


# Pressure measurement instruments for the semiconductor industry

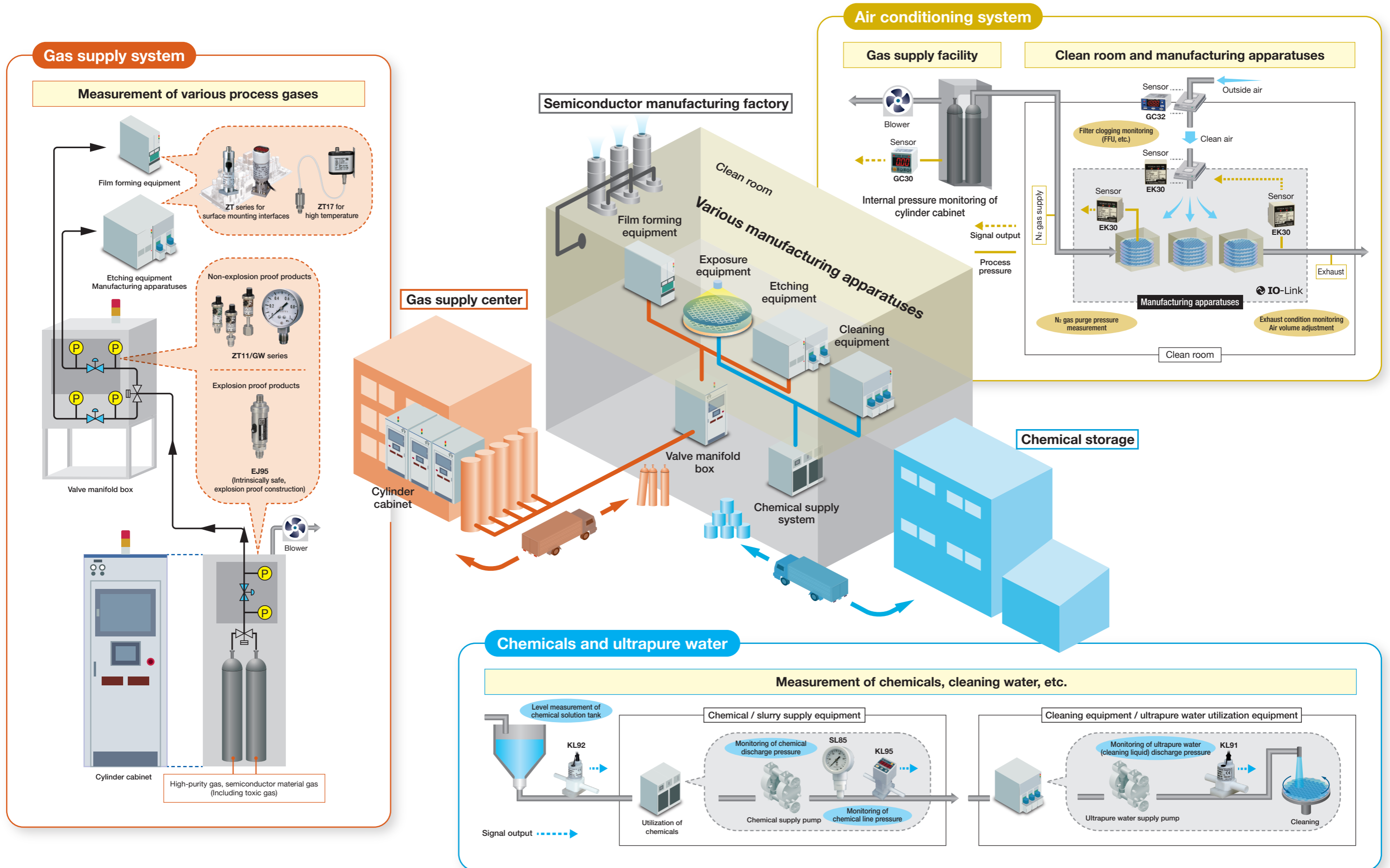
The semiconductor industry is the foundation for all of today's most advanced technology.  
We support this industry by creating new value with  
**advanced pressure measurement technology**



 **Gas supply system**

 **Chemicals and  
ultrapure water**

 **Air conditioning system**



## Semiconductor gas pressure measurement field



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

### Gas supply system

Application process: **Film forming** **Etching** **Wiring** **Gas supply**

#### Mechanical type



#### GW series

- A pressure gauge that supports a wide range of pressure
- Size: ø50, ø60
- Wide range of applications from gas supply to manufacturing equipment



#### JB50

- Pressure gauge with small contact
- Easy setting from the front of the instrument



#### CB14

- Compact and lightweight pressure switch
- External adjustment type

#### Electronic type

#### Pressure sensor series



#### ZT11

- High accuracy: ±0.25% F.S.
- Temperature characteristics: ±0.02% F.S./°C
- Supports absolute pressure measurement

Conforms to worldwide explosion proof standards



Intrinsically safe, explosion proof construction

#### EJ95

- Compatible with explosion proof standards
- IECEX, ATEX, TS, NEPSI, KCs and Japanese standards



### Compatible with surface mounting interfaces and high temperatures

#### Mechanical type



#### GW28



#### GW35

#### Surface mounting interface GW series

- Compact gauges for surface mounting interfaces
- Size: ø28, ø35, ø40

#### Electronic type



#### ZT16 Pressure transmitter



#### ZT61 Digital pressure gauge

#### Surface mounting interface

#### ZT series

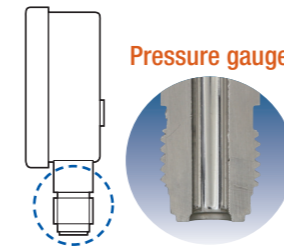
- 1.125 surface mounting interface
- Highly visible LED display (ZT61)



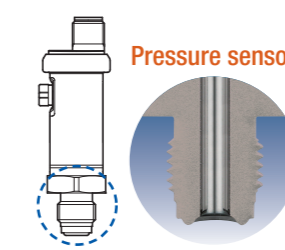
#### High temperature compatible ZT17 (200°C compatible)

- Pressure sensor capable of measurement at high temperatures
- Supports measurement of objects up to 200°C (sensor and cable)

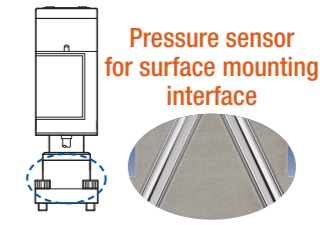
Welding structure suitable for semiconductor gas supply systems due to special surface treatment technology to minimize retention of measured gas.



Pressure gauge



Pressure sensor



Pressure sensor for surface mounting interface

### Grade list and applicable products

These products have been assembled, adjusted, inspected and packaged in a clean room, with special attention to cleanliness.

### Pressure gauges

Grade	BA (Bright Annealing)	EP (Electro Polishing)
Gas contact part material	SUS316L	SUS316L (Gas contact surface polishing)
Cleanliness	Class VI (ANSI B40. 1M-1979)	10 or less particles of 0.2 µm or larger
Leakage (helium leak rate)	1.01 x 10 <sup>-9</sup> Pa·m <sup>3</sup> /s or less	
Cleaning	(1) Coarse cleaning (2) Ultrasonic cleaning (3) Finish cleaning (4) N <sub>2</sub> gas flushing	
Work area	(1) Clean room (Class 10,000) (2) Clean bench (Class 100)	
Adjustment test media	N <sub>2</sub> gas	
Packaging form	Sealed polyethylene bag	
Applicable products	GW28, GW35, GW45	

### Pressure sensors

Grade	UC (Ultra Clean)	BA (Bright Annealing)	EP (Electro Polishing)	GP (General Purpose)
Roughness of gas contact part	0.18µm Ra Avg. 0.7µm Rz Max.	Approx. Rz 2.5 µm	0.18µm Ra Avg.	0.5µm Ra Avg.
Gas contact parts materials	Pressure sensor	Co-Ni alloy		SUS316L
	Fitting*1	SUS316L		SUS316L
Maximum allowable pressure*2	200% of rated pressure		150% of rated pressure	
Leakage (helium leak rate)	5 x 10 <sup>-12</sup> Pa·m <sup>3</sup> /s or less		5 x 10 <sup>-12</sup> Pa·m <sup>3</sup> /s or less	
Particle	Zero count for size 0.1 µm or greater (as per internal inspection standard)	No regulation	Zero count for size 0.1 µm or greater (In our inspection standard)	No regulation
Cleaning	Ultra clearance (cleaning)	Degreasing	Ultra clearance (cleaning)	Degreasing
Recommended gases*3	High-purity gas, semiconductor material gas, etc.	Purge gas, exhaust gas, etc.	High-purity gas, semiconductor material gas, etc.	Purge gas, exhaust gas, etc.
Applicable products	EJ95 ZT16 ZT17 ZT61	—*4	EJ95 ZT11 ZT16 ZT17 ZT61	ZT11 ZT16 ZT61

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

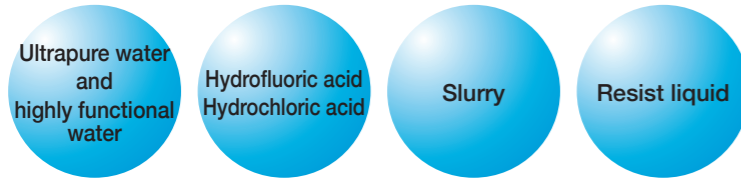
\*2 Allowable maximum pressure is the upper limit to which pressure may be temporarily increased while still allowing normal measurement functionality to be resumed, when pressure levels return to the normal (rated) range. We can't guarantee full functionality in the case of repeated high pressure above the rated range or static pressure increases lasting 10 minutes or more above the rated range.

\*3 Please confirm that the gas contact part material is suitable for the gas to be measured.

\*4 Please contact us for BA grade products.

• UC/EP grade ships with double packing (filled with N<sub>2</sub>).

## Semiconductor wet process pressure measurement field



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

### Chemicals and ultrapure water

Application process: **Photosensitive material coating** **Exposure** **Cleaning**

#### Mechanical type



Thread connection



Rear/tube connection\*1

#### SL85

- Pressure gauge with excellent corrosion resistance and environmental resistance
- Wetted part fluorine resin

#### Electronic type

#### KL9 series



KL91  
Pressure transmitter

#### For ultrapure water

- Multi-layered fluorine resin on wetted parts
- Suppresses the amount of metal ion elution and the occurrence of contamination



KL92  
Pressure transmitter

KL95  
Pressure transmitter with digital display

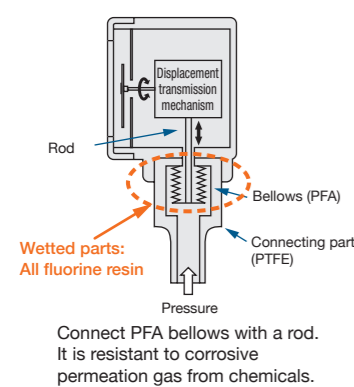
#### For chemicals

- Life is extended by adopting a fluorine resin diaphragm.
- Compatible with small to large diameter connections\*1

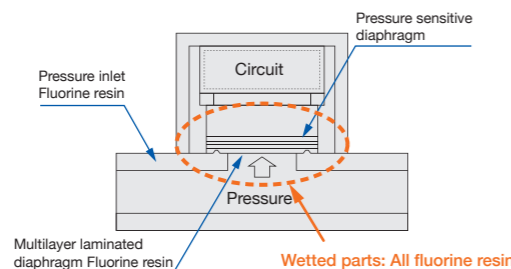
\*1 Please contact us for connections not listed in the catalog.

### Wetted part structure suitable for chemicals and ultrapure water measurement.

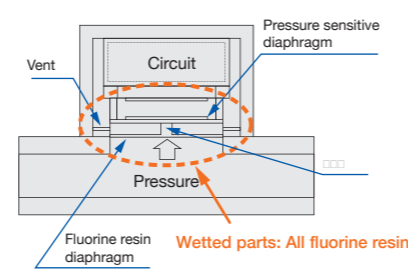
#### Features of wetted parts



SL85  
for high corrosion resistance

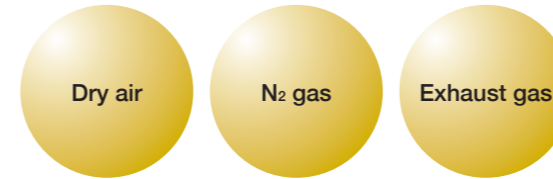


KL91  
for ultrapure water measurement



KL92/KL95  
for chemicals measurement

## Pressure measurement field for air conditioning systems



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

### Air conditioning system

Application process: **Photosensitive material coating** **Exposure** **Cleaning** **Gas supply**

#### Mechanical type



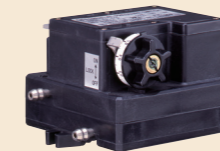
#### DG85

- High pressure proof differential pressure gauge
- Zero adjustment is possible from the outside



#### DG87

- Easy to read due to edgewise type
- Zero adjustment is possible from the front



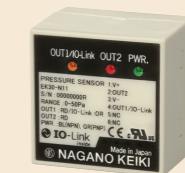
#### CL13

- High pressure proof differential pressure switch
- High sensitivity and high reliability
- UL standard certified product (option)

#### Electronic type

#### Digital differential pressure gauge series

#### EK30



[EK30]

#### IO-Link

- UL standard certified product

[Common to EK30 and GC30]

- Compact dimensions for both: 30 x 30 mm
- Supports 10 Pa ultra-low differential pressure
- Achieves high sensitivity with a resolution of 0.01 Pa (10 Pa range)

#### GC30

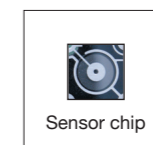
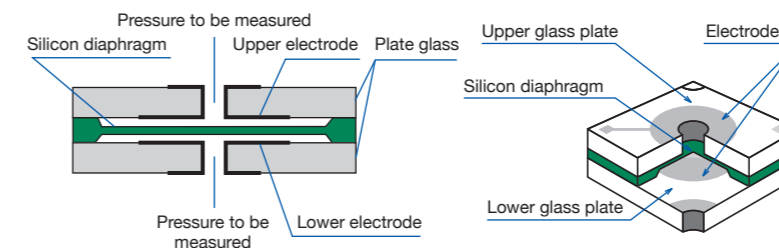


#### GC32

- 24 x 48 mm
- UL standard certified product

### Silicon capacitance sensor that can measure with high sensitivity starting at the ultra-fine differential pressure range (10 Pa) and which has a high withstand voltage of 50 kPa at all ranges.

#### Sensor design



The diaphragm is protected by glass on both sides. When excessive pressure is applied, the glass acts as a stopper, resulting in high pressure resistance.

## Pressure measurement instruments for the semiconductor industry

Product lineup	Measurement range		
	Differential pressure	Low pressure	Intermediate pressure
<b>Gas supply system</b> <p>GW series    GW28    JB50 (with reed switch)</p> <p>ZT11 (increased safety, explosion proof)    ZT17 (accommodates high temperature)</p> <p>EJ95 (intrinsically safety explosion proof)</p> <p>ZT series (surface mounting interface)</p>		0.2 to 25 MPa (GW12 and GW17 support up to 100 MPa.) 0.4 to 25 MPa (JB50)	
		0.3 to 20 MPa (ZT11 also supports absolute pressure)	
		0.3 to 20 MPa	
		0.3 to 1 MPa	
<b>Chemicals and ultrapure water</b> <p>SL85 (compatible with chemicals)</p> <p>KL91 (for ultrapure water)    KL92, KL95 (compatible with chemicals)</p>		0.3 to 0.5 MPa	
		0.1 to 0.5 MPa (KL91) 0.3 to 0.5 MPa (KL92, 95)	
<b>Air conditioning system</b> <p>DG85    DG87    CL13 (differential pressure switch)</p> <p>IO-Link    EK30</p> <p>GC30</p> <p>GC32</p>	50 Pa to 100 kPa		
	10 Pa to 20 kPa		
	10 Pa to 5 kPa		
	50 Pa to 5 kPa		

• Various compound ranges are also available.

## IoT related products

### Gas supply system

ER31 Battery-less pressure sensor



RFID / wireless communication  
(Please contact us for semiconductor specifications.)

### Air conditioning system

EK30

IO-Link compatible digital differential pressure Gauge



Lineup of IO-Link compatible products for fine differential pressure measurement!

ER63

Wireless differential pressure gauge



LPWA / wireless communication

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

**NAGANO KEIKI**

**NAGANO KEIKI CO., LTD.**

URL : <https://www.naganokeiki.co.jp/>

**HEAD OFFICE & OVERSEAS SALES DEPT**

1-30-4, HIGASIMAGOME OHTA-KU, TOKYO, JAPAN.

PHONE : +81-3-3776-5328    FAX : +81-3-3776-5447

E-mail : [overseas\\_sales\\_dept@naganokeiki.co.jp](mailto:overseas_sales_dept@naganokeiki.co.jp)