

# SU Sanitary type Waterproof Digital Pressure Gauge

## Outline

Waterproof digital pressure gauge is particularly designed to make pressure measurements in the field that sanitary care is required. This can be widely used, in Food, Pharmaceuticals, Cosmetics, Bio-related industries, etc.

## Features

- IP67 (1MPa or less: IP65)
- Analog output (option) scaling function
- Switch function (NPN/PNP switchable)
- Display scaling function (Max. display 9999)
- Peak & bottom holding function, key lock function, zero adjustment function
- 6 kinds filter function (Nil, 25 · 250ms, 2.5 · 5 · 10s)
- Pressure switch: Delay function added (0.00~2.00s)
- M12 Connector connection



### 1S Ferrule wetted parts

The diaphragm is optimized for the inside diameter of ISO (IDF) 1S pipes, keeping contamination to a bare minimum through optimal fitting.



Diaphragm diameter: φ23



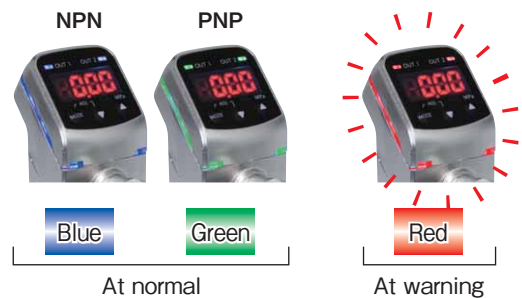
## Radiation shape

Radiation shape		Standard		Radiation tube	
Externals					
		Stem type SU1G	Back type SU1H	Stem type SU1E	Back type SU1F
Operating temperature range	Wetted parts	-5~70°C		-5~135°C	
	Ambient	-5~40°C			
Allowable temperature range	Wetted parts	-5~70°C		-5~150°C *	
	Ambient	-5~50°C			

\* Allowed time is limited to 20 hours if in excess of 135°C.

## Function

### LED Ring (switch operation light)



Pressure switch and two independent outputs (Lighting for operation status)



## Specifications

Item		Description							
Fluid		Air or liquid (Non-corrosive fluid)							
Materials	Wetted parts	Diaphragm: SUS316L, Fitting: SUS316 or SUS316L							
	Case	ADC12 (Nickel plating), PC, NBR							
Pressure range		Gauge pressure (MPa)				Compound (MPa)			
		0~0.5	0~1	0~2	0~3.5	-0.1~0.5	-0.1~1	-0.1~2	
		Max. allowable pressure	2	3.5	3.5	3.5	2	3.5	3.5
		Display digit, range	0.000~0.500	0.000~1.000	0.000~2.000	0.00~3.50	-1.00~0.500	-1.00~1.000	-1.00~2.000
Protection (JIS C 0920)		IP65		IP67		IP65		IP67	
Accuracy	Display accuracy *1	±(1.5%F.S.+1digit)							
	Output accuracy *2	±1.5%F.S.							
	Ambient temperature coefficient	±0.15%F.S./°C (Zero, Span)							
	Wetted parts temperature coefficient	±0.05%F.S./°C (Zero, Span)							
Operating temperature	Wetted parts	Standard: -5~70°C (No freezing or condensation) Radiation tube: -5~135°C (No freezing or condensation)							
	Ambient	-5~40°C (No freezing or condensation)							
Operating humidity		85%RH or less (1MPa or less)							
Allowable temperature	Wetted parts	Standard: -5~70°C (No freezing or condensation) Radiation tube: -5~150°C Allowed time is limited to 20 hours if in excess of 135°C. (No freezing or condensation)							
	Ambient	-5~50°C (No freezing or condensation)							
Filled liquid		Propylene glycol (Compound: Silicone oil)							

\* 1: Linearity hysteresis, and repeatability are contained at 23±2°C. [Linearity: ±(1%F.S. + 1digit)]

\* 2: Linearity hysteresis, and repeatability are contained at 23±2°C. [Linearity: ±(1%F.S.)]

		Comparator 2 outputs (Independent)	Comparator 1 output + Analog 1 output
Power source		12~24V DC ±10%, ripple (P-P) not exceeding 10%	18~24V DC ±10%, ripple (P-P) not exceeding 10%
	Consumption current	30mA DC or less (Excluding output signal)	
Comparator output	Open collector	NPN (default) / PNP	
	Maximum load current	80mA DC Applied voltage: 30V DC (NPN output) / Residual voltage 1V DC or less	
	Response speed	10ms or less (without filter)	
	Operation mode	Hysteresis mode, window comparator mode	
	Dead band	Hysteresis mode: Changeability (Min. set value 1 digit), Window comparator mode: 1%F.S. fixed	
	Delay	0~2.00s (ON, OFF)	
	Setting range	-1999~9999	
Set resolution	1 digit		
Analog output	Current output	—	4~20mA DC
	Output accuracy *2	—	±1.5%F.S.
	Load resistance	—	400Ω or less
	Resolution	—	0.05%F.S. or less
Filter setting		Nil, 25ms, 250ms, 2.5s, 5s, 10s (25ms setting when shipping)	
Cable connection		M12 Connector (Quadruple)	

\* 2: Linearity hysteresis, and repeatability are contained at 23±2°C. [Linearity: ±(1%F.S.)]

Display		4 digit, 8mm LED
	Display update	200ms
	Display range	-1999~9999
	Pressure indication	-10~110%F.S. of pressure range
	Scaling	-1999~9999
LED Ring	Emission color	NPN: Red (ON), Blue (OFF) / PNP: Red (ON), Green (OFF)
Operating condition		Normal conditions (No flammable liquids or explosive gaseous atmospheres)
Installation location		Install without direct sunlight

Function	Loop check, Display scaling, Analog output scaling, Filter, Key lock, Peak & bottom holding
CE Compliance *3	EMC Directive: 2004/108/EC Applicable Standards: EN61326-1:2006, EN61326-2-3:2006
RoHS Compliance	EU RoHS Directive applicable
Weight (Except cable)	Standard: Approx. 300 g Radiation tube: Approx. 500 g

\* 3: It is not possible to use as safety accessories.

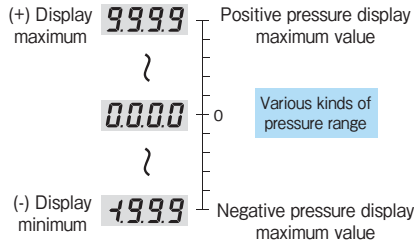
Accessory	Manual	1
Option	Cable	M12 Connector cable 2m or 5m (Straight)
		M12 Connector cable 2m or 5m (L type)
		PVC cable

### Seven points related to function

#### 1 Flexible range application by the high accuracy of display and output scaling.

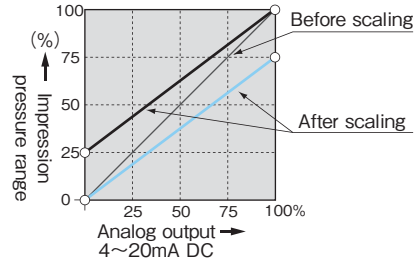
##### • Display scaling function

Digital display can be set at given values within the limit of a 4 figure display.

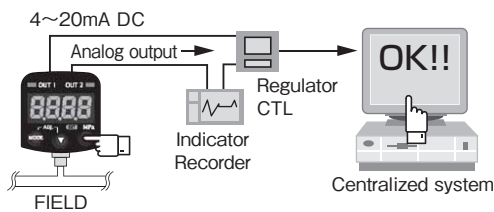


##### • Analog output scaling function\*1

Scaling of the analog output can be arbitrarily carried out to a full-scale display within the limit of a maximum display and rated pressure range.



#### 2 By the loop checking, display, analog output\*1 and comparator output can be manual tested with up and down keys operation regardless of impression pressure. It is suitable for the simulation operation of a wiring check etc.

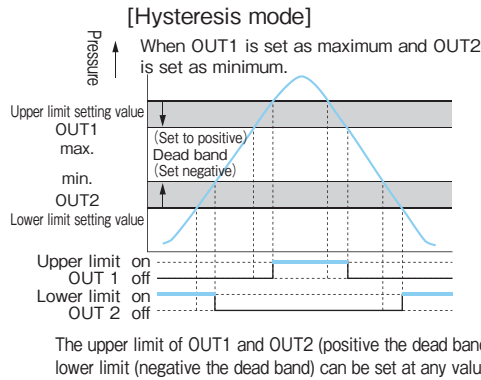


Comparator output can also be tested of operation.

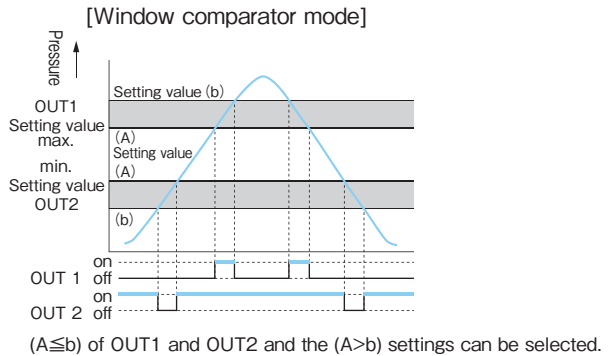
\*1 With analog output (option) only

【Attention】 The comparator becomes one output when selected with the analog output.

#### 3 When the comparator is two output specification, two kinds of operation modes can be freely selected according to the use.



Either one of the two



The upper limit of OUT1 and OUT2 (positive the dead band) and lower limit (negative the dead band) can be set at any value.

( $A \leq b$ ) of OUT1 and OUT2 and the ( $A > b$ ) settings can be selected.



The delay of turning on and turning off can be set to the above-mentioned, set value.

#### 4 The digital filter is built in. It is useful, when pressure change is hard and a display is hard to see. Either Nil, 25ms, 250ms, 2.5s, 5s or 10s is selected.

#### 5 It can adjust the zero easily by setting inlet port to atmospheric pressure and pushing MODE key and down key simultaneously.

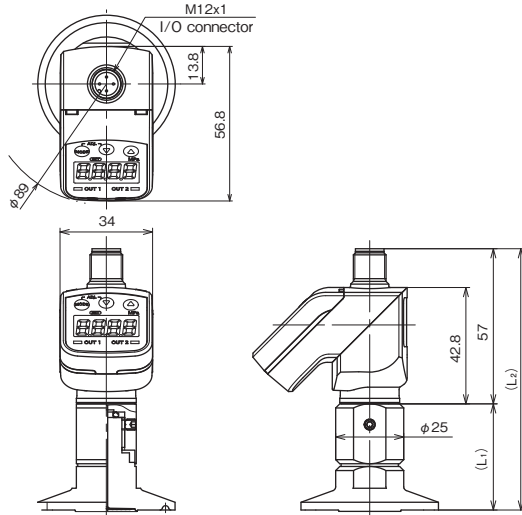
#### 6 The peak and bottom value of measured are memorized. It displays, while pushing up and down keys.

#### 7 An error message is displayed when outside of the zero adjustment and excessive pressure is applied. Key lock function for avoiding incorrect operation is prepared.

### Dimensions 1

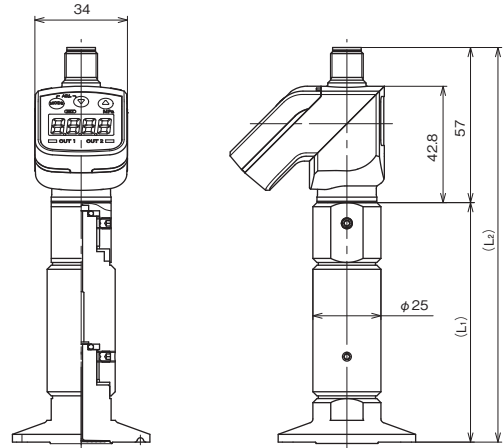
Unit: mm

**Stem type (Standard)  
SU1G**



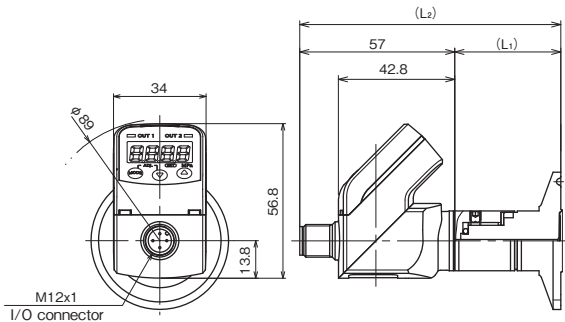
Ferrule size	L <sub>1</sub>	L <sub>2</sub>
1S, 1½S	39	96
2S	41.5	98.5

**Stem type (Radiation tube)  
SU1E**



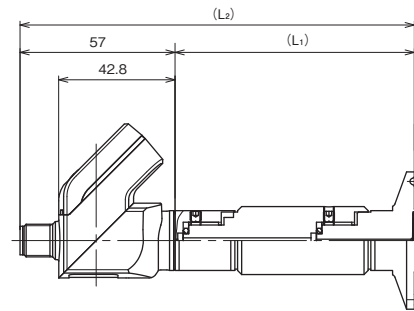
Ferrule size	L <sub>1</sub>	L <sub>2</sub>
1S, 1½S	88	145
2S	90.5	147.5

**Back type (Standard)  
SU1H**



Ferrule size	L <sub>1</sub>	L <sub>2</sub>
1S, 1½S	39	96
2S	41.5	98.5

**Back type (Radiation tube)  
SU1F**

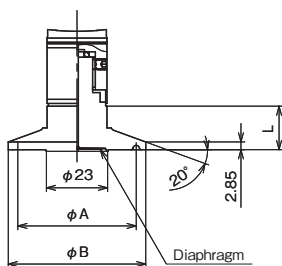


Ferrule size	L <sub>1</sub>	L <sub>2</sub>
1S, 1½S	88	145
2S	90.5	147.5

### Dimensions 2

(Connection type) ISO (IDF) Standard

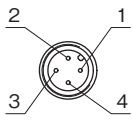
Ferrule type

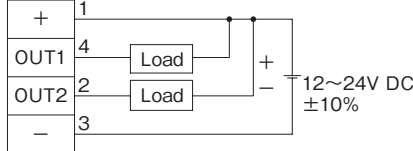
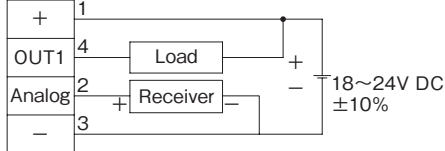
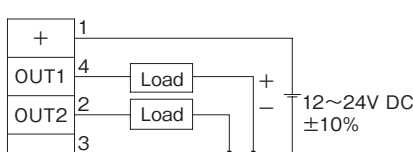
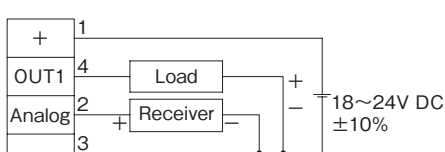


Ferrule size	A	B	L
1S, 1½S	43.5	50.5	16
2S	56.5	64	18.5

\* Please contact us for nut type

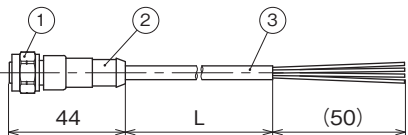
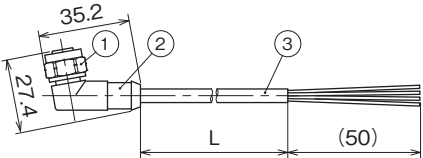
### Wiring

Connector terminal array for I/O	Terminal number		Cable color*1	
	2 comparator outputs	1 comparator output + 1 analog output		
	1	Power source (+)	Power source (+)	Brown
	2	Open collector output (OUT 2)	Analog output (+)	White
	3	Power source (-)	Power source (-)	Blue
	4	Open collector output (OUT 1)	Open collector output (OUT 1)	Black

2 comparator outputs		1 comparator output + 1 analog output	
NPN		NPN	
PNP		PNP	

\*1 Cable wiring color: when the cable with M12 connector of an option is used

### Cable with M12 connector (Option)

	Straight	L type
PVC cable (Stainless nut)		
Material	① Stainless steel ② TPU (Black) ③ PVC	
Cable length (L)	2m (standard), 5m	
Conductor cross section	0.34mm <sup>2</sup> (22AWG)	
Core diameter including insulation	1.52mm	
External cable diameter	5.2mm	

### Model number configuration

Please specify the model number, each specs and the range for ordering.

Model																	
S	U	1															
Sanitary type waterproof digital pressure gauge			①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Model number				Selective spec.				Additional spec. (Option)									
Shape *1	G	Stem type Standard	E	Stem type Radiation tube	H	Back type, Standard	F	Back type, Radiation tube									
① Connection type *2		1	Ferrule type *3 (Please use within proofpressure of the clamp and gasket)														
② Size (Connection)		2	1S (Only Ferrule type can be manufactured)														
		3	1½S														
		4	2S														
③ Wetted parts material *4		3	SUS316														
		4	SUS316L														
		5	SUS316 Buff finish														
		6	SUS316L Buff finish														
④ Pressure range (MPa)		5	-0.1~0.5				G	0~1									
		6	-0.1~1				J	0~2									
		7	-0.1~2				K	0~3.5									
		E	0~0.5														
⑤ Accuracy		8	±(1.5%F.S. + 1digit)														
⑥ Power source		N	12~24V DC±10%														
		U	18~24V DC±10% For 4~20mA DC output														
⑦ Analog output		0	Nil [2 comparator outputs NPN (default) or PNP]														
		1	4~20mA DC [1 comparator output NPN (default) or PNP]														
⑨ M12 Connector cable		0	Nil														
		3	PVC cable (Stainless nut)				Straight										
		4	2m in length of cable				L type										
		7	PVC cable (Stainless nut)				Straight										
		8	5m in length of cable				L type										
⑩ Option		0	Nil														
⑮ Documents		0	Nil														
		1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill sheet, test report (1 pc 1 copy), inspection / traceability certificate, attended inspection														

Please specify the pressure range and units separately after selecting the range code.

### Caution

- \*1 Please select the radiation tube when the temperature of fluid exceeds 70°C.
- \*2 Please use it within the range of proofpressure of connected parts (clamp, gasket, etc.). Many of commercial clamps have proofpressure for 1MPa or less. Please use it for 1MPa or less in principle without special-purpose item.

#### <Manufacturing range>

- \*3 Please contact us for nut type.
- \*4 Please contact us for electrolytic polishing wetted parts specifications.

\* Please prepare clamps, gaskets etc. parts required for mounting by yourself.

\* Specify "X" if there is no specification item.