

For Semiconductor Industry

ZT11 Pressure Sensor

- Absolute pressure range is available.
- Further improved temperature characteristics ($\pm 0.02\%$ F.S./ $^{\circ}\text{C}$)
- Improved workability of zero point adjustment.
- Increased safety type is available.



RoHS



Identification by label color



ZT11 Pressure Sensor

This instrument is a pressure sensor that uses thin film deposition type semiconductor strain gauge.

We added the increased safety construction type to our portfolio that improves safety still farther when using equipment and facilities.

Features

- In addition to gauge pressure (positive pressure/compound) range, absolute pressure range is also available.
- Improved temperature characteristics ($\pm 0.02\%$ F.S./ $^{\circ}\text{C}$)
- Zero adjustment mechanism is provided on the side of the case to improve workability.

List of grade

ZT11 Pressure Sensor has been assembled, calibrated, inspected and packaged in our clean room, paying special attention for maintaining cleanliness.

Grade		EP	GP
Surface roughness of gas contact		0.18 μm Ra Avg.	0.5 μm Ra Avg.
Wetted parts	Pressure sensor	SUS316L	
	Fitting	SUS316L	
Maximum allowable pressure*1		150% of pressure range	
Leakage (Helium leak rate)		5 $\times 10^{-12}$ Pa $\cdot\text{m}^3/\text{s}$ or less	
Particle		Zero count for size 0.1 μm or greater (In our inspection standard)	No regulation
Cleaning		Ultra clearance (cleaning)	Degreasing
Operating media*2 (Recommended)		Highly pure gas, semiconductor materials 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 which a couple of times over pressurization for about 10 minutes. Effects of continuous over pressure are not guaranteed.

*2: Please confirm if the gas contact part material is suitable for the gas to be measured. For UC grade (pressure sensor material: Co-Ni alloy), please contact us.

Specifications

Item		Descriptions			
Fluid		Various kinds of process gases for semiconductor			
Fitting shape		Type T integral structure (forged), Type S			
Connection		Integral structure compatible with 1/4 VCR [®] , 1/2 (3/8) VCR [®] , 1/4 UJR [™]			
Internal volume		Approx. 0.9 cm ³ (For Type S and 1/4UJR [™] , it depends on the fitting shape.)			
Pressure sensor seal method		Welding type			
Pressure range	Gauge Pressure	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	0 to 45, 75, 150, 250, 300, 500, 750, 1500, 3000psi -15 to 45, 75, 150, 250, 300, 500, 750, 1500, 3000psi 0 to 3, 5, 10, 20, 35, 50, 100, 200bar -1 to 3, 5, 10, 20, 35, 50, 100, 200bar		
	Absolute Pressure	0 to 0.3, 0.5, 1, 2, 3.5, 5, 10, 20MPa abs.	0 to 45, 75, 150, 300, 500, 750, 1500, 3000psi abs. 0 to 3, 5, 10, 20, 35, 50, 100, 200bar abs.		
Power supply voltage		Standard	10 to 30V DC		
		Increased safety "ec"	12 to 24V DC		
Load resistance		R max (Ω) = 50E-500 [E: Power supply voltage]			
Output		4 to 20mA DC			
Transmission system		2-wire system			
Accuracy		±0.25% F.S. (at 23°C) (including linearity, hysteresis and repeatability)			
Temperature coefficient (ZERO, SPAN)		±0.02% F.S./°C			
Operating temperature		Standard	-20 to 70°C (No freezing or condensation)		
		Increased safety "ec"	Temperature class	T4	-20 to 70°C (No freezing or condensation)
			T5	-20 to 70°C (No freezing or condensation)	
T6	-20 to 30°C (No freezing or condensation)				
Storage temperature		-30 to 80°C (no freezing or condensation)			
Insulation resistance		100MΩ or more (joint to I/O terminal package: 50VDC)			
CE marking		Applicable Directive: 2014/30/EU (EMC Directive) 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.			
Electrical connections		M12 connector connection (4-pin)			
Case material		SUS305, PBT			
Protection class*		Standard	IP67 (IEC60529)		
		Increased safety "ec"	IP65 (IEC60529)		
Zero adjustment mechanism		External adjustment method (side of case)			
Weight		Approx. 70 g (For Type S, it depends on the joint shape, excluding the cable.)			
Compatible with RoHS		Conforms to the RoHS directive			

*Mated state with M12 connector cable

ZT11 Pressure Sensor

Increased safety Pressure Sensor Type of protection "ec"

Features

- Acquired: the increased safety type construction of IECEx, ATEX, TS. (Exec IIC T4/T5/T6 Gc)
- This pressure transmitter can be used without the safety barrier in the places (Zone 2 / Category 3G).
- Expected to acquire other "ec" certification of the increased safety type construction (NEPSI, KCs).

Attention
Please make sure to use with the M12 connector cable specified by us.



Specifications

Certification	IECEX	ATEX	TS
Certification number	IECEX CML 21.0001X	CML 20ATEX3232X	TD10003L (Identification No.)
Hazardous area classifications	Zone 2	Category 3G	Zone 2
Applicable standards	IEC 60079-0: 2017 IEC 60079-7: 2017	EN 60079-0: 2018 EN 60079-7: 2015+A1: 2018	CNS3376-0 CNS3376-7
Applicable directive		2014/34/EU (ATEX Directive)	
Ex marking	Ex ec IIC T4/T5/T6 Gc Increased safety "ec" Group of gases Temperature class Equipment protection level		
Withstand voltage	500V AC for 1 minute		
Protection class*	IP65 (IEC60529)		
Operating temperature	Temperature class	T4: -20 to 70°C (No freezing or condensation) T5: -20 to 70°C (No freezing or condensation) T6: -20 to 30°C (No freezing or condensation)	
Power supply voltage	12 to 24V DC		

*Meted state with M12 connector cable

Electrical connections

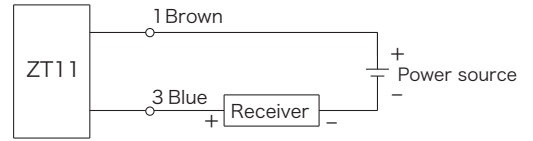
Connector terminal array	Terminal number	2-wire system	Cable color
	1	Power source +	Brown
	2	—	White
	3	Power source -	Blue
	4	—	Black

Cable with M12 connector (option)

	PUR cable (oilproof)	PVC cable (stainless nut)
Straight		
L type		
Material	① Zinc die casting (nickel plating) ② TPU (green) ③ PUR (black)	① Stainless steel 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
Sheath outer diameter	4.7mm	4.7mm

Wiring

2-wire system



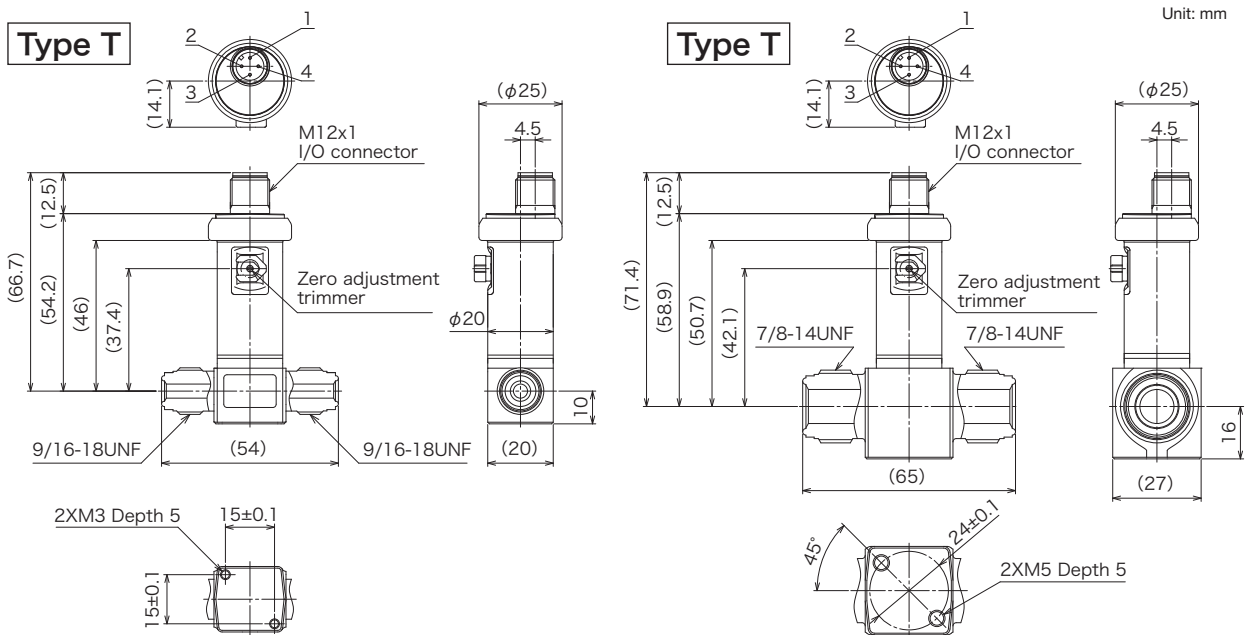
2-wire system Terminal array

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

Attention

Please make sure to use the M12 connector cable shown in the left column when you specified "ec" increased safety type.

DIMENSIONS ① Type T ZT11-1□□ (gauge pressure), ZT11-3□□ (absolute pressure) ZT11-E□□ (type "ec" gauge), ZT11-P□□ (type "ec" absolute)



1/4 Compatible with VCR®

- ZT11-13□
- ZT11-33□
- ZT11-E3□
- ZT11-P3□

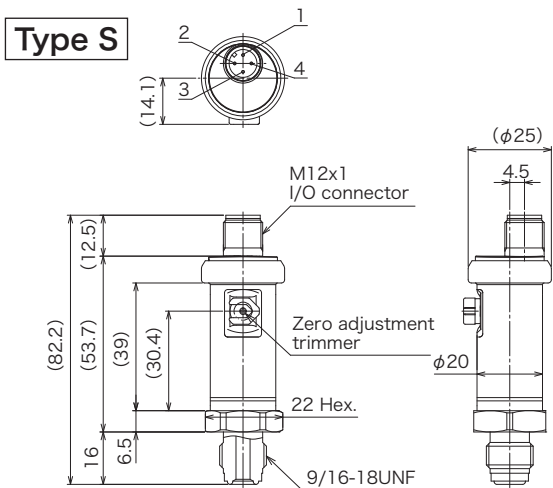
1/2(3/8) Compatible with VCR®

- ZT11-14□
- ZT11-34□
- ZT11-E4□
- ZT11-P4□

ZT11 Pressure Sensor

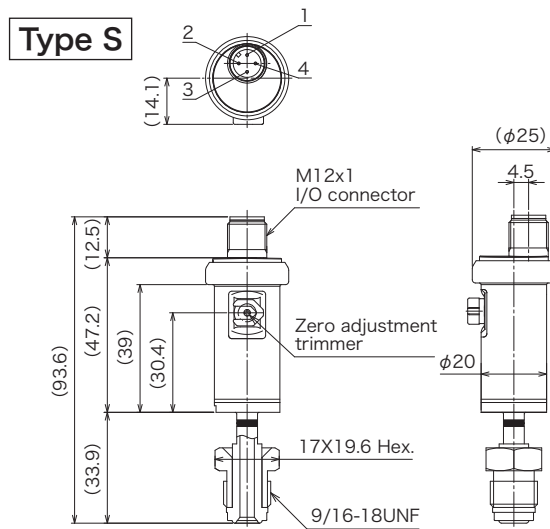
- **DIMENSIONS** ② **Type S** ZT11-2□□ (gauge pressure), ZT11-4□□ (absolute pressure)
 ZT11-F□□ (type "ec" gauge), ZT11-Q□□ (type "ec" absolute)

Unit: mm



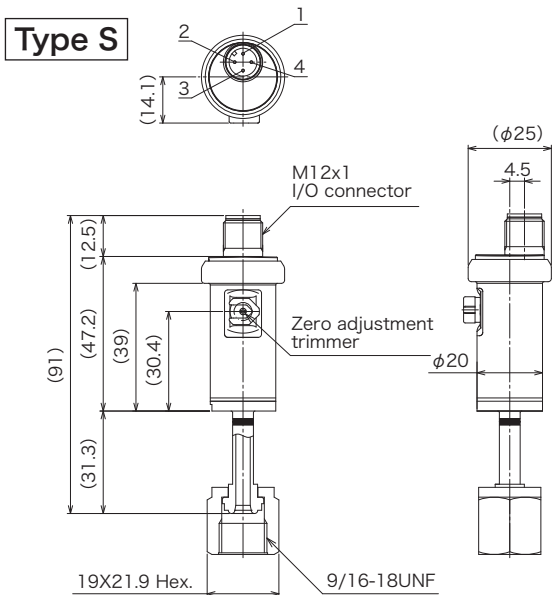
1/4 Compatible with VCR®

- ZT11-23□
- ZT11-43□
- ZT11-F3□
- ZT11-Q3□



1/4 UJR™

- ZT11-2N□
- ZT11-4N□
- ZT11-FN□
- ZT11-QN□



1/4 UJR™

- ZT11-2Q□
- ZT11-4Q□
- ZT11-FQ□
- ZT11-QQ□

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

Gauge pressure range product

Model name

ZT11

Pressure Sensor (gauge pressure)
for Semiconductor Industry

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
			V	1	×	×	×	×	×	×	×	×	×	×

Model number	Selective spec.	Additional spec. (option)
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ZT11	[Standard spec.] CE marking compliant products External zero adjustment (side of case)	Compatible with RoHS
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① Mounting	1	Type T, Standard	Construction:IP67
	2	Type S, Standard	Construction:IP67
	E	Type T, Increased safety "ec" (IECEX / ATEX)	Construction:IP65
	F	Type S, Increased safety "ec" (IECEX / ATEX)	Construction:IP65

② Connection of fitting	3	1/4	Compatible with VCR [®] Male Integrated	Type T	Type S
	4	1/2(3/8)	Compatible with VCR [®] Male Integrated	○	×
	N	1/4	UJR [™] Male nut	×	○
	Q	1/4	UJR [™] Female nut (Without pure ring)	×	○

③ Grade, Gas contact parts materials	E	EP Grade	-Pressure sensor: SUS316L (All welding)-Fitting: SUS316L
	G	GP Grade	

④ Pressure range	Gauge	CD	MPa	CD	psi	bar
		1	0 to 0.3	9	0 to 45	0 to 3
		2	0 to 0.5	9	0 to 75	0 to 5
		3	0 to 1	9	0 to 150	0 to 10
		—	—	9	0 to 250	—
		4	0 to 2	9	0 to 300	0 to 20
		5	0 to 3.5	9	0 to 500	0 to 35
		6	0 to 5	9	0 to 750	0 to 50
		7	0 to 10	9	0 to 1500	0 to 100
		8	0 to 20	9	0 to 3000	0 to 200
	Compound	C	-0.1 to 0.3	9	-15 to 45	-1 to 3
		D	-0.1 to 0.5	9	-15 to 75	-1 to 5
		E	-0.3 to 1	9	-15 to 150	-1 to 10
		—	—	9	-15 to 250	—
		F	-0.1 to 2	9	-15 to 300	-1 to 20
		G	-0.1 to 3.5	9	-15 to 500	-1 to 35
		H	-0.1 to 5	9	-15 to 750	-1 to 50
		J	-0.1 to 10	9	-15 to 1500	-1 to 100
		K	-0.1 to 20	9	-15 to 3000	-1 to 200

Please specify the pressure range separately for ordering.

⑤ Accuracy	V	±0.25%F.S. (Temperature coefficient ±0.02%F.S./°C)
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⑥ Power source	M	10 to 30V DC (Standard)
	N	10 to 24V DC (Increased safety "ec")

⑦ Output	1	4 to 20mA DC (2-wire system)
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⑨ M12 Connector cable (See "Electrical connections.")*	0	Not required	
	1	PUR Cable (oilproof)	Straight (3 m in length of cable)
			L type (3 m in length of cable)
	3	PVC cable (Stainless nut)	Straight (3 m in length of cable)
			L type (3 m in length of cable)
	5	PUR cable (oilproof)	Straight (5 m in length of cable)
			L type (5 m in length of cable)
	7	PVC cable (Stainless nut)	Straight (5 m in length of cable)
L type (5 m in length of cable)			

⑩ Documents	0	Not required
	1	Required

* Please select the cable specified by us to meet "ec" certification.
* Only "Yes or No" is available for "Documents." Please provide separate specifications in regards to the content.

• VCR[®] is the registered trademark of SWAGELOK.
• UJR[™] is the trademark of Fujikin Incorporated.

For absolute pressure range products, see the next page.

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

Absolute pressure range products

Model name

ZT11 — [] [] [] — [V] [1] [X] [X] [X] [X] [X] [X]

Pressure Sensor (absolute pressure)
for Semiconductor Industry

Model number [ZT11] Selective spec. [] Additional spec. (option) []

ZT11	[Standard spec.] CE marking compliant products External zero adjustment (side of case)	Compatible with RoHS
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① Mounting	3	Type T, Standard	Construction:IP67
	4	Type S, Standard	Construction:IP67
	P	Type T, Increased safety "ec" (IECEX / ATEX)	Construction:IP65
	Q	Type S, Increased safety "ec" (IECEX / ATEX)	Construction:IP65

② Connection of fitting	3	1/4	Compatible with VCR® Male Integrated	Type T	Type S
	4	1/2(3/8)	Compatible with VCR® Male Integrated	○	×
	N	1/4	UJR™ Male nut	×	○
	Q	1/4	UJR™ Female nut (Without pure ring)	×	○

③ Grade, Gas contact parts materials	E	EP Grade	*Pressure sensor: SUS316L (All welding)·Fitting: SUS316L
	G	GP Grade	

Please specify the pressure range separately for ordering.

④ Pressure range	Absolute	CD	MPa abs.	CD	psi abs.	bar abs.
		R	0 to 0.3	9	0 to 45	0 to 3
		S	0 to 0.5	9	0 to 75	0 to 5
		T	0 to 1	9	0 to 150	0 to 10
		U	0 to 2	9	0 to 250	0 to 20
		V	0 to 3.5	9	0 to 300	0 to 35
		W	0 to 5	9	0 to 500	0 to 50
		X	0 to 10	9	0 to 750	0 to 100
Y	0 to 20	9	0 to 1500	0 to 200		

⑤ Accuracy	V	±0.25%F.S. (Temperature coefficient ±0.02%F.S./°C)
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⑥ Power source	M	10 to 30V DC (Standard)
	N	12 to 24V DC (Increased safety "ec")

⑦ Output	1	4 to 20mA DC (2-wire system)
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⑨ M12 Connector cable (See "Electrical connections.")*	0	Not required	
	1	PUR Cable (oilproof)	Straight (3 m in length of cable)
			L type (3 m in length of cable)
	3	PVC cable (Stainless nut)	Straight (3 m in length of cable)
			L type (3 m in length of cable)
	5	PUR cable (oilproof)	Straight (5 m in length of cable)
			L type (5 m in length of cable)
	7	PVC cable (Stainless nut)	Straight (5 m in length of cable)
L type (5 m in length of cable)			

* Please select the cable specified by us to meet "ec" certification.
 * Only "Yes or No" is available for "Documents." Please provide separate specifications in regards to the content.
 · VCR® is the registered trademark of SWAGELOK.
 · UJR™ is the trademark of Fujikin Incorporated.

⑩ Documents	0	Not required
	1	Required

For gauge pressure range products, see the previous page.

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



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