101.3kPa (Low-pressure type) P: -0.101~1.000MPa (High-pressure type)
③	Output	001:1-channel NPN output 005:1-channel NPN + 1-channel PNP output 002: 1-channel PNP output 009:1-channel NPN + 1-channel adjustable analog voltage output*1
④	Port	M: M5 Spec. female thread R: Internal M5 + external R1/8 fitting*2 C4H: Straight 4mm air tube fitting, straight type C4L: Straight 4mm air tube fitting, right-angle elbow C6H: Straight 6mm air tube fitting, straight type C6L: Straight 6mm air tube fitting, right-angle elbow
⑤	Specification	Blank: Standard type without customization T: Custom 2-channel switch output (NPN or PNP)*3 M: Custom dual air nozzles

SP- 10 C 010 R

①	Series	10: Standard Type
②	Pressure Range	P:-0.101~1.000MPa (High-pressure Model) C:-101.3~101.3kPa(Low-pressure Model) L:-10~10kPa(Small-range Model)
③	Output	010: 2-channel NPN + 1-channel analog voltage output 020: 2-channel PNP + 1-channel analog voltage output 011: 2-channel NPN + 1-channel analog current output 021: 2-channel PNP + 1-channel analog current output
④	Port	R: Internal M5 + external R1/8 C4H: Straight 4mm air tube fitting, straight type C6H: Straight 6mm air tube fitting, straight type C4L: Straight 4mm air tube fitting, right-angle elbow C6L: Straight 6mm air tube fitting, right-angle elbow

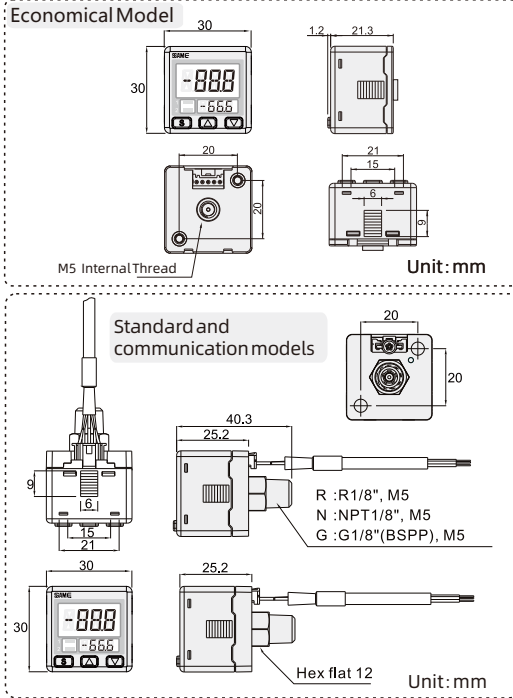
Optional Accessories (Single Selection)

- 1.L-type metal mounting bracket: XP-BT-01
- 2.Z-type metal mounting bracket: XP-BT-02
- 3.Panel mounting bracket: XP-PA-01
- 4.M5 male to R1/8 adapter: XP-MR-01
- 5.M5 male to R1/4 adapter: XP-MR-02

Note:

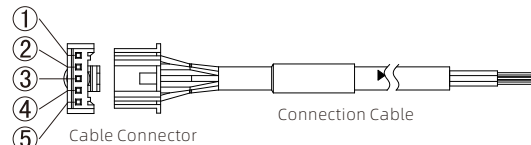
The pressure port thread conforms to R1/8 (Asian standard).
It is also referred to as PT1/8 or NPT 1/8 (North American standard) in some regions.
G1/8 is the European standard and is less commonly used domestically in China.

C. EXTERNAL DIMENSION



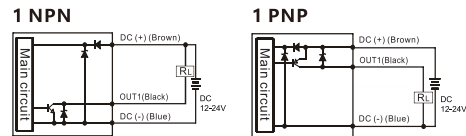
D.WIRING

Note: Please use the matching cable and be careful not to pull the cable too hard.



Pin NO.	SP-10 (Standard series)	SP-01 (Economical series)
① Brown	DC+	DC+
② Black	OUT1	OUT1
③ White	OUT2	
④ Orange	AIO	
⑤ Blue	DC-	DC-

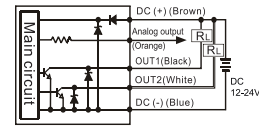
E.OUTPUT WIRING INSTRUCTIONS



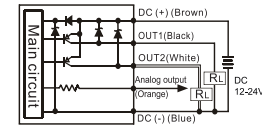
(Switch to the next page)

(Continued from previous page "E.OUTPUT WIRING INSTRUCTIONS")

2 NPN+1 Analog



2 PNP+1 Analog

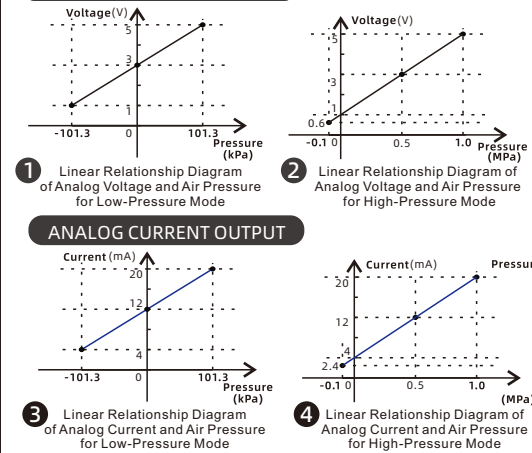


[NOTE]

OUT1 is a multi-functional port for both switch output and parameter copying. Please switch between functions via the settings.

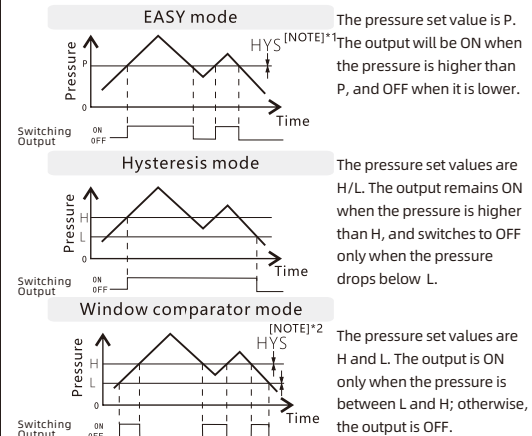
F.OUTPUT MODEL

ANALOG VOLTAGE OUTPUT



G.OUTPUT MODEL

The switch output OUT1 and OUT2 [Note]*1 can be selected in three modes, namely "Easy Mode", "hysteresis Mode" and "Window Mode". For specific Settings, please refer to the section "K. Normal Settings Mode".

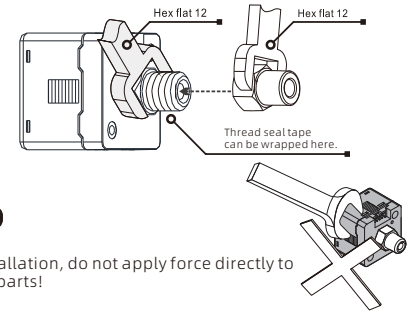


[NOTE]

- *1.In the EASY mode, $P-L$ is displayed on the sub-display, $H-L$ is displayed in the other mode.
- *2.HYS is the hysteresis value; it can be adjusted in <Expert setting mode>.

H.AIR PRESSURE INLET

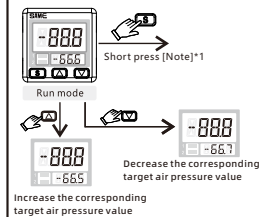
The air pressure can be connected using a universal connector. The interface type can be external thread R1/8, G1/8 and NPT1/8, or internal thread M5 specification. The specific type should be selected according to actual needs. When tightening and installing, the torque for the external thread interface should be controlled below 9.8N.M, and for the internal thread interface, it should be controlled below 1 N.M. In addition, to prevent air leakage, an appropriate amount of raw material tape can be wrapped around the threaded joint, and then the pneumatic connector can be tightened.



Warning

During installation, do not apply force directly to the plastic parts!

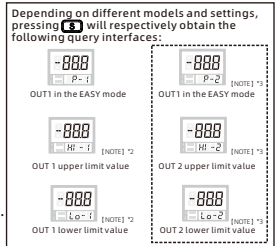
I.Basic operations under < Run Mode >



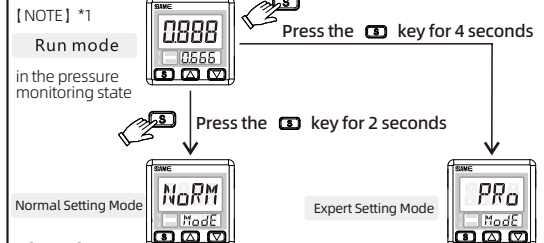
Pressing **S** allows you to query and switch the output port and mode corresponding to the current secondary screen display value. In the query interface, pressing **←** or **→** will exit the query interface and enable increasing or decreasing the setting value. If there is no operation within 1 second, the query interface will exit, and the secondary screen will display the set value of the output port and mode corresponding to the query interface.

[NOTE]

- * 1. Use a short press; otherwise, it will enter other setting modes.
- * 2. The upper limit value must be greater than the lower limit value.
- * 3. If OUT2 is set to OFF, the three interfaces in the dashed box will not appear. Additionally, the economy series does not have an OUT2 setting item.



J.MENU SETTING

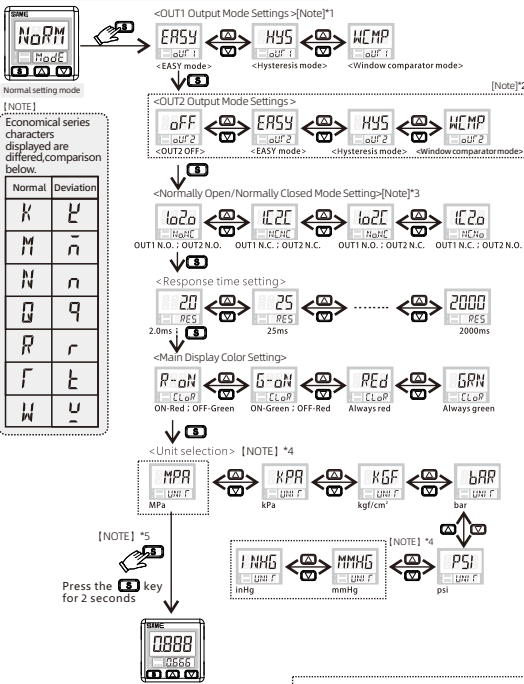


[NOTE]

- *1.Long press the **S** button for 2 seconds on any screen in <Normal Setting Mode> to return to <Run Mode>.
- *2.Long press the **S** button for 4 seconds on any screen in <Expert Setting Mode> to return to <Run Mode>.

K.NORMAL SETTING MODE

The mode of <Run mode> be changed to <Normal setting mode>



[NOTE]

*1. OUT1 defaults to output, cannot be disabled.

*2. If there is no OUT2, this setting is invalid.

*3. If OUT is OFF, this setting as right figure:

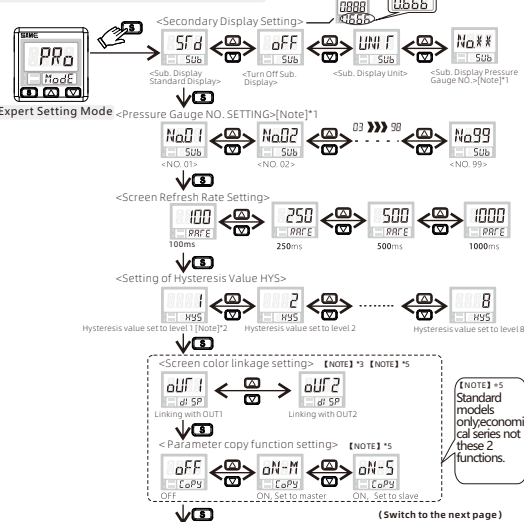
*4. High-pressure models: inHg/mmHg not allowed; Low-pressure models:

Mpa not allowed.

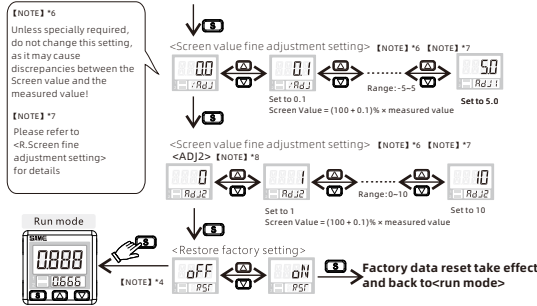
*5. Press [F] for 2 seconds in any interface of <Normal Setting Mode> to exit this mode and return to <Running Mode>.

L.EXPERT SETTING MODE

From <Run Mode>, enter <Expert Setting Mode>



(Continued from previous page "L.EXPERT SETTING MODE")



[NOTE]

*1. For multiple "pressure gauges" in the same environment, assign a unique ID to each via this setting for easy management.

*2. Level 1 = 1 digit hysteresis; Level 2 = 2 digits, and so on. Setting hysteresis prevents display flickering or false switching outputs caused by small pressure fluctuations near the set target.

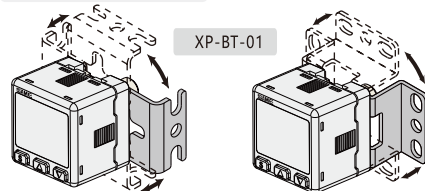
*3. Color linkage: When OUT1/OUT2 output is active, the screen display color changes (e.g., from green to red or from red to green).

*4. <Expert setting Mode>: Long-press [F] for 4 seconds in any interface to exit this mode and return to <Running Mode>.

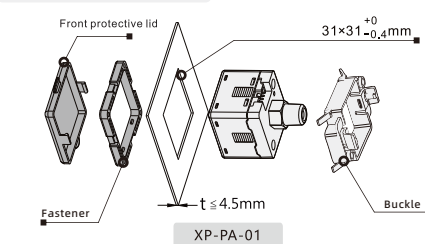
*8. Micro-pressure shielding value setting Adjustable range: 0 to 10 When this option is set to a non-zero value N, all pressure values within the range of -N to N (based on the minimum display unit) will be displayed as 0.

M.MOUNTING

1 - Mounting bracket



2 - panel mounting



[Note]

All the aforementioned items are optional accessories, which require separate selection during the ordering process.

N.SUPERSPEED MODE

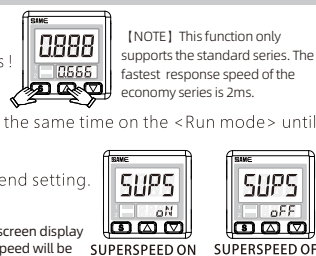
By the SUPERSPEED mode, response time can up to 1ms!

Press [F] + [F] button at the same time on the <Run mode> until display show as:

Release the buttons to end setting.

[NOTE]

To ensure response speed, the screen display update rate and key response speed will be appropriately reduced (without affecting normal use).



O. SPECIFICATIONS

MODEL		SP-01P (High Pressure)	SP-01C (Low Pressure)	SP-10P (High Pressure)	SP-10C (Low Pressure)
Rated pressure range		-0.101~1.000MPa	-101.3~101.3kPa	-0.101~1.000MPa	-101.3~101.3kPa
Setting pressure range		-0.105~1.000MPa	-105.0~105.0kPa	-0.105~1.000MPa	-105.0~105.0kPa
Max withstand pressure		1.5MPa	500kPa	1.5MPa	500kPa
Applicable gas		Filtered air, Non-corrosive/Non-flammable gas, Compliant with ISO 8573-1:2010[7:4:4]			
Power supply voltage		12~24V DC ±10%			
Current consumption		≤45mA(With no load)			
Display Resolution Under Different Pressure Units	kPa	1	0.1	1	0.1
	MPa	0.001	-	0.001	-
	kgf	0.01	0.001	0.01	0.001
	bar	0.01	0.001	0.01	0.001
	psi	0.1	0.01	0.1	0.01
	mmHg	-	0.1	-	0.1
inchHg	-	1	-	1	
Comparative Output*1		NPN Open Collector Output Max load current: 100mA Max supply voltage: 30V DC Internal voltage drop: 1.5V or less		PNP Open Collector Output Max load current: 100mA Max supply voltage: 24V DC Internal voltage drop: 1.5V or less	
Voltage Analog Output*1		—		Output voltage: 1~5V ±2.5 % F.S Linearity: ±1% F.S. Output impedance: Approx. 1kΩ	
Current Analog output *1		—		Output Current: 4~20mA ±2.5 % F.S Linearity: ±1% F.S Output impedance: Min. 50Ω Max 300Ω@12V, 600Ω@24V	
MODBUS Function*2		—			
Display Accuracy		±2%F.S. ±1digits(Operating temperature25±3°C)			
Repeatability		±0.2%F.S. ±2digits			
Response time		2.0ms, 50ms, 100ms 250ms, 500ms, 2000ms, 3000ms, 5000ms Optional [NOTE] *3		1ms [NOTE] *2, 2.0ms, 50ms, 100ms, 250ms, 500ms, 2000ms, 3000ms, 5000ms Optional	
Display		3 color (Red/ Green/ Orange) Display (Sampling rate: 4times/1sec)			
Temp. Characteristics		±2%F.S. detected pressure (25°C) at temperature range of 0~50°C			
Operating Environment		0~50°C(No condensation/icing) ; 35~85%RH (No water droplets)			
Storage Environment		-10~50°C (No condensation/icing) ; 35~85%RH (No water droplets)			
Protection		Ip40			
Pressure port		M5 Female Thread		R: Ext 1/8, Int M5 C4H: 4mm straight outlet, straight C4L: 4mm straight outlet, right-angle elbow C6H: 6mm straight outlet, straight C6L: 6mm straight outlet, right-angle elbow	
Weight		Approx. 55g (With lead wire)		Approx. 85g (With lead wire)	
Accessories		1 terminal power cable, 1 user manual			

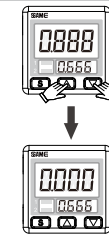
[NOTE]

*1. Output type corresponds to product model one-to-one;

*2. 1ms response speed is only supported when SUPERSPEED mode is enabled; refer to "N: SUPERSPEED MODE" for operation.

*3. For response speed settings, see "K. NORMAL SETTING MODE".

P.ZERO CALIBRATION



In <Run Mode>, Press until [F] + [F] at the same time show as follow:

Release the button to complete zero setting.

Q.KEY LOCK/UNLOCK



In <Run Mode>, Press until [F] + [F] at the same time show as follow:



Release the button to complete key lock/unlock operations

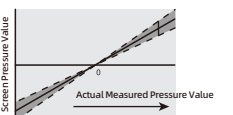
R.SCREEN FINE ADJUSTMENT FUNCTION

<EXPERT SETTING MODE>



Set ratio via [F] [F]

Fine-tuning range: ±5.0% R.D.
Fine-tuning range: ±0.1% R.D.



— : Factory Default Value

■ : Display Fine-Tuning Range

R.D. Indicates Actual Measured Value

[NOTE]

1. This function eliminates minimal pressure errors. Do not change defaults unless necessary to avoid confusion.
2. The signal would be changed with analog output after adjusting.

S. ERROR MESSAGE

Error display	Error description
EEER1	Abnormal current consumption at digital output port
EEER2	Apply pressure during zero calibration
***#	Pressure value out of range
EEER3	Internal error
EEER4	Internal error

For more information, please contact us. We are ready to serve you!

T. CONTACT US

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