

ZT11

Pressure Transmitters

for Semiconductor Industry

Outline

These are pressure transmitters developed for semiconductor industry, in which pressures are converted into electric signals and transmitted by the sensing portion equipped with evaporation coating type semiconductor strain gauge and a built-in electronic circuit. It is more small and lightweight than a conventional pressure transmitter (our comparison). EP/GP grade is standard. Also conforming to the UC grade as an option.

Features

- Highly corrosion-resistant pressure sensors made of SUS316L are welded directly to the fitting, giving them excellent corrosion resistance, air-tightness, long-term stability, and reliability. Co-Ni alloy is optional (Only available in UC grade).
- * Please confirm that the gas contact part material is suitable for the gas to be measured.
- Dust-protected and excellent waterproof structure (IP67)



List of grade

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

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



*1 For UC Grade (option), the pressure transmitter can be manufactured in DOUBLE MELT material by request. Please contact us.

*2 Allowable maximum 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 pressure range with a couple of times overpressurization for about 10 minutes. Effects of continuous overpressure are not guaranteed.


*3 Ensure that pressure media is compatible with wetted parts.

● EP (UC) Grade rises with double packing (Filled with N₂).

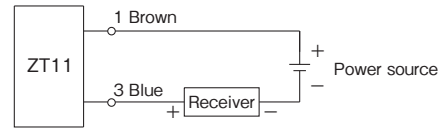
Specification

Item	Description	
Measurement fluid	Various kinds of process gases for semiconductor	
Fitting shape	Type T 	Type S 
Connection	Compatible with 1/4 VCR, Compatible with 1/2 (3/8) VCR, 1/4 UJR	
Internal volume	Approx. 0.9cm ³ (In case of S type·1/4 UJR, Varies depending on the fitting shape)	
Pressure sensor seal method	Welding type	
Pressure range	0 to 0.3, 0.5, 1, 2, 3.5, 5, 10, 20 MPa -0.1 to 0.3, 0.5, 1, 2 MPa	0 to 45, 75, 150, 300, 500, 750, 1500, 3000 psi -15 to 45, 75, 150, 250, 300, 3000 psi
Electrical characteristics	Supply voltage	15 to 24V DC ±10% * For relationship between supply voltage and load resistance, please refer to the numerical formula.
	Load resistance	R max. (Ω) =50E - 500 [E: Supply voltage]
	Output	4 to 20mA DC
	Transmission system	2-wire system
Accuracy	Linearity (BFSL)	±0.25%F.S. (at 23°C)
	Hysteresis	
	Repeatability	
Temperature coefficient	±0.05%F.S./°C (Zero, Span)	
Operating temperature	-20 to 70°C (No freezing or condensation)	
Storage temperature	-30 to 80°C (No freezing or condensation)	
Insulation resistance	100MΩ or more (50V DC between joint and all input output terminals)	
Electrical connections	M12 Connector connection (4 pin)	
Construction	IP67 (When connector mating/IEC 60529)	
Zero/Span adjustment mechanism	External adjustment method (Top surface)	
Weight	Approx. 70g (In case of S type, Excluding cable, Varies depending on the fitting shape)	

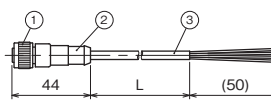
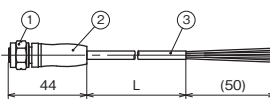
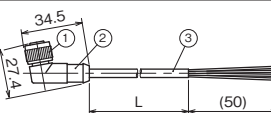
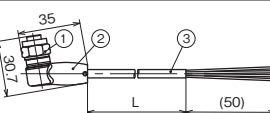
Electrical connection

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

2-wire system



M12 cable with connector (Optional)

	PUR cable (Oilproof)	PVC cable (Stainless nut)
Straight		
Type L		
Material	① Zinc die casting (Nickel plating) ② TPU (Green) ③ PUR (Black)	① Stainless ② PP (White) ③ PVC (Gray)
Cable length (L)	3m or 5m	3m or 5m
Cross-section area of conductor	0.34mm ² (22AWG)	0.34mm ² (22AWG)
Core diameter including insulation	1.27mm	1.26mm
External cable diameter	4.7mm	4.7mm

2-wire system Terminal distribution

- 1 - Brown: Power source (+)
- 3 - Blue: Power source (-)

Caution

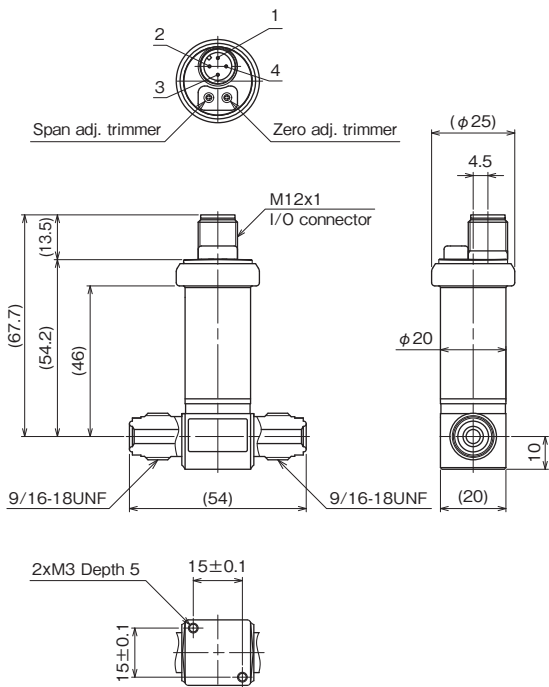
[Standard]
Do not install at facility where that is liable to cause an explosion or fire in normal condition.

* The protection structure of the cable with the M12 connector is protection class in a mating state.

Dimensions 1

Unit: mm

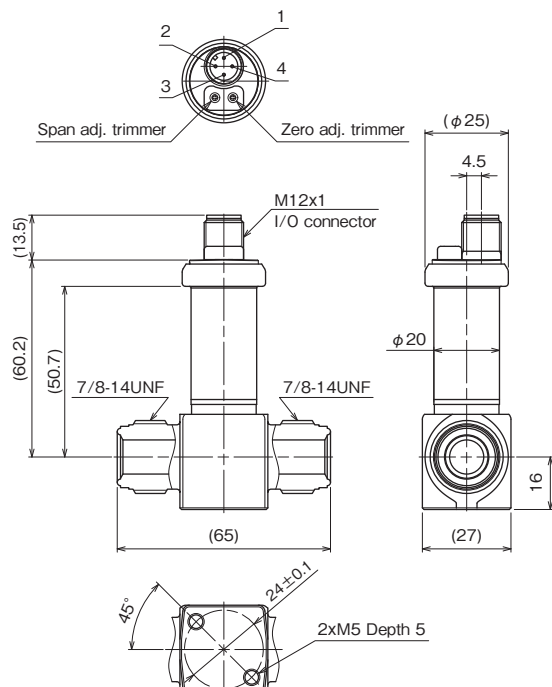
Type T



Compatible with 1/4 VCR

ZT11-C3

Type T



Compatible with 1/2 (3/8) VCR

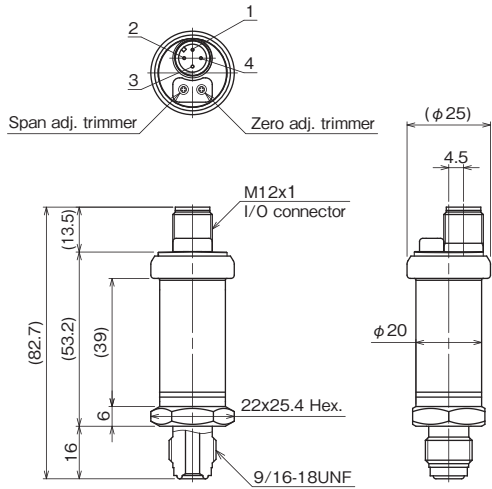
ZT11-C4

The dimension in the catalog are subject to change without notice.

Dimensions2

Unit: mm

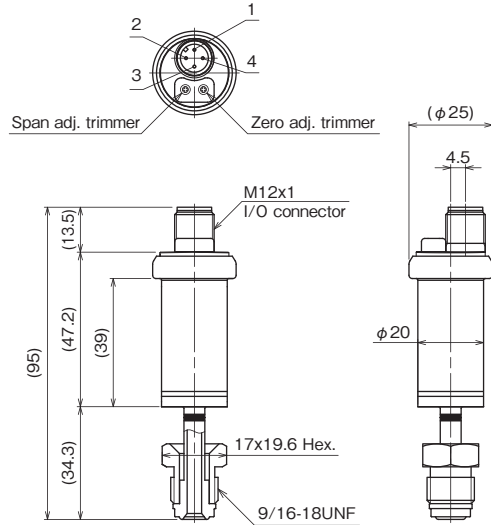
Type S



Compatible with 1/4 VCR

ZT11-D3

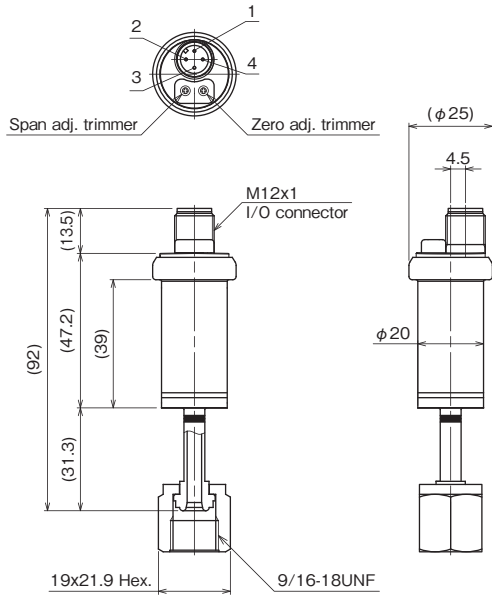
Type S



1/4 UJR

ZT11-DN

Type S

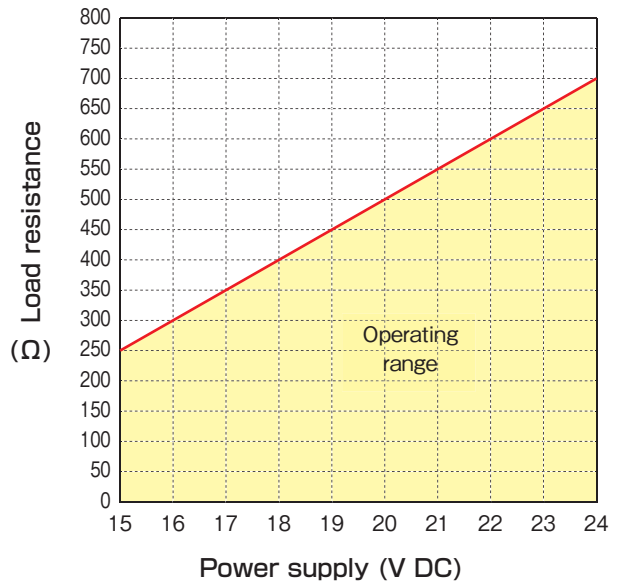


1/4 UJR

ZT11-DQ

The dimension in the catalog are subject to change without notice.

Supply voltage and load resistance



R max. (Ω) = 50E - 500 [E: Supply voltage]

Model number configuration

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

Model
Z T 1 1 — — **V P 1** × × × × × × × ×

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

Pressure Transmitter
EP·GP Grade

Model number		Selective spec.	Additional spec. (Option)			
① Mounting	C	Type T, Standard	Construction: IP67 EMC compliant products			
	D	Type S, Standard	Construction: IP67 EMC compliant products			
② Connection of fitting	3	1/4	Compatible with VCR Male integrated	Type S <input type="radio"/> Type T <input type="radio"/>		
	4	1/2 (3/8)	Compatible with VCR Male integrated	Type S <input checked="" type="radio"/> Type T <input type="radio"/>		
	N	1/4	UJR Male nut	Type S <input type="radio"/> Type T <input checked="" type="radio"/>		
	Q	1/4	UJR Female nut (Without pure ring)	Type S <input type="radio"/> Type T <input checked="" type="radio"/>		
	③ Wetted parts by grade	E	EP Grade · Pressure sensor: SUS316L (All welding) · Fitting: SUS316L			
	G	GP Grade · Pressure sensor: SUS316L (All welding) · Fitting: SUS316L				
④ Pressure range	CD	Range type	MPa	CD	psi	kgf/cm ²
	1	Gauge	0 to 0.3	9	0 to 45	0 to 3
	2	Gauge	0 to 0.5	9	0 to 75	0 to 5
	3	Gauge	0 to 1	9	0 to 150	0 to 10
	4	Gauge	0 to 2	9	0 to 300	0 to 20
	5	Gauge	0 to 3.5	9	0 to 500	0 to 35
	6	Gauge	0 to 5	9	0 to 750	0 to 50
	7	Gauge	0 to 10	9	0 to 1500	0 to 100
	8	Gauge	0 to 20	9	0 to 3000	0 to 200
	C	Compound	-0.1 to 0.3	9	-15 to 45	-1 to 3
	D	Compound	-0.1 to 0.5	9	-15 to 75	-1 to 5
	E	Compound	-0.1 to 1	9	-15 to 150	-1 to 10
	—	—	—	9	-15 to 250	—
	F	Compound	-0.1 to 2	9	-15 to 300	-1 to 20
	—	—	—	9	-15 to 3000	-1 to 200
⑤ Accuracy	V	±0.25%F.S. (Temperature coefficient: ±0.05%F.S./°C)				
⑥ Power source	P	15 to 24V DC±10% (Standard)				
⑦ Output	1	4 to 20mA DC (2-wire system)				
⑨ M12 connector cable	0	Nil				
	1	PUR cable (Oilproof)	Straight		Cable length 3m	
	2		L type			
	3	PVC cable (Stainless nut)	Straight			
	4		L type			
	5	PUR cable (Oilproof)	Straight		Cable length 5m	
	6		L type			
	7	PVC cable (Stainless nut)	Straight			
8	L type					
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, strength calculation, attended inspection				

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

Optional UC grade version available. Please contact us after confirming application and basic specifications of the grade for its use.

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