NAGANO KEIKI

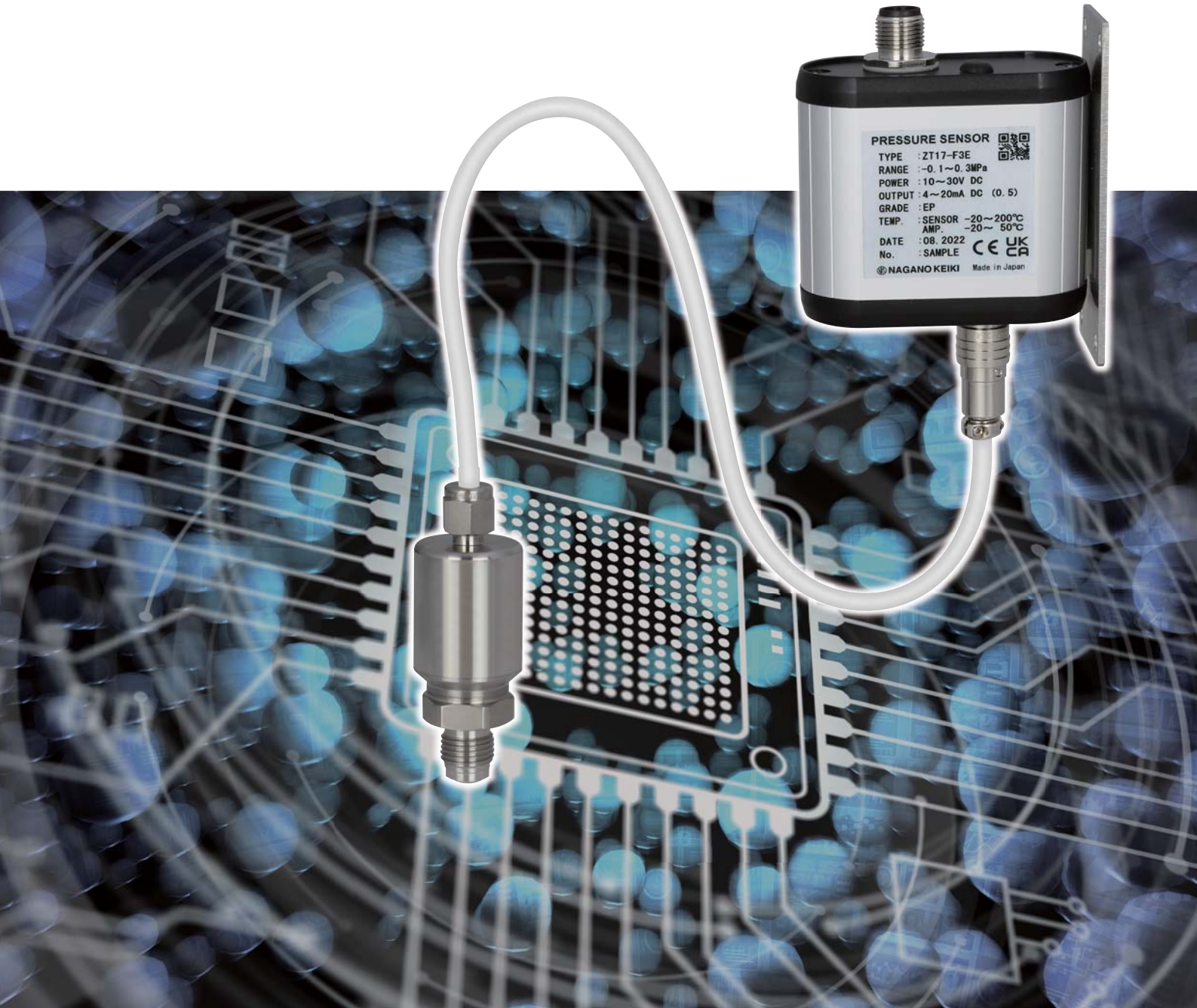
Pressure Sensor

For Semiconductor Industry

ZT17

High Temperature Pressure Sensor (Suitable for 200°C)

Supports measurements up to 200°C!
Pressure sensor for high temperature applications in semiconductor manufacturing processes



ZT17 High Temperature Pressure Sensor (Suitable for 200°C)

Features

High temperature measurement of 200°C

Equipped with a newly developed pressure sensor element and supports 200°C measurement

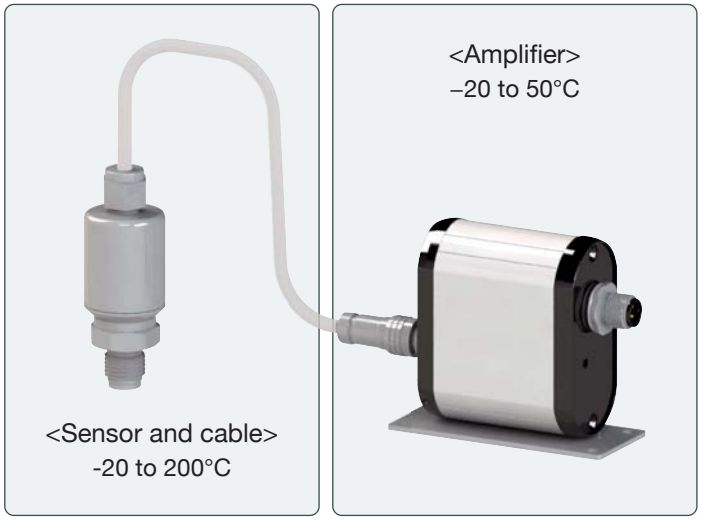
Achieves high-precision high-temperature measurement

Temperature characteristics
ZERO: ±1.0% F.S.
SPAN: ±3.0% F.S.
(Temperature compensation range 15 to 200°C)

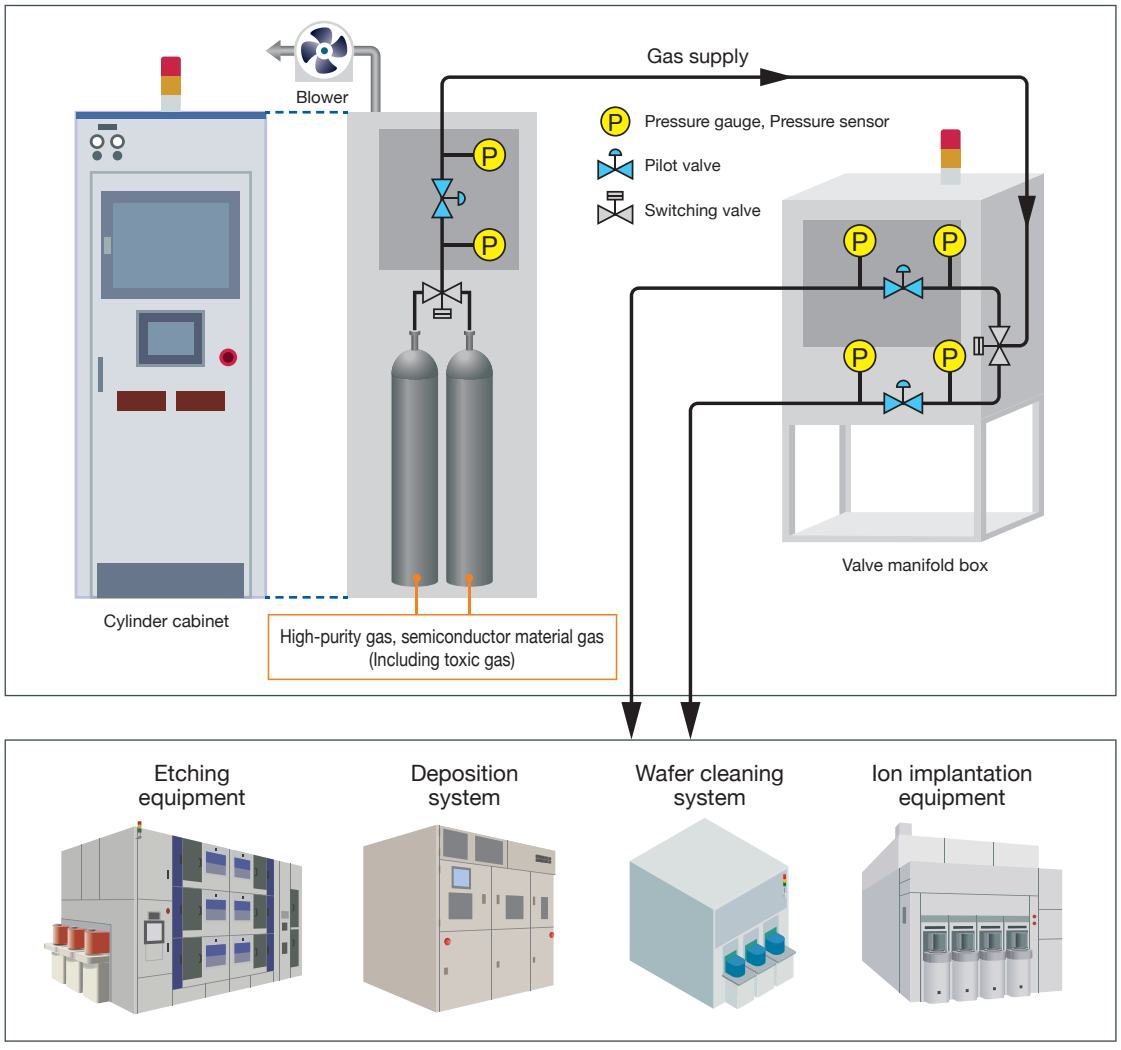
Minimizes retention of measurement gases

Welded structure suitable for gas supply system
Special surface treatment technology

Operating temperature

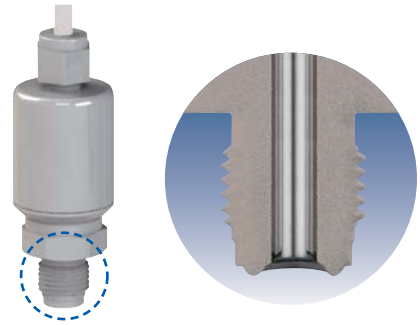


Applications



Suitable for high temperature applications in semiconductor manufacturing processes such as supercritical cleaning and vaporization equipment

Welded structure suitable for semiconductor gas supply system and special surface treatment technology minimizes retention of measured gases.



Grade

Grade		UHP	EP
Roughness of gas contact part		0.13μm Ra Avg.	0.18μm Ra Avg.
Gas contact parts materials	Pressure sensor	Hastelloy®C-22equivalent	SUS316L
	Fitting	SUS316L	SUS316L
Max. allowable pressure*1		200% of pressure range	150% of pressure range
Leakage (Helium leak rate)		5×10^{-12} Pa·m³/s or less	
Particle		Zero count for size 0.1μm or greater (In our inspection standard)	
Cleaning		Ultra clearance (cleaning)	
Recommended gas*2		High-purity gas, semiconductor material gas, etc.	

*1: Allowable maximum pressure is the upper limit to which pressure may be temporarily increased while still allowing normal pressure to be resumed, when pressure levels return to the normal (rated) range. It is not guaranteed to have no impact on functionality in the case of repeated pressure or static pressure increases lasting 10 minutes or more.

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

＊UHP and EP grade products are double-packed (N2 sealed).

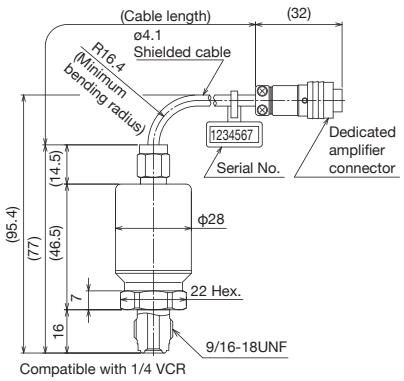
Specifications

Item		Descriptions	
Fitting	Fitting shape	Type S	Type T Male Integrated
	Connection	Compatible with 1/4 VCR®, 1/4UJR™	Compatible with 1/4 VCR®, Compatible with 1/2 (3/8) VCR®
Pressure sensor seal method		Welding type	
Pressure range		0 to 0.3, 0.5, 1, 2, 3.5, 5, 10, 20MPa	
		-0.1 to 0.3, 0.5, 1, 2, 3.5, 5, 10, 20MPa	
Power supply voltage		10 to 30V DC * When using 4-20mA DC output, please refer to the following numerical formula for relationship between power supply voltage and load resistance.	
Output		4-20mA DC (2-wire system) or 1-5V DC (3-wire system)	
Load resistance		When using 4-20mA DC output: R max (Ω)=50E - 500 [E: Power supply voltage] When using 1-5V DC output: 10kΩ min.	
Accuracy (including dedicated amplifier)		±0.5% F.S (at 23°C) (including linearity, hysteresis and repeatability)	
Temperature characteristics (Temperature compensation range)		ZERO: ±1.0%F.S. (15 to 200°C) SPAN: ±3.0%F.S. (15 to 200°C)	
Operating temperature		Pressure sensor	-20 to 200°C (No icing or condensation) * -20 to 50°C for dedicated amplifier connector
		Dedicated amplifier	-20 to 50°C (No icing or condensation)
Storage temperature		Pressure sensor	-20 to 200°C (No icing or condensation) * -20 to 60°C for dedicated amplifier connector
		Dedicated amplifier	-20 to 60°C (No icing or condensation)
Insulation resistance		100MΩ or more (50V DC between housing and all input/output terminals)	
Case material		Pressure sensor	SUS304
		Dedicated amplifier	Aluminum alloy (Alumite treatment), ABS
CE marking, UKCA marking		EMC, RoHS * 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.	
Weight		Pressure sensor	Approx. 200 g (Type S, for 1 m cable)
		Dedicated amplifier	Approx. 180 g (Except cable with M12 connector)
Zero adjustment mechanism		External adjustment method (side of dedicated amplifier)	

Dimensions [Pressure sensor: Type S]

Unit: mm

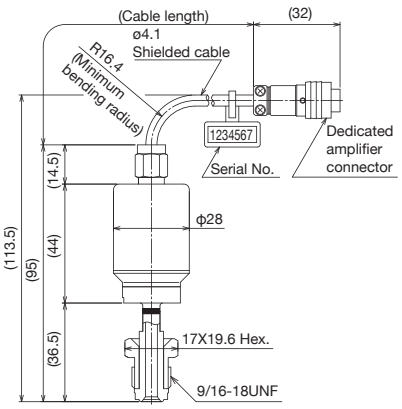
Type S Male Integrated



Compatible with 1/4 VCR

ZT17-F3C
ZT17-F3E

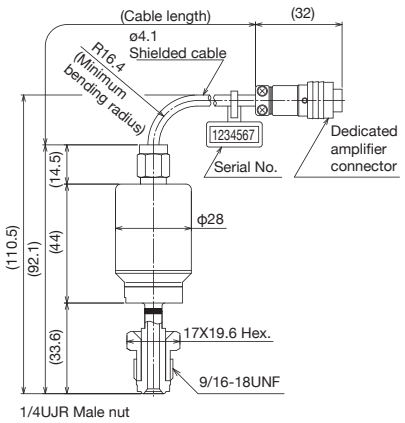
Type S Male nut



1/4UJR Male nut

ZT17-FNC

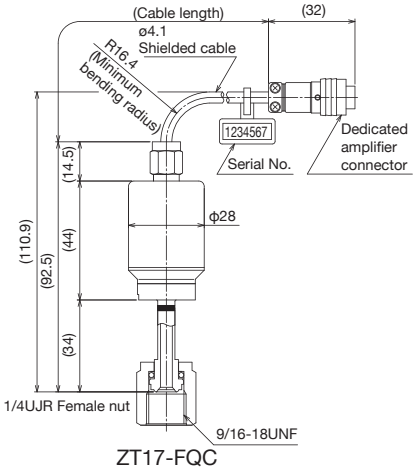
Type S Male nut



1/4UJR Male nut

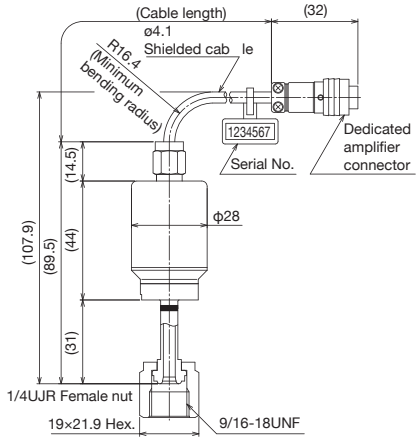
ZT17-FNE

Type S Female nut



ZT17-FQC

Type S Female nut

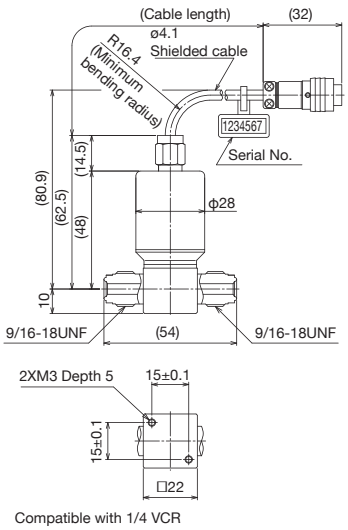


ZT17-FQE

Dimensions [Pressure sensor: Type T]

Unit: mm

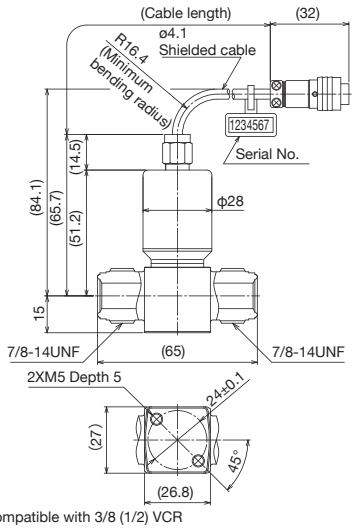
Type T Male Integrated



Compatible with 1/4 VCR

ZT17-E3C
ZT17-E3E

Type T Male Integrated



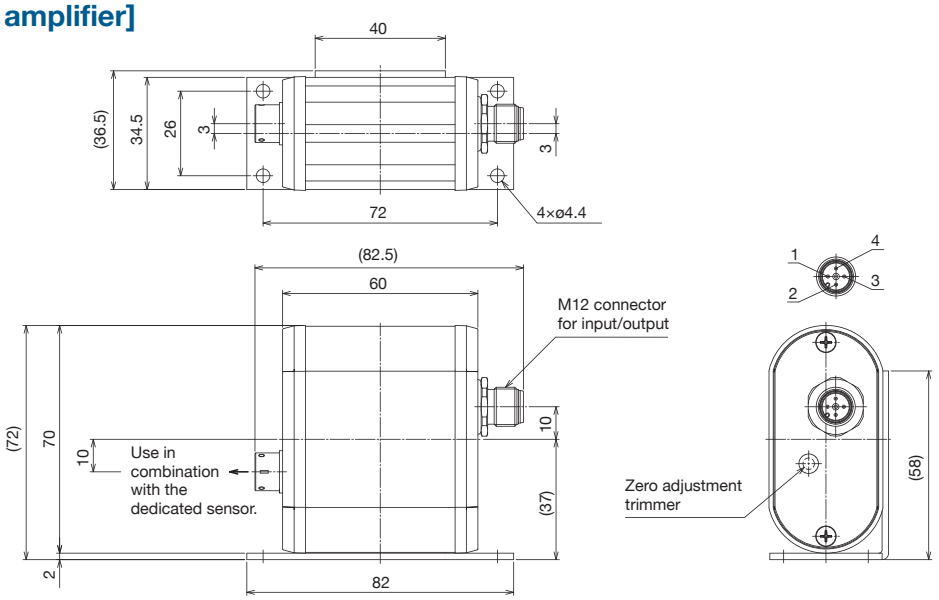
Compatible with 3/8 (1/2) VCR

ZT17-E4C
ZT17-E4E

Dimensions [Dedicated amplifier]

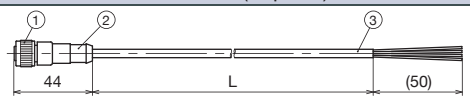
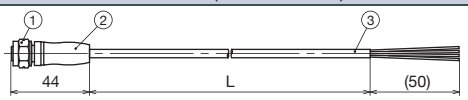
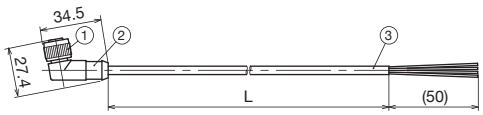
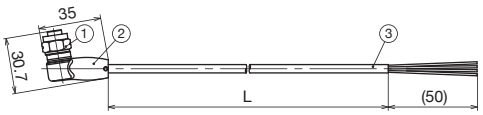
Operating condition: -20 to 50°C

Unit: mm



Dedicated amplifier

Cable with M12 connector (Sold separately)

	PUR Cable (Oilproof)	PVC Cable (Stainless nut)
Straight		
Type L		
Material	①Zinc die-casting (nickel-plated) ②TPU (Green) ③PUR (Black)	①Stainless ②PP (White) ③PVC (Gray)
Cable length (L)	3 m or 5 m	
Conductor cross section	0.34mm² (22AWG)	
Core diameter including insulation	1.27 mm	1.26 mm
Sheath outer diameter	4.2 mm	4.7 mm

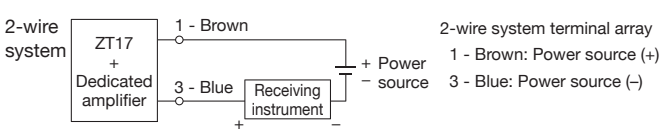
Electrical connections

Connector terminal array	Terminal number	2-wire system	3-wire system	Cable color
	1	Power source +	Power source +	Brown
	2	—	—	White
	3	Power source -	Common	Blue
	4	—	Output +	Black

Caution

Do not use the pressure sensor in facility that may cause ignition or explosion under instrument normal operating atmosphere (excluding the object to be measured).

Wiring



Model number configuration

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

Model name

Z T 1 7	—	①	②	③	—	④	5	M	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
High Temperature Pressure Sensor For Semiconductor Industry											×	×	×	×	×	×	

Model name		Selective spec.	Additional spec. (option)
ZT17	[Standard spec.] Operating temperature: -20 to 200°C (Pressure sensor) -20 to 50°C (Dedicated amplifier) External zero adjustment type (side of dedicated amplifier)		Temperature characteristics (Temperature compensation range: 15 to 200°C)

① Mounting

E	Type T Gauge pressure, compound
F	Type S Gauge pressure, compound

② Connection of fitting

			Type S	Type T
3	1/4	Compatible with VCR® Male Integrated	○	○
4	1/2 (3/8)	Compatible with VCR® Male Integrated	×	○
N	1/4	UJR™ Male nut	○	×
Q	1/4	UJR™ Female nut*1	○	×

③ Grade, Gas contact parts materials

C	UHP Grade •Pressure sensor: Hastelloy®C-22 equivalent (all welding) •Fitting : SUS316L
E	EP Grade •Pressure sensor: SUS316L (all welding) •Fitting : SUS316L

④ Pressure range

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

Gauge pressure	1	0 to 0.3MPa
	2	0 to 0.5MPa
	3	0 to 1MPa
	4	0 to 2MPa
	5	0 to 3.5MPa
	6	0 to 5MPa
	7	0 to 10MPa
	8	0 to 20MPa
Compound	C	-0.1 to 0.3MPa
	D	-0.1 to 0.5 MPa
	E	-0.1 to 1MPa
	F	-0.1 to 2MPa
	G	-0.1 to 3.5MPa
	H	-0.1 to 5MPa
	J	-0.1 to 10MPa
	K	-0.1 to 20MPa

⑤ Accuracy

5	±0.5 %F.S.

⑥ Power supply

M	10 to 30V DC

⑦ Output

1	4 to 20mA DC (2-wire system)
8	1 to 5V DC (3-wire system)

⑧ Cable length (Between pressure sensor and dedicated amplifier)

B	Cable length: 1 m (standard)
C	Cable length: 2 m
D	Cable length: 3 m (Up to 3 m)

⑮ Documents

0	Not required
1	Required (Please specify separately.) Data sheet (Drawing/Specifications), Instruction manual, Inspection procedure, Mill sheet, Inspection report (1 copy per item), Inspection/traceability certificate, Strength calculation sheet, Witness inspection.

*1: EP Grade: Without pure ring
UHP Grade: With pure ring

Note) M12 connector cable for output is not supplied.
When the M12 connector cable is required, please specify separately.

Types of cables with M12 connector		
PUR Cable	Straight	Cable length 3 m
	Type L	Cable length 3 m
PVC Cable (Stainless nut)	Straight	Cable length 3 m
	Type L	Cable length 3 m
PUR Cable	Straight	Cable length 5 m
	Type L	Cable length 5 m
PVC Cable (Stainless nut)	Straight	Cable length 5 m
	Type L	Cable length 5 m

NAGANO KEIKI

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