

ZT61

Digital Pressure Gauge for Semiconductor Industry

1.125 surface mounting interface

RoHS

CE

Outline

These are digital pressure gauges corresponding to 1.125 surface mounting interface for semiconductor gas delivery applications. An excellent visibility LED digital display is built-in. There are the 2-wire transmission system without a dedicated power supply for indication, and the 3-wire transmission system (current and voltage) with comparator output. Sensing element is made of Co-Ni alloy or SUS316L, so that it is extremely reliability, corrosion resistant.

Features

- Integrated easy-to-read LED digital display.
- Available with simple 2-wire transmission system and comparator + 3-wire output.
- Excellent durability due to strain gauge formed on metal diaphragm with PCVD process.
- Highly corrosion-resistant pressure sensors made of Co-Ni alloy or SUS316L are welded directly to the SUS316L joints, giving them excellent corrosion resistance, air-tightness, long-term stability and reliability.



2-wire system

3-wire system with comparator

0 to 10V DC Output available

List of grade

Cleanliness These pressure transmitters have been assembled, adjusted, inspected and packaged in our clean room, paying special attention for maintaining cleanliness.

Grade		UC (Ultra Clean)	EP (Electro Polishing)	GP (General Purpose)
Surface roughness of gas contact		0.18 μ m Ra Avg., 0.7 μ m Rz Max.	0.18 μ m Ra Avg.	0.5 μ m Ra Avg.
Wetted parts	Pressure sensor	Co-Ni alloy	SUS316L	
	Fitting	SUS316L DOUBLE MELT material	SUS316L	
Maximum allowable pressure *1		200% of rated pressure	150% of rated pressure	
Leakage (Helium leak rate)		5 x 10 ⁻¹² Pa·m ³ /s and under	5 x 10 ⁻¹² Pa·m ³ /s and under	
Particle		Zero count for size 0.1 μ m or greater (In our inspection standard)	Zero count for size 0.1 μ m or greater (In our inspection standard)	—————
Cleaning		Ultra clearance (Cleaning)	Ultra clearance (Cleaning)	Degreasing
Recommended gas *2		High-purity gas, semiconductor material gas, etc.	High-purity gas, semiconductor material gas, etc.	Purge gas, exhaust gas, etc.

*1 The maximum allowable pressure is the upper limit of pressure value which may safely be applied to the product and remain in specification once pressure is returned to the rated range with a couple of times overpressurization for about 10 minutes. Effects of continuous overpressure are not guaranteed.

*2 Please confirm that the gas contact part material is suitable for the gas to be measured.

*UC/EP Grade rises with triple packing (Filled with N₂).

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Digital Pressure Gauge (1.125 surface mounting interface)

Features of sensor

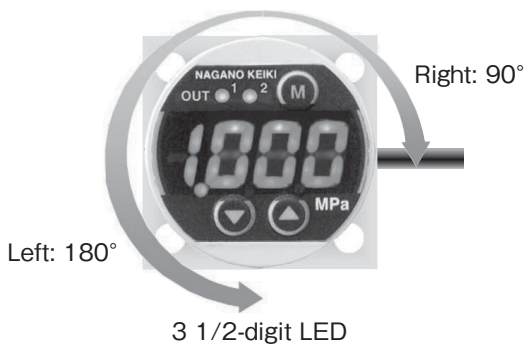
Sensor element and fitting are unification structure by welding. This pressure sensor is excellent in Corrosion resistance and Durability. It is because the quality of the material of this pressure sensor is being made by high corrosion resistance, the high tension alloy.



Features of the display unit

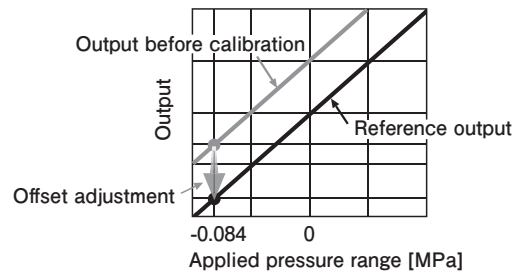
This gauge has excellent visibility because 3 1/2-digit LED display is mounted. In addition, it is possible to rotate the display unit depending on the direction of pipe.

Rotation of the display unit



Offset (Zero) adjustment function

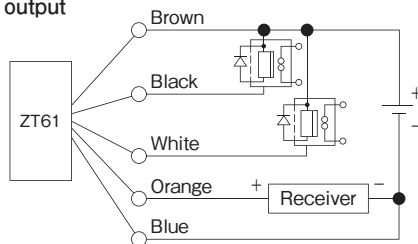
The conventional digital pressure gauge was possible to perform the zero adjustment of the output only when air pressure is atmospheric pressure. Since the semiconductor manufacturing equipment cannot open the gas contact section to the atmospheric, the use of this gauge enables to adjust the output by applying any accurate reference pressure.



*The factory default reference pressure of offset is set to atmospheric pressure. Separately, you can use the analog scaling function.

Wiring

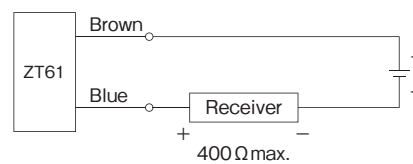
3-wire system
NPN output



Load resistance
4 to 20 mA DC: 400Ω max.
1 to 5V DC, 0 to 10V DC: 10k Ω min.

Cable color:
Brown Power source (+)
Black Open collector (OUT 1)
White Open collector (OUT 2)
Orange ... Analog output (+)
(4 to 20 mA or 1 to 5V DC, 0 to 10V DC)
Blue Power source (-) COMMON

2-wire system



Cable color:
Brown ... Power source (+)
Blue Power source (-)

Caution

Avoid installing in location where apparatus or atmosphere (excluding process media) could be cause of initiation of ignition or explosion under normal operating condition.

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Digital Pressure Gauge (1.125 surface mounting interface)

Specification

■ Select the following power type (2-wire system or 3-wire system)

■ When selecting the 3-wire system, select the analog signal (4 to 20 mA DC, 1 to 5V DC, 0 to 10V DC)

Item	Description			
Fluid	Process gasses for semiconductor industry			
Pressure range	0 to 0.3, 0 to 0.5, 0 to 1MPa -0.1 to 0.3, -0.1 to 0.5, -0.1 to 1MPa			
Display unit				
Display	3 1/2 digit LED display, 270° rotation			
Character height	8mm			
Transmission system	2-wire system	3-wire system		
Analog output	4 to 20mA DC	4 to 20mA DC	1 to 5V DC	0 to 10V DC
Supply Voltage	24V DC±10%	15 to 24V DC±10%		24V DC±10%
Standard				
Display accuracy*1	±(1.0%F.S.+1digit) at 23°C			
Output accuracy*1	±1.0%F.S. at 23°C			
Temperature coefficient	±0.1%F.S./°C (Zero, Span)			
Option (0.5MPa range or greater can be specified)				
Display accuracy*1	±(0.5%F.S.+1digit) at 23°C		±(0.75%F.S.+1digit) at 23°C	
Output accuracy*1	±0.5%F.S. at 23°C		±0.75%F.S. at 23°C	
Temperature coefficient	±0.05 %F.S./°C (Zero, Span)			
Load resistance	400Ω max.	400Ω max.	10kΩ min.	
Comparator output	Nil	NPN open collector x 2 independent outputs [Hysteresis mode, Window comparator mode] Maximum rating: 30V DC, 80 mA DC Protection circuit: Short-circuit (Over-current) protection Comparator operation display LED: Red LED (OUT1, 2), Lit when switched to ON. ON/OFF Delay: Max. 2 seconds for ON/OFF of the comparator output		
Consumption current	20mA DC and under (When using within the rated range)	35mA DC and under	15mA DC and under	
Operating temperature range	-10 to 50°C (No freezing or condensation)			
Storage temperature range	-20 to 60°C (No freezing or condensation)			
Insulation resistance	100MΩ or greater (For 50V DC)			
Mount size	1.125 Integrated size			
Electrical junction	Cable type			
Case material	ADC12, PC, PC / ABS UL94V-0			
Enclosure	Indoor use			
CE compliance	Applicable Standards: EN61326-1: 2013; EN61326-2-3: 2013 *Please use it to connect to the indoor power distribution network which is not affected by the lightning surge voltage and power supply system switching transients.			
Function				
Display scaling	-1999 to 1999 digits with respect to the ratings range			
Analog output scaling	-100 to 150% with respect to the ratings range			
Filter	Selectable among No filter, 25ms, 250ms, 2.5s, 5s or 10s			
Fine adjustment of the analog output	Possible to fine adjust the minimum/maximum value of the analog output			
Loop check	Manual display without applying pressure, comparator output (only for 3-wire system), and analog output simulated.			
Offset (Zero) adjustment	Offset (Zero) adjustment of the displayed and analog output values			
Holding function	Both the maximum value and the minimum value can be indicated, reset			
Key lock	Operation PB lock			
Error display	Comparator over-current (Only when applying the specifications with 3-wire system comparator), over-pressure, out of pressure range for zero adjustment			
Weight	Approx. 180 g			

*1 Display and analog output accuracies include the effects of Linearity, Hysteresis and Repeatability.

Cable

	Environmental temperature	Conductor		Cable outer diameter (mm)	Minimum bending radius (mm)
		Cross-sectional area (mm ²)	Twisted conductors (pcs./mm)		
PVC cable	-10 to 105°C	0.18	7/0.18	φ3.5	15

*Cable length: 2 m only

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Digital Pressure Gauge (1.125 surface mounting interface)

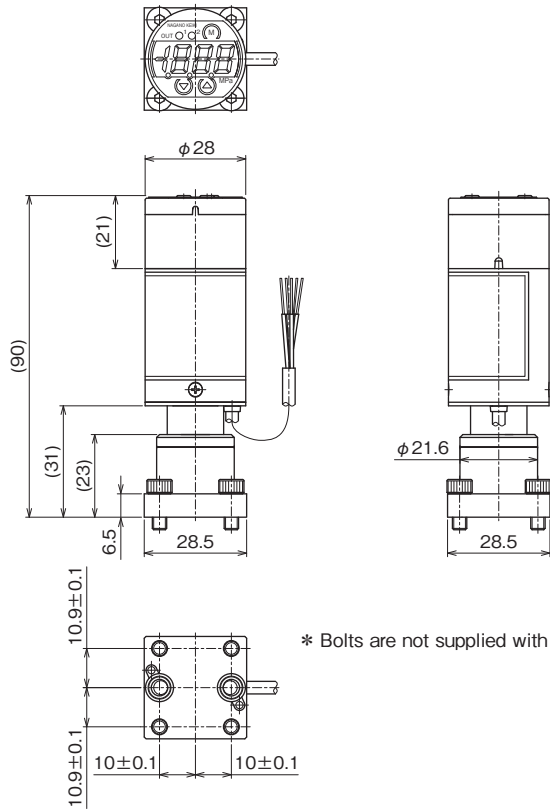
Dimensions

3-wire system

UC/EP/GP Grade

Unit: mm

<1.125 W-Seal>



* Bolts are not supplied with the EP and GP grades.

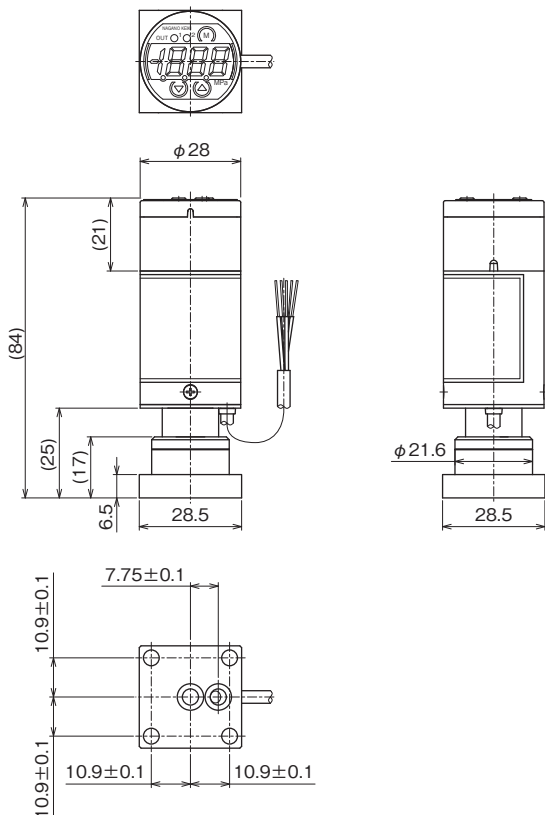
Grade	Connection	Model number
UC	1.125 W-Seal (With bolt)	ZT61-ZW2

Grade	Connection	Model number
EP	1.125 W-Seal (Without bolt)	ZT61-ZFE

Grade	Connection	Model number
GP	1.125 W-Seal (Without bolt)	ZT61-ZFG

UC Grade

<1.125 C-Seal>



Grade	Connection	Model number
UC	1.125 C-Seal (Without bolt)	ZT61-ZC2

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Digital Pressure Gauge (1.125 surface mounting interface)

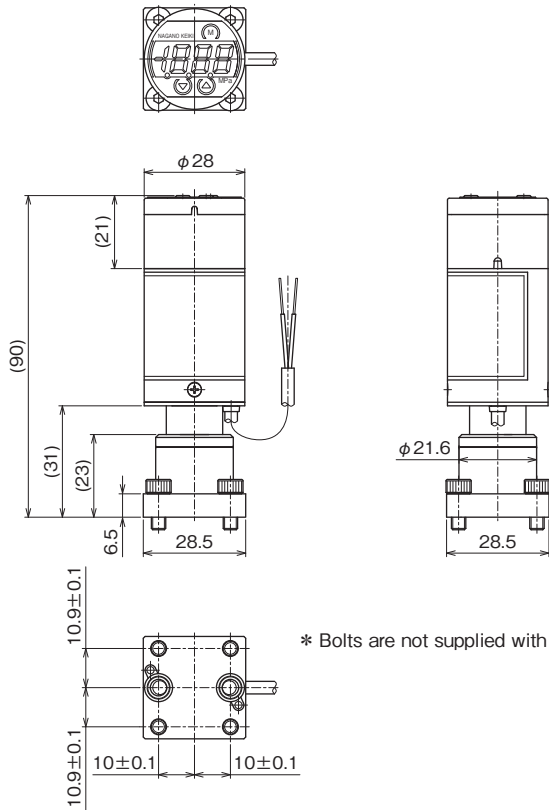
Dimensions

2-wire system

UC/EP/GP Grade

Unit: mm

<1.125 W-Seal>



* Bolts are not supplied with the EP and GP grades.

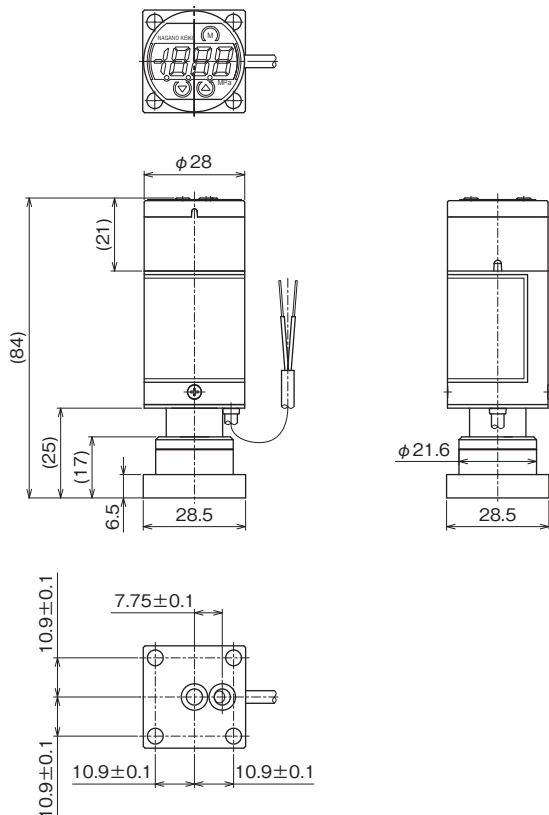
Grade	Connection	Model number
UC	1.125 W-Seal (With bolt)	ZT61-ZW1

Grade	Connection	Model number
EP	1.125 W-Seal (Without bolt)	ZT61-ZFD

Grade	Connection	Model number
GP	1.125 W-Seal (Without bolt)	ZT61-ZFF

UC Grade

<1.125 C-Seal>



Grade	Connection	Model number
UC	1.125 C-Seal (Without bolt)	ZT61-ZC1

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Digital Pressure Gauge (1.125 surface mounting interface)

With 3-wire system comparator, UC Grade

Model number configuration

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

Model

Z T 6 1 — **Z** **2** — **3** × × × × × × ×

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

Digital Pressure Gauge
(1.125 surface mounting interface)
With 3-wire system comparator UC Grade

Model number		Selective spec.	Additional spec. (Option)
① Mounting	Z	Surface mounting interface	
② Connection	C	1.125 C-Seal (Without bolt)	
	W	1.125 W-Seal (Bolt embodiment type)	
③ Power type, Wetted parts by grade	2	3-wire system analog output (4 to 20 mA / 1 to 5V DC / 0 to 10V DC), With comparator output / UC Grade ·Pressure sensor: Co-Ni alloy (All welding) ·Fitting: SUS316L DOUBLE MELT material	
④ Pressure range	C	-0.1 to 0.3MPa	(Number of digit indication: 0.300)
	D	-0.1 to 0.5MPa	(Number of digit indication: 0.500)
	E	-0.1 to 1MPa	(Number of digit indication: 1.000)
	1	0 to 0.3MPa	(Number of digit indication: 0.300)
	2	0 to 0.5MPa	(Number of digit indication: 0.500)
⑤ Display accuracy	5	± (0.5%F.S.+1 digit) (0.5MPa range or greater and Analog output is 4 to 20mA DC or 1 to 5V DC, can be specified)	
	6	± (0.75%F.S.+1 digit) (0.5MPa range or greater and Analog output is 0 to 10V DC, can be specified)	
	7	± (1.0%F.S.+1 digit)	
⑥ Power source	⑥	15 to 24V DC±10%	⑦ Analog output
	⑦		4 to 20mA DC
⑦ Analog output	P 1	24V DC±10%	1 to 5V DC
	P 8		0 to 10V DC
⑧ Comparator output	3	NPN Open collector x 2 outputs	
⑮ Document	0	Nil	
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill test report, test report (1 pc 1 copy), inspection / traceability certificate, attended inspection	

Please specify the pressure range and units separately besides selection of range code.

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

ZT61

Digital Pressure Gauge (1.125 surface mounting interface)

With 3-wire system comparator, EP Grade

Model number configuration

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

Model

Z T 6 1 — **Z F E** — **3** × × × × × × ×

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

Digital Pressure Gauge
(1.125 surface mounting interface)
With 3-wire system comparator EP Grade

Model number		Selective spec.	Additional spec. (Option)	
① Mounting	Z	Surface mounting interface		
② Connection	F	1.125 W-Seal (Without bolt)		
③ Power type, Wetted parts by grade	E	3-wire system analog output (4 to 20 mA / 1 to 5V DC / 0 to 10V DC), With comparator output / EP Grade ·Pressure sensor: SUS316L (All welding) ·Fitting: SUS316L		
④ Pressure range	C	-0.1 to 0.3MPa		
	D	-0.1 to 0.5MPa		
	E	-0.1 to 1MPa		
	1	0 to 0.3MPa		
	2	0 to 0.5MPa		
⑤ Display accuracy	5	± (0.5%F.S.+1 digit) (0.5MPa range or greater and Analog output is 4 to 20mA DC or 1 to 5V DC, can be specified)		
	6	± (0.75%F.S.+1 digit) (0.5MPa range or greater and Analog output is 0 to 10V DC, can be specified)		
	7	± (1.0%F.S.+1 digit)		
⑥ Power source	⑥	⑦	⑥ Power source	⑦ Analog output
	P		1	15 to 24V DC±10%
⑦ Analog output	P	8		1 to 5V DC
	1	7	24V DC±10%	0 to 10V DC
⑧ Comparator output	3	NPN Open collector x 2 outputs		
⑮ Document	0	Nil		
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill test report, test report (1 pc 1 copy), inspection / traceability certificate, attended inspection		

Please specify the pressure range and units separately besides selection of range code.

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

ZT61

Digital Pressure Gauge (1.125 surface mounting interface)

With 3-wire system comparator, GP Grade

Model number configuration

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

Model

Z T 6 1 — **Z F G** — [] [] [] [] **3** × × × × × × [] []

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

Digital Pressure Gauge
(1.125 surface mounting interface)
With 3-wire system comparator GP Grade

Model number		Selective spec.	Additional spec. (Option)
① Mounting	Z	Surface mounting interface	
② Connection	F	1.125 W-Seal (Without bolt)	
③ Power type, Wetted parts by grade	G	3-wire system analog output (4 to 20 mA / 1 to 5V DC / 0 to 10V DC), With comparator output / GP Grade ·Pressure sensor: SUS316L (All welding) ·Fitting: SUS316L	
④ Pressure range	C	-0.1 to 0.3MPa	
	D	-0.1 to 0.5MPa	
	E	-0.1 to 1MPa	
	1	0 to 0.3MPa	
	2	0 to 0.5MPa	
⑤ Display accuracy	5	± (0.5%F.S.+1 digit) (0.5MPa range or greater and Analog output is 4 to 20mA DC or 1 to 5V DC, can be specified)	
	6	± (0.75%F.S.+1 digit) (0.5MPa range or greater and Analog output is 0 to 10V DC, can be specified)	
	7	± (1.0%F.S.+1 digit)	
⑥ Power source	⑥	⑥ Power source 15 to 24V DC±10%	⑦ Analog output 4 to 20mA DC
	⑦		1 to 5V DC
⑦ Analog output	⑥	24V DC±10%	0 to 10V DC
	⑦		
⑧ Comparator output	3	NPN Open collector x 2 outputs	
⑮ Document	0	Nil	
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill test report, test report (1 pc 1 copy), inspection / traceability certificate, attended inspection	

Please specify the pressure range and units separately besides selection of range code.

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

2-wire system, UC Grade

Model number configuration

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

Model

	Z	T	6	1	Z		1			1	1	0	X	X	X	X	X	X	
	①	②	③			④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮		

Digital Pressure Gauge
(1.125 surface mounting interface)
2-wire system, UC Grade

Model number	Selective spec.	Additional spec. (Option)
① Mounting	Z Surface mounting interface	
② Connection	C 1.125 C-Seal (Without bolt)	
	W 1.125 W-Seal (Bolt embodiment type)	
③ Power type, Wetted parts by grade	1 2-wire system analog output (4 to 20 mA) UC Grade ·Pressure sensor: Co-Ni alloy (All welding) ·Fitting: SUS316L DOUBLE MELT material	
④ Pressure range	C -0.1 to 0.3MPa (Number of digit indication: 0.300)	
	D -0.1 to 0.5MPa (Number of digit indication: 0.500)	
	E -0.1 to 1MPa (Number of digit indication: 1.000)	
	1 0 to 0.3MPa (Number of digit indication: 0.300)	
	2 0 to 0.5MPa (Number of digit indication: 0.500)	
	3 0 to 1MPa (Number of digit indication: 1.000)	
⑤ Display accuracy	5 ± (0.5%F.S.+1 digit) (0.5MPa range or greater can be specified)	
	7 ± (1.0%F.S.+1 digit)	
⑥ Power source	1 24V DC±10%	
⑦ Analog output	1 4 to 20 mA DC (2-wire system)	
⑧ Comparator output	0 Nil	
⑮ Document	0 Nil	
	1 Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill test report, test report (1 pc 1 copy), inspection / traceability certificate, attended inspection	

Please specify the pressure range and units separately besides selection of range code.

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

ZT61

Digital Pressure Gauge (1.125 surface mounting interface)

2-wire system, EP Grade

Model number configuration

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

Model

	Z	T	6	1	Z	F	D			1	1	0	X	X	X	X	X	X		
	①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮				

Digital Pressure Gauge
(1.125 surface mounting interface)
2-wire system, EP Grade

Model number	Selective spec.	Additional spec. (Option)
① Mounting	Z Surface mounting interface	
② Connection	F 1.125 W-Seal (Without bolt)	
③ Power type, Wetted parts by grade	D 2-wire system analog output (4 to 20 mA) EP Grade ·Pressure sensor: SUS316L (All welding) ·Fitting: SUS316L	
④ Pressure range	C -0.1 to 0.3MPa	
	D -0.1 to 0.5MPa	
	E -0.1 to 1MPa	
	1 0 to 0.3MPa	
	2 0 to 0.5MPa	
	3 0 to 1MPa	
⑤ Display accuracy	5 ± (0.5%F.S.+1 digit) (0.5MPa range or greater can be specified)	
	7 ± (1.0%F.S.+1 digit)	
⑥ Power source	1 24V DC±10%	
⑦ Analog output	1 4 to 20 mA DC (2-wire system)	
⑧ Comparator output	0 Nil	
⑮ Document	0 Nil	
	1 Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill test report, test report (1 pc 1 copy), inspection / traceability certificate, attended inspection	

Please specify the pressure range and units separately besides selection of range code.

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

ZT61

Digital Pressure Gauge (1.125 surface mounting interface)

2-wire system, GP Grade

Model number configuration

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

Model

	Z	T	6	1	Z	F	F			1	1	0	X	X	X	X	X	X		
	①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮				

Digital Pressure Gauge
(1.125 surface mounting interface)
2-wire system, GP Grade

Model number	Selective spec.	Additional spec. (Option)
① Mounting	Z	Surface mounting interface
② Connection	F	1.125 W-Seal (Without bolt)
③ Power type, Wetted parts by grade	F	2-wire system analog output (4 to 20 mA) GP Grade ·Pressure sensor: SUS316L (All welding) ·Fitting: SUS316L
④ Pressure range	C	-0.1 to 0.3MPa
	D	-0.1 to 0.5MPa
	E	-0.1 to 1MPa
	1	0 to 0.3MPa
	2	0 to 0.5MPa
⑤ Display accuracy	5	± (0.5%F.S.+1 digit) (0.5MPa range or greater can be specified)
	7	± (1.0%F.S.+1 digit)
⑥ Power source	1	24V DC±10%
⑦ Analog output	1	4 to 20 mA DC (2-wire system)
⑧ Comparator output	0	Nil
⑮ Document	0	Nil
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill test report, test report (1 pc 1 copy), inspection / traceability certificate, attended inspection

Please specify the pressure range and units separately besides selection of range code.

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