Move into the future with reliable measurements

KYOWA

Measuring Equipment

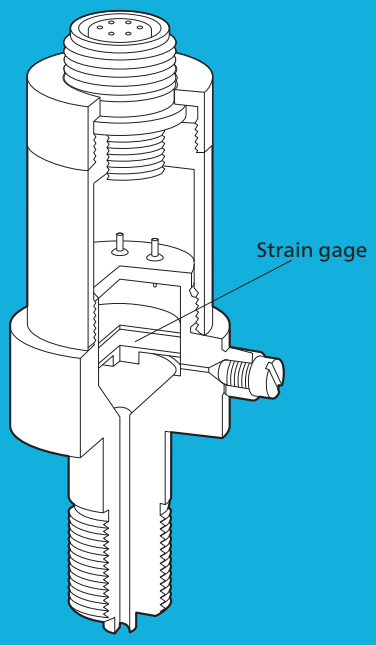
Pressure Transducers 2021

70TH ANNIVERSARY

Pressure Transducers

Pressure transducers convert liquid or gas pressures into electric quantities. According to measuring purposes, they are connected to various instruments for monitoring, recording and controlling pressures.
They have highly precise dedicated self-temperature-compensated strain gages incorporated as pressure detecting elements and feature a hermetically-sealed structure with inert gas filled in, ensuring superior linearity, thermal characteristics and waterproofness. Thus, they enable highly precise and stable pressure measurement for a long period of time in a wide range of fields including chemical, machinery and steelmaking.

■Pressure Transducers



Features

- Long-term stable operation
- Highly precise
- Excellent thermal characteristics

Pressure Transducers
Outline
General
High temp. Low temp.
Absolute pressure High pressure
Pressure transmitter
Differential pressure
Distributed pressure

Important Notice

Unless specified, strain-gage transducers must not be used under hydrogen environment.

■Types of Pressure

1) Absolute Pressure

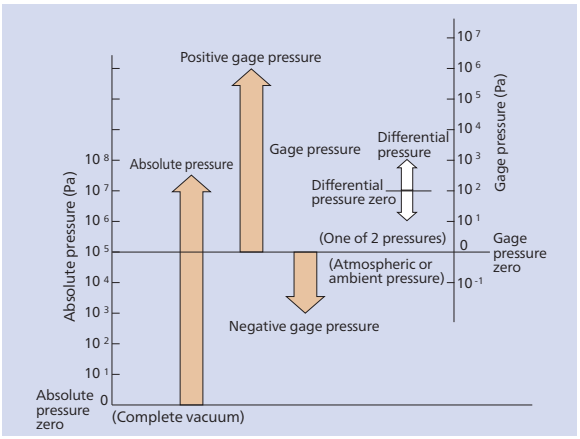
Absolute pressure is a pressure expressed by referring to vacuum (Complete) pressure as zero. It is mainly used in physical science for expressing atmospheric pressure, etc. Absolute pressure is calculated by following formula : absolute pressure = atmospheric pressure + gage pressure. Kyowa mentions absolute pressure as “abs.” to differentiate absolute pressures to gage pressures.

2) Gage Pressure

Gage pressure is a pressure expressed by referring to atmospheric or ambient pressure as zero. Industrially, it is merely called pressure unless otherwise noted. Pressure higher than atmospheric or ambient pressure is called positive gage pressure and pressure lower than atmospheric or ambient pressure, negative gage pressure. Though ISO recommends to affix "Pe" or "Gauge" to gage pressure, Kyowa does not affix either of them to gage pressure.

3) Differential Pressure

Differential pressure is a difference between a specific pressure and other. Thus, it may be either positive or negative.



Relations between Pressure Units

Pa	bar	kgf/cm²	atm	mmH_2O (mmAq)
1	1×10^{-5}	1.01972×10^{-5}	9.86923×10^{-6}	1.01972×10^{-1}
1×10^{5}	1	1.01972	9.86923×10^{-1}	1.01972×10^{4}
9.80665×10^{4}	9.80665×10^{-1}	1	9.67841×10^{-1}	1×10^{4}
1.01325×10^{5}	1.01325	1.03323	1	1.03323×10^{4}
9.80665	9.80665×10^{-5}	1×10^{-4}	9.67841×10^{-5}	1

1 Pa=1 N/m^2
1 Torr=1 mmHg=1.33322×10^{2} Pa=1.33322×10^{-3} bar=1.35951×10^{-3} kgf/cm^2
=1.31579×10^{-3} atm=1.35951×10 mmH_2O (mmAq)
1 psi=6894.7 Pa=7.0307×10^{-2} kgf/cm^2

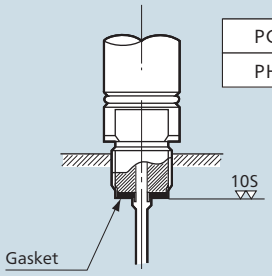
To Ensure Safe Usage

- Install each pressure transducer with the tightening torque stated in the Instruction Manual.
- Do not apply any load exceeding the safe overload rating. Excess load may break the pressure transducer.
- If pressure is applied repetitively, select a model which satisfies the following 2 requirements:
  - The rated capacity covers the peak pressure.
  - 50% the rated capacity covers the maximum pressure amplitude.
- If the pressure transducer may receive an unexpected excess pressure, select a model with a higher rated capacity. Especially, in the case of a pressure transducer with a higher rated capacity, if there exists air in the measuring medium, install a protective case around the pressure transducer for safety assurance.

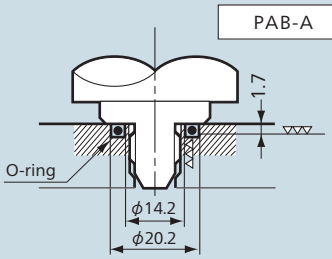
Typical Installation with Standard Accessories

For other methods of installation, contact us.

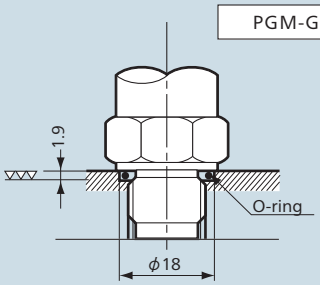
PG-U
PHB-A

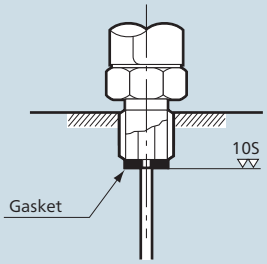


PAB-A



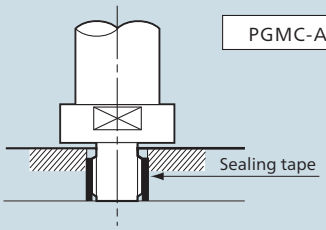
PGM-G

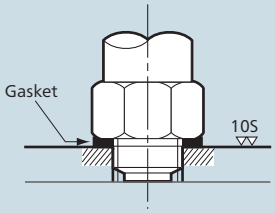




PGS-A	PAV-R,U
PG-H	PAA-R,U
PGR-A	PAG-A
PHS-B	

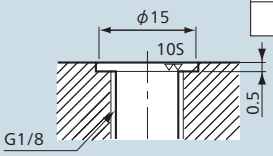
PGMC-A





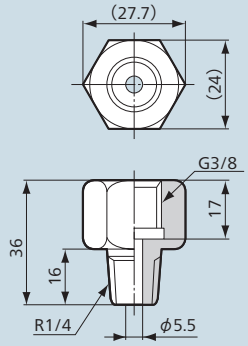
PGM-D	PHC-B
PGM-E	PVL-A,B,C,D
PGM-H	PAL-A,B
PE-F	

PGL-A
PHL-A



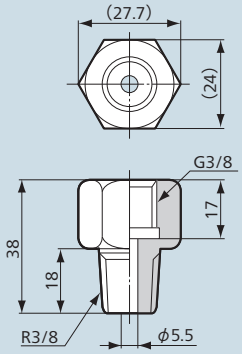
Screw Standard Conversion Adapters (G-to-R Conversion)

H-5237 G3/8→R1/4



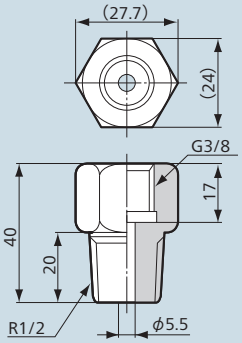
Material: SUS304

H-5238 G3/8→R3/8



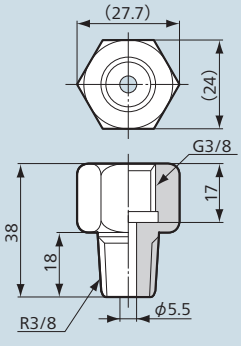
Material: SUS304

H-5239 G3/8→R1/2



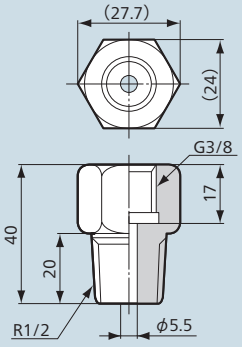
Material: SUS304

H-20109 G3/8→R3/8



Material: C3601 to 5B

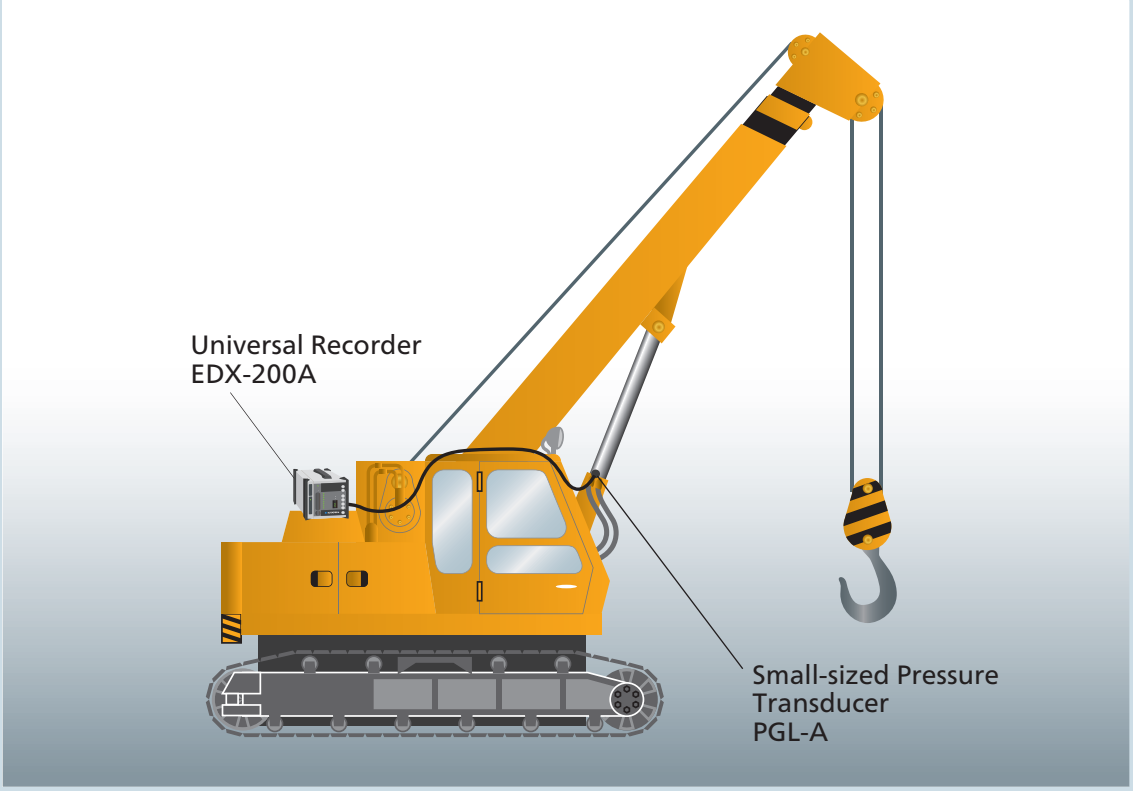
H-20110 G3/8→R1/2



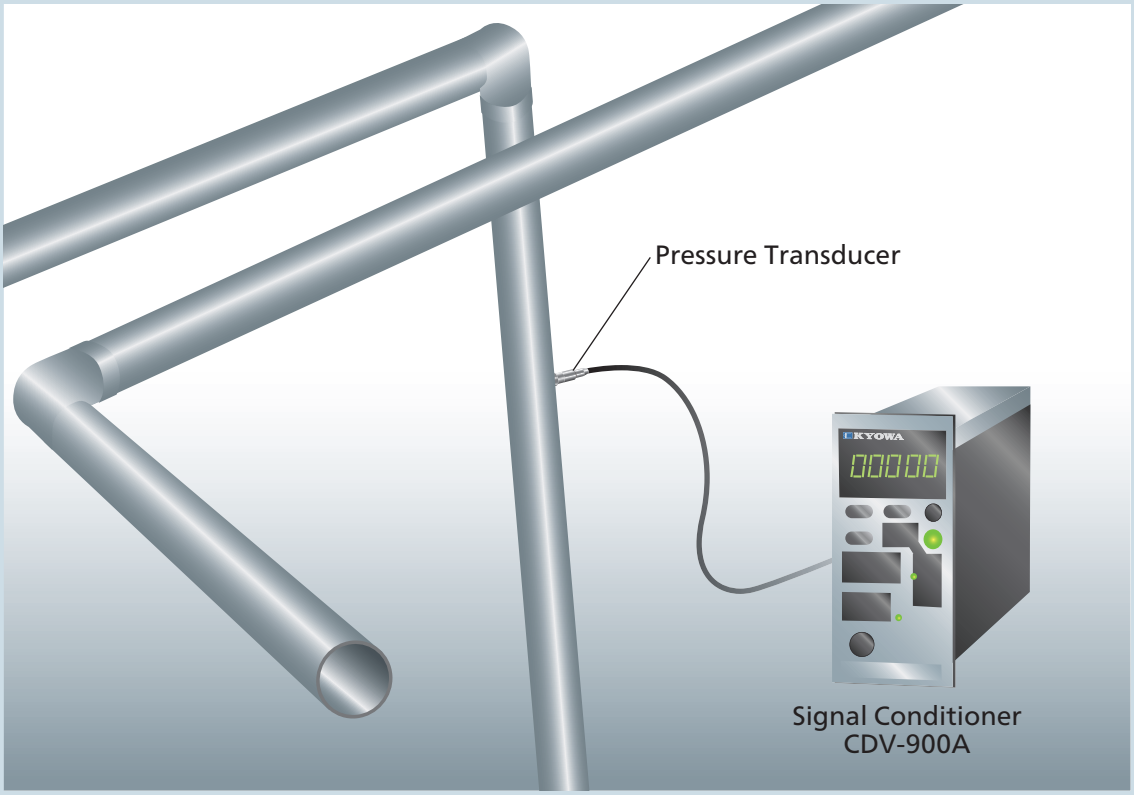
Material: C3601 to 5B

Pressure Transducers Examples of Measurement (Image)

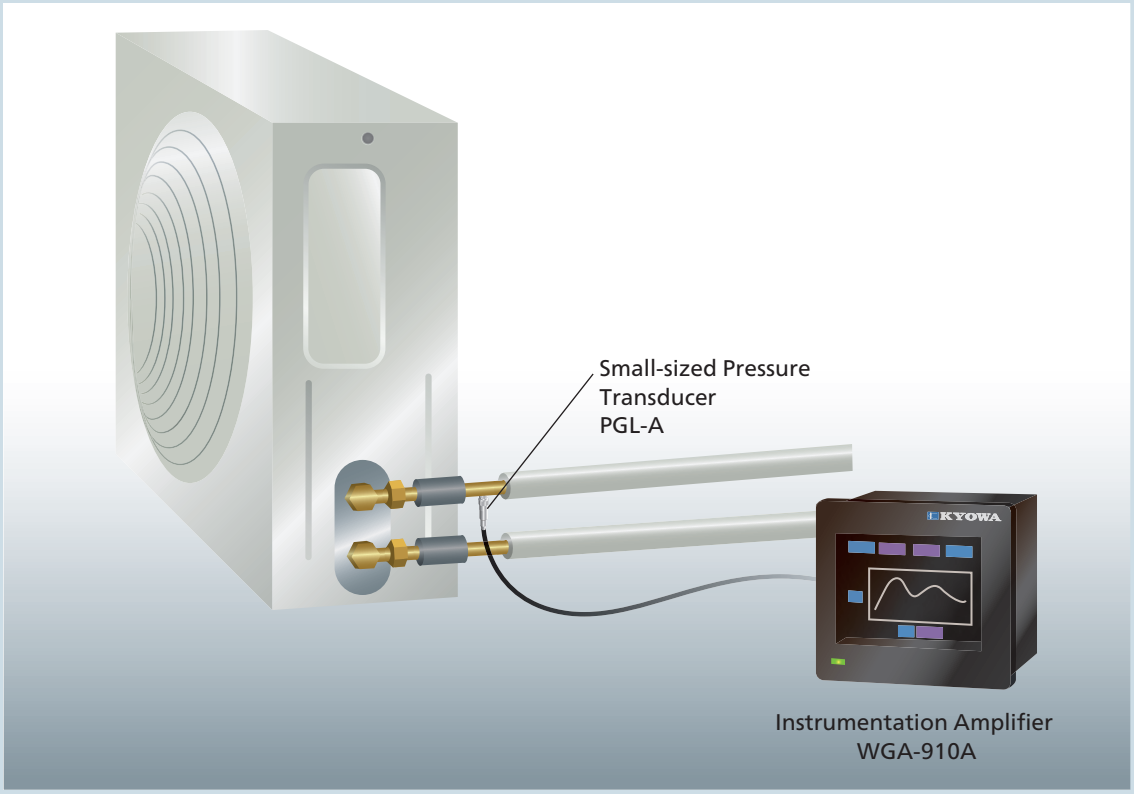
●Hydraulic pressure monitor or control of construction machine



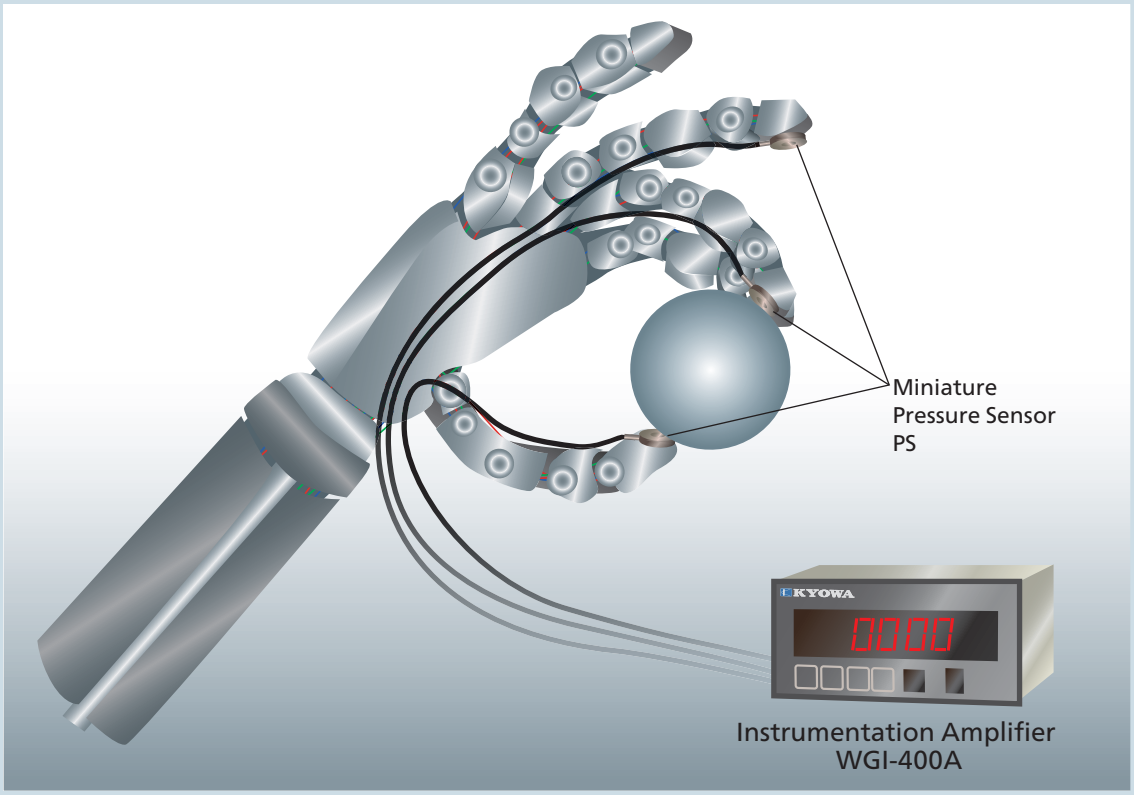
●Pressure measurement in pipes etc.



●Refrigerant pressure monitor of air conditioning facilities.



●Usable as a touch sensor for built-in robot parts.



Pressure Transducers Selection Chart

General Purpose Models Compensated Temperature	Rated Capacity kPa 20	50	100	200	500	MPa 1	2	3	5	10	20	30	50	100	200	250	300	Mounting Screw	Pages
PGM-G -10℃ 60℃	Yes	Yes	Yes															M14 P=1 male	2-90
PGMC-A 0℃ 50℃				Yes	Yes	Yes												G1/8 male	2-91
PG-U -10℃ 60℃				Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes					G3/8 male	2-85
PGM-H -10℃ 60℃					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes					G3/8 male	2-88
PGL-A -10℃ 60℃						Yes	Yes		Yes	Yes	Yes		Yes					G1/8 male	2-83
PGM-E 0℃ 60℃						Yes	Yes		Yes	Yes	Yes		Yes					G3/8 male	2-89
PGS-A -10℃ 60℃						Yes	Yes		Yes	Yes	Yes	Yes	Yes					G3/8 male	2-86
PGM-D 0℃ 60℃									Yes	Yes	Yes		Yes					G1/8 male	2-92
PG-H -10℃ 70℃														Yes	Yes			G1/2 male	2-87
PGH-S-SA19 0℃ 60℃																Yes	Yes	G1/2 male	2-100

High/Low Temperature Models Compensated Temperature	Rated Capacity MPa 1	2	3	5	10	20	30	50	100	Mounting Screw	Pages
PHB-A -196℃ 200℃	Yes	Yes		Yes	Yes	Yes	Yes	Yes		G3/8 male	2-97
PHL-A -20℃ 150℃(A) -196℃ 200℃(B)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		G1/8 male	2-84
PGH-S-100MPSA17 -20℃ 150℃									Yes	M12 P=1 male	2-99
PHF-S-S3 Series NEW -40℃ 150℃		Yes		Yes	Yes	Yes				Selectable	2-98
PHC-B 23℃ 230℃		Yes		Yes	Yes	Yes				G1/8 male	2-96

Absolute Pressure Models Compensated Temperature	Rated Capacity kPa 200	500	MPa 1	2	5	10	20	Mounting Screw	Pages
PAB-A -20℃ 70℃	Yes	Yes	Yes	Yes				7/16-20UNF male	2-94
PHS-B -30℃ 200℃	Yes	Yes	Yes	Yes	Yes	Yes	Yes	G3/8 male	2-95

High-pressure-resistant Models Compensated Temperature	Rated Capacity MPa 1	2	5	10	20	Mounting Screw	Pages
PGR-A -10℃ 100℃	Yes	Yes	Yes	Yes	Yes	G3/8 male	2-93

Water-cooled Type Models Compensated Temperature	Rated Capacity MPa 3	Mounting Screw	Pages
PE-30KF Attaching screw section: Max. 300°C Wastewater: Max. 80°C	Yes	M18 P=1.5	**5-10**

Pressure Transmitter Models Compensated Temperature	Rated Capacity kPa		MPa							Mounting Screw	Pages
	200	500	1	2	5	10	20	30	50		
PAG-2KA -20°C 70°C	Yes									G3/8 male	**2-105**
PAV-R/U -20°C 70°C			Yes		Yes	Yes	Yes	Yes	Yes	G3/8 male	**2-101**
PAA-R/U -20°C 70°C		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	G3/8 male	**2-102**
PVL -10°C 60°C		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	G3/8 male	**2-103**
PAL -10°C 60°C		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	G3/8 male	**2-104**

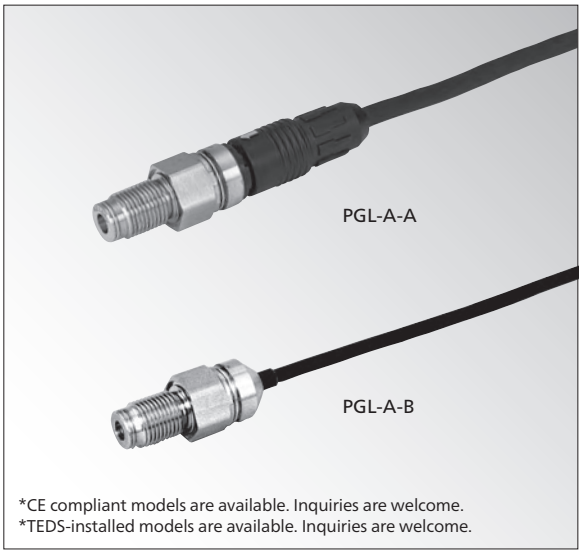
Differential Pressure Measurement Models Compensated Temperature	Rated Capacity kPa										MPa		Mounting Screw	Pages
	1	2.5	5	7	10	20	50	100	200	500	1	2		
PDS-A 0°C 50°C	Yes	Yes	Yes	Yes									–	**2-109**
PDV-A 0°C 50°C	Yes	Yes	Yes	Yes									–	**2-110**
PD-A 0°C 60°C					Yes	Yes	Yes	Yes	Yes				–	**2-111**
PDU-A -20°C 80°C							Yes	Yes	Yes	Yes	Yes	Yes	–	**2-112**

Distributed Pressure Measurement Models Compensated Temperature	Rated Capacity kPa					MPa					Mounting Screw	Pages
	20	50	100	200	500	1	2	3	5	7		
PSS 0°C 50°C	Yes	Yes	Yes								Dedicated Adhesive RC-19	**2-107**
PS 0°C 50°C		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Dedicated Adhesive RC-19	**2-106**
PSM-AB 0°C 50°C			Yes	Yes							Dedicated Adhesive RC-19	**2-108**

PGL-A

Small-sized Pressure Transducer

●1 to 50 MPa



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Compact & lightweight
Highly stable
High frequency response

PGL-A series pressure transducers are suitable for pressure measurement in limited space. The semi-flush diaphragm at the top end ensures excellent response and dynamic characteristics. There are 2 types: A type with removable cable and B type with integrated cable.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.3% RO
	(2 MPa or less: Within ±0.5% RO)
Hysteresis	Within ±0.2% RO
	(2 MPa or less: Within ±0.5% RO)
Repeatability	0.2% RO or less
Rated Output	2 mV/V ±20%
	2 MPa or less: 2 mV/V ±30%

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	-10 to 60°C
Temperature Effect on Zero	Within ±0.03% RO/°C
	(2 MPa or less: Within ±0.05% RO/°C)
Temperature Effect on Output	Within ±0.03%/°C

Electrical Characteristics

Safe Excitation	6 V AC or DC
Recommended Excitation	1 to 3 V AC or DC
Input Resistance	350 Ω ±2%
Output Resistance	350 Ω ±2%
Cable	PGL-A-A: 4-conductor (0.18 mm²) vinyl shielded cable, 4.6 mm diameter by 3 m long
	Sensor side: Terminated with a connector plug HR30-6P-6S
	Measuring instrument side: Terminated with a connector plug PRC03-12A10-7M
	PGL-A-B: 4-conductor (0.08 mm²) vinyl shielded cable, 3.2 mm diameter by 30 cm long, terminated with a connector plug PRC03-12A10-7M
	(Shield wire is not connected to the case.)

Mechanical Properties

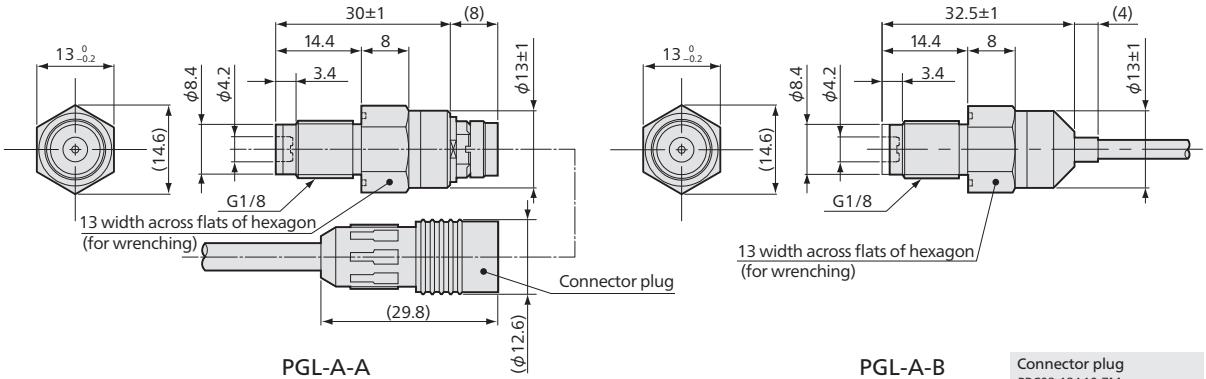
Safe Overloads	150%
Natural Frequencies	See table below.
Material	Liquid-contacting part: SUS 630
Weight	Approx. 20 g (Excluding cable)
Degree of Protection	PGL-A-A: IP67 (IEC 60529)
	PGL-A-B: IP64 (IEC 60529)
Mounting Screw	G1/8, male

Standard Accessories: Gasket (Mild copper) (SS-105 O-ring is also usable. However, use the pressure and temperature range within the O-ring specification range.)

Models		Rated Capacity	Natural Frequencies (Approx.)
Connector Type	Cable Integrated Type		
●PGL-A-1MP-A	●PGL-A-1MP-B	1 MPa	48 kHz
●PGL-A-2MP-A	●PGL-A-2MP-B	2 MPa	74 kHz
●PGL-A-5MP-A	●PGL-A-5MP-B	5 MPa	122 kHz
●PGL-A-10MP-A	●PGL-A-10MP-B	10 MPa	149 kHz
●PGL-A-20MP-A	●PGL-A-20MP-B	20 MPa	210 kHz
●PGL-A-50MP-A	●PGL-A-50MP-B	50 MPa	294 kHz

●For delivery date, please contact us.

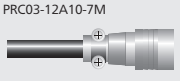
■Dimensions



PGL-A-A

PGL-A-B

Connector plug
PRC03-12A10-7M

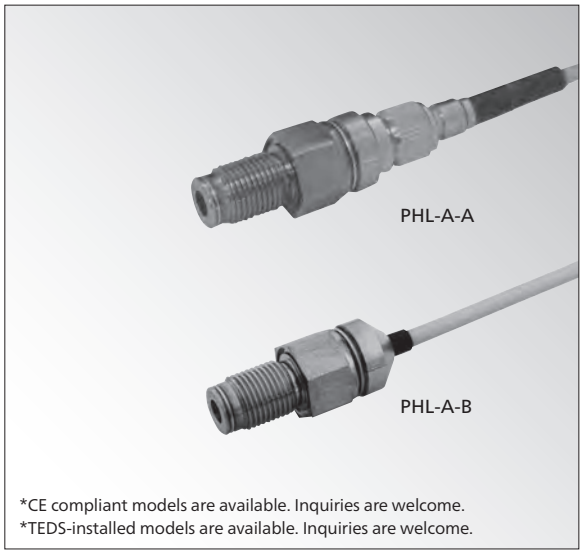


Pressure Transducers
Outline
General
High temp. Low temp.
Absolute pressure High pressure
Pressure transmitter
Differential pressure
Distributed pressure

PHL-A

●1 to 50 MPa

Small-sized High/Low-temperature Pressure Transducer



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Compact & lightweight
For high & low temperatures
High frequency response

PHL-A series pressure transducers are suitable for pressure measurement in not only limited space under both high and low temperature environments but also highly viscous heated fluids like melt resin, high-temperature gases and LPG/LNG tanks. A semi-flush diaphragm at the top not only ensures excellent response and dynamic characteristics.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.3% RO
	(2 MPa or less: Within ±0.5% RO)
Hysteresis	Within ±0.2% RO
	(2 MPa or less: Within ±0.5% RO)
Repeatability	0.2% RO or less
Rated Output	2 mV/V ±20%
	2 MPa or less: 2 mV/V ±30%

Environmental Characteristics

Safe Temperature	PHL-A-A: -40 to 150°C
	PHL-A-B: -196 to 210°C
	(Connector plug: -25 to 85°C)
Compensated Temperature	PHL-A-A: -20 to 150°C
	PHL-A-B: -196 to 200°C
	(Connector plug: -25 to 85°C)
Temperature Effect on Zero	Within ±0.03% RO/°C
	(3 MPa or less: Within ±0.05% RO/°C)
Temperature Effect on Output	Within ±0.03%/°C

Electrical Characteristics

Safe Excitation	6 V AC or DC
Recommended Excitation	1 to 3 V AC or DC
Input Resistance	350 Ω ±2%
Output Resistance	350 Ω ±2%
Cable	PHL-A-A: 4-conductor (0.08 mm²) fluoroplastic shielded cable, 3.1 mm diameter by 4 m long
	Sensor side: Terminated with a connector plug MR01-9008P4F
	Measuring instrument side: Terminated with a connector plug PRC03-12A10-7M
	PHL-A-B: 4-conductor (0.08 mm²) fluoroplastic shielded cable, 3.1 mm diameter by 30 cm long, terminated with a connector plug PRC03-12A10-7M
	(Shield wire is not connected to the case.)

Mechanical Properties

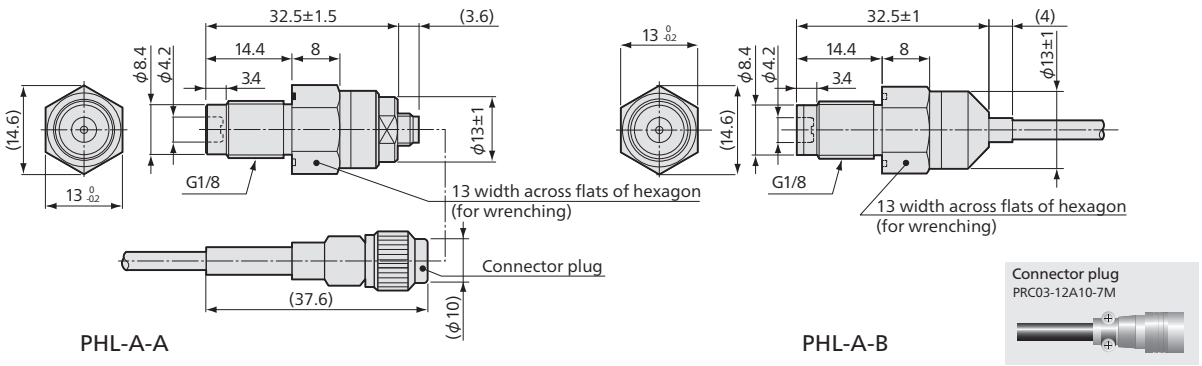
Safe Overloads	150%
Natural Frequencies	See table below.
Material	Liquid-contacting part: SUS 630
Weight	Approx. 20 g (Excluding cable)
Degree of Protection	PHL-A-A: IP67 (IEC 60529)
	PHL-A-B: IP64 (IEC 60529)
Mounting Screw	G1/8, male

Standard Accessories Gasket (Mild copper) (SS-105 O-ring is also usable. However, use the pressure and temperature range within the O-ring specification range.)

Models		Rated Capacity	Natural Frequencies (Approx.)
Connector Type	Cable Integrated Type		
PHL-A-1MP-A	**PHL-A-1MP-B**	1 MPa	48 kHz
PHL-A-2MP-A	**PHL-A-2MP-B**	2 MPa	74 kHz
●**PHL-A-3MP-A**	●**PHL-A-3MP-B**	3 MPa	94 kHz
PHL-A-5MP-A	●**PHL-A-5MP-B**	5 MPa	122 kHz
●**PHL-A-10MP-A**	**PHL-A-10MP-B**	10 MPa	149 kHz
PHL-A-20MP-A	**PHL-A-20MP-B**	20 MPa	210 kHz
●**PHL-A-30MP-A**	●**PHL-A-30MP-B**	30 MPa	250 kHz
PHL-A-50MP-A	●**PHL-A-50MP-B**	50 MPa	294 kHz

●For delivery date, please contact us.

Dimensions



PG-U

Pressure Transducer

●Highly reliable ●200 kPa to 50 MPa

*CE compliant models are available. Inquiries are welcome.
*Models with no air vent are available. Inquiries are welcome.

Highly accurate and reliable pressure transducers

●Hermetically-sealed structure with inert gas filled in
●Wide range of rated capacities
●Abundant application achievements

Highly accurate and reliable PG-U series pressure transducers are hermetically sealed with inert gas filled in to enable a long-term stable measurement.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.2% RO
	(2 to 10KU: Within ±0.3% RO)
Hysteresis	Within ±0.2% RO
	(2 to 10KU: Within ±0.3% RO)
Repeatability	0.1% RO or less
Rated Output	2 mV/V ±0.5%
	2 to 10KU: 2 mV/V ±1%

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	-10 to 60°C
Temperature Effect on Zero	Within ±0.02% RO/°C
Temperature Effect on Output	Within ±0.02%/°C

Electrical Characteristics

Safe Excitation	15 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω ±1%
Accessory Cable	4-conductor (0.3 mm²) chloroprene shielded cable,
(TT-01)	7.6 mm diameter by 3 m long
	Sensor side: Terminated with a waterproof connector plug 1108-12A10-7M
	Measuring instrument side: Terminated with a connector plug PRC03-12A10-7M
	(Shield wire is connected to the case.)

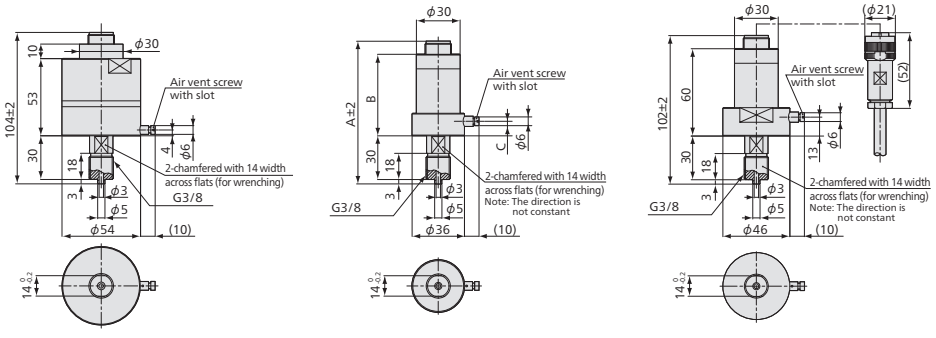
Mechanical Properties

Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: Anode oxidized coated aluminum
	Liquid-contacting part: SUS 630
	For 10KU or more, the case is die cast zinc alloy.
	(Chrome plated)
Weight	Approx. 300 g (2, 5KU is approx. 500 g)
	(Excluding cable)
Degree of Protection	IP54 (IEC 60529)
Mounting Screw	G3/8, male

Standard Accessories Gasket (Mild copper)

*Do not use PG-200KU to PG-500KU for endurance/fatigue tests.
*The PG-U have airvent screw with slot. Avoid using for a long-term measurement of gas pressure if much importance is attached to the stability of output in a minute range.

■Dimensions

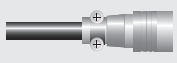


PG-2, 5KU　　PG-10 to 200KU　　PG-300, 500KU

Models	Rated Capacity	Natural Frequencies (Approx.)	A	B	C
PG-2KU	200 kPa	2 kHz	–	–	–
PG-5KU	500 kPa	4 kHz			
PG-10KU	1 MPa	7 kHz	98	56	10
PG-20KU	2 MPa	13 kHz			
PG-50KU	5 MPa	21 kHz	102	60	13
PG-100KU	10 MPa	29 kHz			
PG-200KU	20 MPa	40 kHz			
●**PG-300KU**	30 MPa	45 kHz	–	–	–
PG-500KU	50 MPa	50 kHz			

●For delivery date, please contact us.

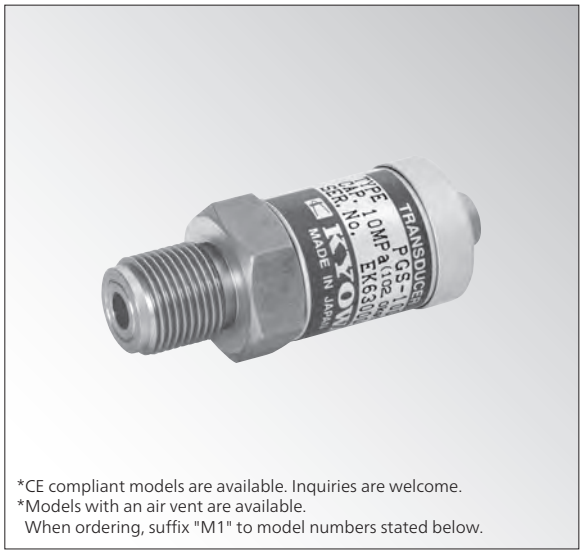
Connector plug
PRC03-12A10-7M



PGS-A

●Compact & lightweight ●1 to 50 MPa

Small-sized Pressure Transducer



*CE compliant models are available. Inquiries are welcome.
*Models with an air vent are available.
When ordering, suffix "M1" to model numbers stated below.

Compact & lightweight

●Not affected by atmospheric pressure change
●Strong against vibration and impact

PGS-A series pressure transducers are designed and manufactured to be especially compact and lightweight.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.2% RO
	(20KA: Within ±0.3% RO)
	(10KA: Within ±0.4% RO)
Hysteresis	Within ±0.2% RO
Repeatability	0.1% RO or less
Rated Output	2 mV/V ±0.5%

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	-10 to 60°C
Temperature Effect on Zero	Within ±0.02% RO/°C
Temperature Effect on Output	Within ±0.01%/°C

Electrical Characteristics

Safe Excitation	15 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	600 Ω ±17.5%
Output Resistance	500 Ω ±1%
Accessory Cable	4-conductor (0.3 mm²) chloroprene shielded cable,
	4.5 mm diameter by 3 m long,
	Sensor side: Terminated with a connector plug R06-P5F
	Measuring instrument side: Terminated with a connector plug PRC03-12A10-7M
	(Shield wire is not connected to the case.)

Mechanical Properties

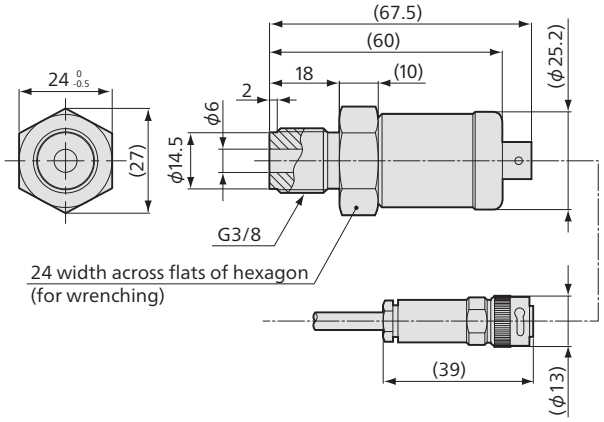
Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: Anode oxidized coated aluminum
	Liquid-contacting part: SUS 630
Weight	Approx. 120 g (Excluding cable)
Degree of Protection	IP52 (IEC 60529)
Mounting Screw	G3/8, male

Standard Accessories Gasket (Mild copper)

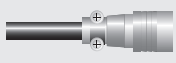
Models	Rated Capacity	Natural Frequencies (Approx.)
●PGS-10KA	1 MPa	11 kHz
●PGS-20KA	2 MPa	17 kHz
●PGS-50KA	5 MPa	27 kHz
●PGS-100KA	10 MPa	35 kHz
●PGS-200KA	20 MPa	52 kHz
●PGS-300KA	30 MPa	64 kHz
PGS-500KA	50 MPa	85 kHz

●For delivery date, please contact us.

Dimensions



Connector plug
PRC03-12A10-7M



PG-H

Pressure Transducer

- Highly reliable inert gas sealed structure
- 100 & 200 MPa

*CE compliant models are available. Inquiries are welcome.

Compact, lightweight, highly accurate, and highly reliable

Available with rated capacities of 100 and 200 MPa, the PG-H series pressure transducers are hermetically sealed with inert gas filled in, enabling long-term stable measurement.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.2% RO
Hysteresis	Within ±0.2% RO
Rated Output	1.5 mV/V ±0.5%

Environmental Characteristics

Safe Temperature	-20 to 80°C
Compensated Temperature	-10 to 70°C
Temperature Effect on Zero	Within ±0.02% RO/°C
Temperature Effect on Output	Within ±0.01%/°C

Electrical Characteristics

Safe Excitation	15 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±1.5%
Output Resistance	350 Ω ±1.5%
Accessory Cable	4-conductor (0.3 mm²) chloroprene shielded cable, 7.6 mm diameter by 3 m long
	Sensor side: Terminated with a waterproof connector plug 1108-12A10-7F
	Measuring instrument side: Terminated with a connector plug PRC03-12A10-7M
	(Shield wire is not connected to the case.)

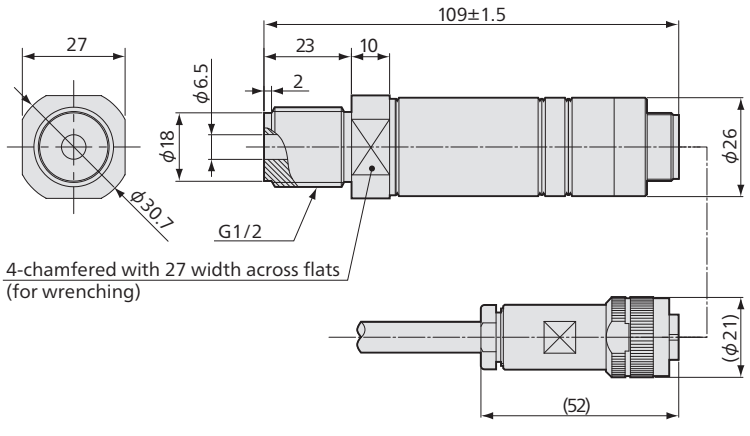
Mechanical Properties

Safe Overloads	150%
Natural Frequencies	Approx. 250 kHz
Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 220 g (Excluding cable)
Degree of Protection	IP52 (IEC 60529)
Mounting Screw	G1/2, male

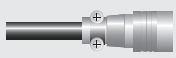
Standard Accessories Gasket (Mild copper)

Models	Rated Capacity
PG-1TH	100 MPa
PG-2TH	200 MPa

Dimensions



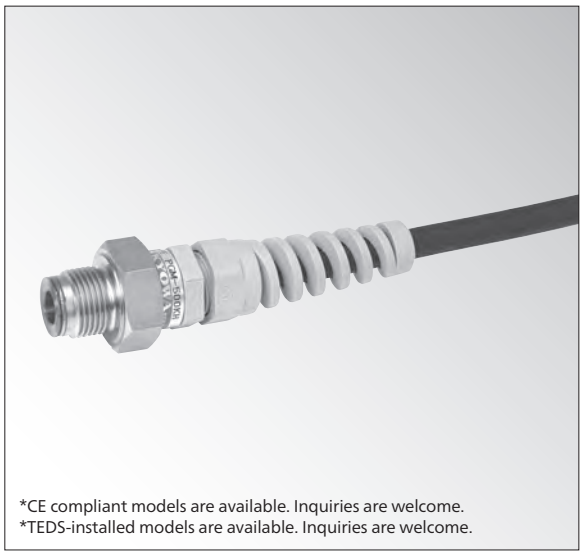
Connector plug
PRC03-12A10-7M



PGM-H

●Highly accurate ●500 kPa to 50 MPa

Small-sized Pressure Transducer



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Compact semiflush diaphragm type and available in various rated capacities

PGM-H series pressure transducers are suitable for pressure measurement in limited space. Because of a diaphragm at the end, it ensures excellent response and dynamic characteristics.
The PGM-H has 9 types of rated capacities from 500 kPa to 50 MPa. The PGM-H also has wide pressure ranges.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.3% RO
	(5 to 20KH: Within ±0.5% RO)
Hysteresis	Within ±0.2% RO
Repeatability	0.15% RO or less
Rated Output	2 mV/V or more
	5KH: 1.35 mV/V or more

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	-10 to 60°C
Temperature Effect on Zero	Within ±0.03% RO/°C
	(5 to 20KH: Within ±0.05% RO/°C)
Temperature Effect on Output	Within ±0.02%/°C

Electrical Characteristics

Safe Excitation	6 V AC or DC
Recommended Excitation	1 to 3 V AC or DC
Input Resistance	350 Ω ±2%
Output Resistance	350 Ω ±2%
Cable	4-conductor (0.3 mm²) chloroprene shielded cable,
	7.6 mm diameter by 3 m long, terminated with a connector plug
	PRC03-12A10-7M
	(Shield wire is not connected to the case.)

Mechanical Properties

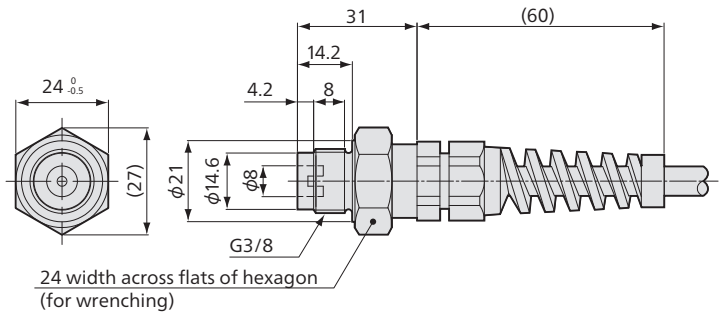
Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: Stainless steel
	Liquid-contacting part: SUS 630
Weight	Approx. 65 g (Excluding cable)
Degree of Protection	IP64 (IEC 60529)
Mounting Screw	G3/8, male

Standard Accessories Gasket (Mild copper)

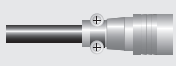
Models	Rated Capacity	Natural Frequencies (Approx.)
●PGM-5KH	500 kPa	19 kHz
●PGM-10KH	1 MPa	26 kHz
●PGM-20KH	2 MPa	37 kHz
●PGM-30KH	3 MPa	46 kHz
●PGM-50KH	5 MPa	57 kHz
●PGM-100KH	10 MPa	78 kHz
●PGM-200KH	20 MPa	110 kHz
●PGM-300KH	30 MPa	134 kHz
PGM-500KH	50 MPa	174 kHz

●For delivery date, please contact us.

■Dimensions



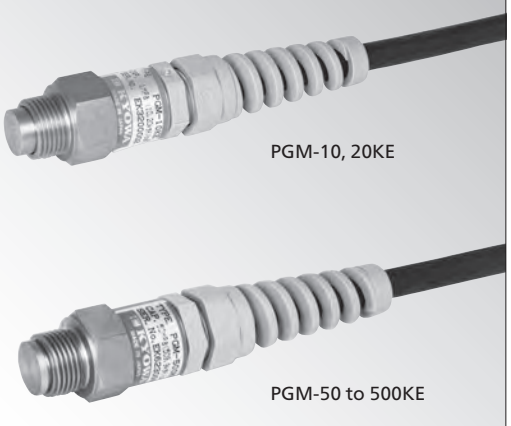
Connector plug
PRC03-12A10-7M



PGM-E

Small-sized Pressure Transducer

●Abundant models from low to high pressures
●1 to 50 MPa



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Compact flush diaphragm type and available in various rated capacities

PGM-E series pressure transducers are extremely effective for pressure measurement in limited space. A flush diaphragm ensures excellent response and dynamic characteristics. Since the pressure sensing part directly contacts the measuring object, they are applicable to highly viscous medium.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
Hysteresis	Within ±1% RO
Rated Output	1 mV/V or more
	500KE: 1.4 mV/V or more

Environmental Characteristics

Safe Temperature	0 to 80°C
Compensated Temperature	0 to 60°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	5 V AC or DC
Recommended Excitation	1 to 3 V AC or DC
Input Resistance	120 Ω ±2%
Output Resistance	120 Ω ±2%
Cable	4-conductor (0.3 mm²) chloroprene shielded cable,
	7.6 mm diameter by 3 m long, terminated with a connector plug
	PRC03-12A10-7M
	(Shield wire is connected to the case.)

Mechanical Properties

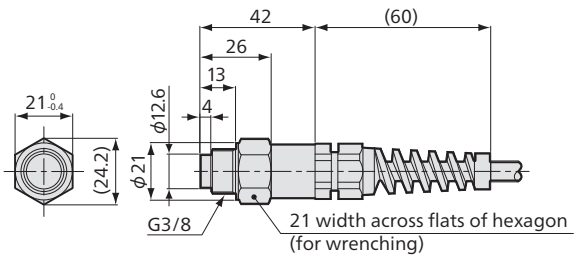
Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: Stainless steel
	Liquid-contacting part: SUS 630
	Screw: SUS 630
	SUS 304 (10, 20KE only)
Weight	Approx. 65 g (Excluding cable)
Degree of Protection	IP64 (IEC 60529)
Mounting Screw	G3/8, male

Standard Accessories Gasket (Mild copper)

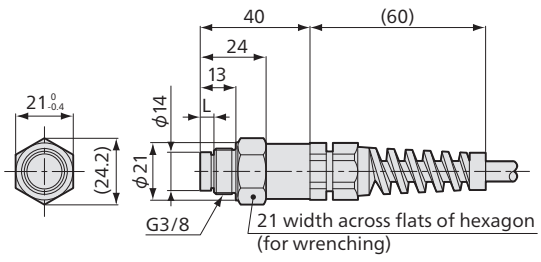
Models	Rated Capacity	L	Natural Frequencies (Approx.)
●PGM-10KE	1 MPa	—	22 kHz
●PGM-20KE	2 MPa	—	23 kHz
●PGM-50KE	5 MPa	5	46 kHz
●PGM-100KE	10 MPa	5	60 kHz
●PGM-200KE	20 MPa	4	73 kHz
●PGM-500KE	50 MPa	3	80 kHz

●For delivery date, please contact us.

■Dimensions

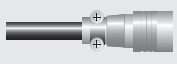


PGM-10, 20KE



PGM-50 to 500KE

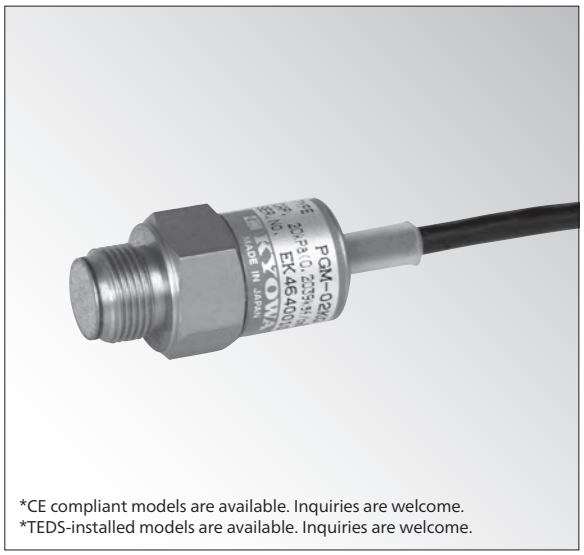
Connector plug
PRC03-12A10-7M



PGM-G

Low Pressure Transducer

●Low pressure
●20 to 100 kPa



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Enable highly accurate and stable measurement of low pressures

PGM-G series pressure transducers come with the cable in a conduit pipe for back-pressure compensation. Thus, they are easy to handle and enable highly accurate and stable measurement of low pressure.

Specifications

Performance

Rated Capacity	See table below.	
Nonlinearity	Within ±0.5% RO	
Hysteresis	Within ±0.3% RO	
Repeatability	0.5% RO or less	
Rated Output	PGM-02KG	0.75 mV/V or more
	PGM-05KG	1.25 mV/V or more
	PGM-1KG	1.4 mV/V or more

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	-10 to 60°C
Temperature Effect on Zero	Within ±0.02% RO/°C
Temperature Effect on Output	Within ±0.03%/°C

Electrical Characteristics

Safe Excitation	5 V AC or DC
Recommended Excitation	1 to 3 V AC or DC
Input Resistance	350 Ω ±10%
Output Resistance	350 Ω ±10%
Cable	4-conductor (0.08 mm²) horizontal vinyl shielded cable in fluoroplastic tube, 4.2 mm diameter by 3 m long, terminated with a connector plug PRC03-12A10-7M (Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: Stainless steel
	Liquid-contacting part: SUS 304
Weight	Approx. 40 g (Excluding cable)
Degree of Protection	IP54 (IEC 60529)
Mounting Screw	M14 P=1, male

Standard Accessories O-ring JIS B 2401-P14

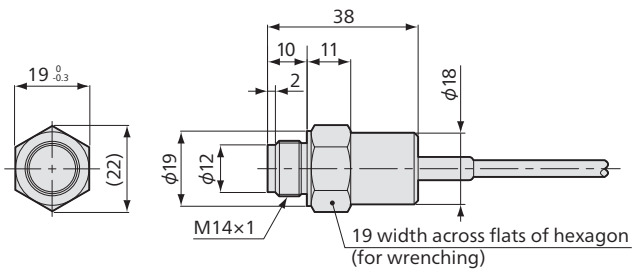
Models	Rated Capacity	Natural Frequencies (Approx.)
PGM-02KG	20 kPa	2 kHz
●PGM-05KG	50 kPa	3 kHz
PGM-1KG	100 kPa	4 kHz

●For delivery date, please contact us.

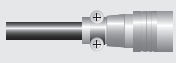
To Ensure Safe Usage

Neither bend nor vibrate the cable, otherwise, the output may be affected.
So, please fasten the cable when using.

■Dimensions



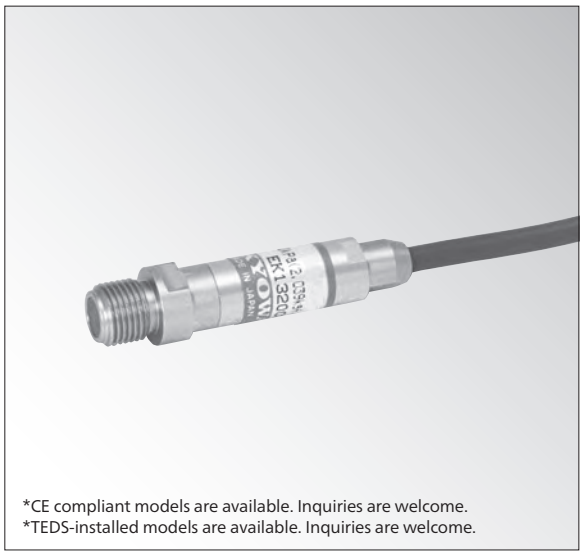
Connector plug
PRC03-12A10-7M



PGMC-A

Small-sized Pressure Transducer

- Sensing surface of 6 mm diameter
- 200 kPa to 1 MPa



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Compact & lightweight
High frequency response
Flush diaphragm type

PGMC-A series pressure transducers adopt a flush diaphragm with the sensing surface of 6 mm diameter. Since a high frequency response to low pressure is ensured, they are suitable for pressure measurement requiring quick response or for a complicated piping system where the attaching space is limited.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1.5% RO
Hysteresis	Within ±1.5% RO
Rated Output	PGMC-A-200KP: 0.6 mV/V or more
	PGMC-A-500KP, 1MP: 1 mV/V ±20%

Environmental Characteristics

Safe Temperature	-10 to 60°C
Compensated Temperature	0 to 50°C
Temperature Effect on Zero	Within ±0.2% RO/°C
	(200KP: Within ±0.3% RO/°C)
Temperature Effect on Output	Within ±0.2%/°C
	(200KP: Within ±0.3%/°C)

Electrical Characteristics

Safe Excitation	3 V AC or DC
Recommended Excitation	1 to 2 V AC or DC
Input Resistance	350 Ω ±10%
Output Resistance	350 Ω ±10%
Cable	4-conductor (0.065 mm²) vinyl shielded cable, 4 mm diameter
	by 3 m long, terminated with a connector plug PRC03-12A10-7M
	(Shield wire is connected to the case.)

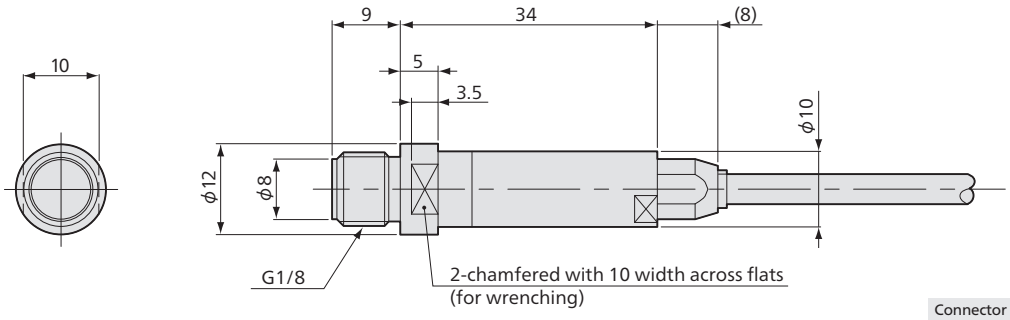
Mechanical Properties

Safe Overloads	150%
Natural Frequencies	See table below.
Material	Liquid-contacting part: C1720
	Screw: SUS 303
Weight	Approx. 20 g (Excluding cable)
Degree of Protection	IP52 (IEC 60529)
Mounting Screw	G1/8, male

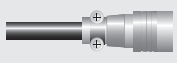
Standard Accessories Fluoroplastic sealing tape

Models	Rated Capacity	Natural Frequencies (Approx.)
PGMC-A-200KP	200 kPa	24 kHz
PGMC-A-500KP	500 kPa	34 kHz
PGMC-A-1MP	1 MPa	40 kHz

Dimensions



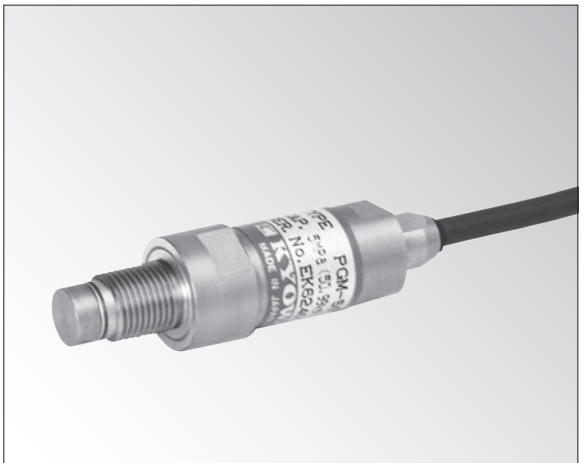
Connector plug
PRC03-12A10-7M



PGM-D

●High frequency response ●5 to 50 MPa

Small-sized Pressure Transducer



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.
*1 MPa model (PGM-10KD M156) and
2 MPa model (PGM-20KD M156) are available.

High frequency response and highly accurate flush diaphragm type with small pressure sensing surface

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.5% RO
Hysteresis	Within ±0.5% RO
Repeatability	0.5% RO or less
Rated Output	1.5 mV/V ±20%

Environmental Characteristics

Safe Temperature	-10 to 70°C
Compensated Temperature	0 to 60°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	3 V AC or DC
Recommended Excitation	1 to 2 V AC or DC
Input Resistance	120 Ω ±2%
Output Resistance	120 Ω ±2%
Cable	4-conductor (0.065 mm²) vinyl shielded cable, 4 mm diameter
	by 3 m long, terminated with a connector plug PRC03-12A10-7M
	(Shield wire is connected to the case.)

Mechanical Properties

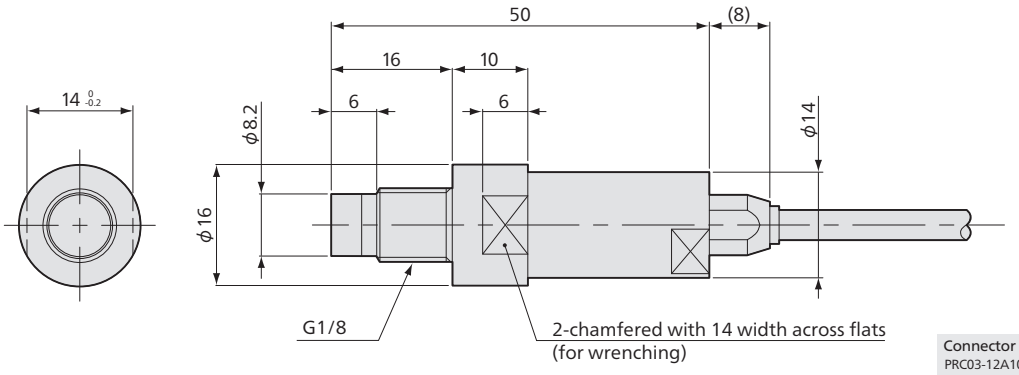
Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 40 g (Excluding cable)
Mounting Screw	G1/8, male

Standard Accessories: Gasket (Mild copper)

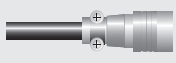
Models	Rated Capacity	Natural Frequencies (Approx.)
PGM-50KD	5 MPa	83 kHz
●**PGM-100KD**	10 MPa	113 kHz
PGM-200KD	20 MPa	150 kHz
PGM-500KD	50 MPa	250 kHz

●For delivery date, please contact us.

■Dimensions



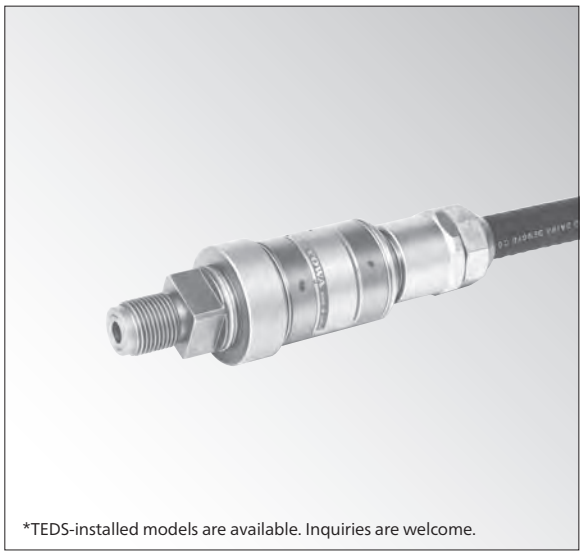
Connector plug
PRC03-12A10-7M



PGR-A

High-pressure-resistant Pressure Transducer

●Ultimate overloads: 117.6 Mpa
●1 to 20 MPa



*TEDS-installed models are available. Inquiries are welcome.

High temperatures (Up to 100°C) High-pressure-resistant and highly accurate pressure transducer

●High temperatures (Up to 100°C)
●High pressure resistant
●Highly accurate

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.1% RO
Hysteresis	Within ±0.1% RO
Rated Output	1.5 mV/V ±5%

Environmental Characteristics

Safe Temperature	-30 to 110°C
Compensated Temperature	-10 to 100°C
Temperature Effect on Zero	Within ±0.01% RO/°C
Temperature Effect on Output	Within ±0.01%/°C

Electrical Characteristics

Safe Excitation	12 V AC or DC
Recommended Excitation	1 to 8 V AC or DC
Input Resistance	350 Ω ±1.4%
Output Resistance	350 Ω ±1.4%
Cable	4-conductor (0.75 mm²) fluonlex shielded cable,
	8 mm diameter by 5 m long, bared at the tip
	(Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads (*1)	300%
Ultimate Overloads (*2)	117.6 MPa (10 to 50KA)
	196.1 MPa (100, 200KA)
Natural Frequencies	See table below.
Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 400 g (Excluding cable)
Mounting Screw	G3/8, male
Degree of Protection	IP52 (IEC 60529)

Standard Accessories Gasket (Mild copper)

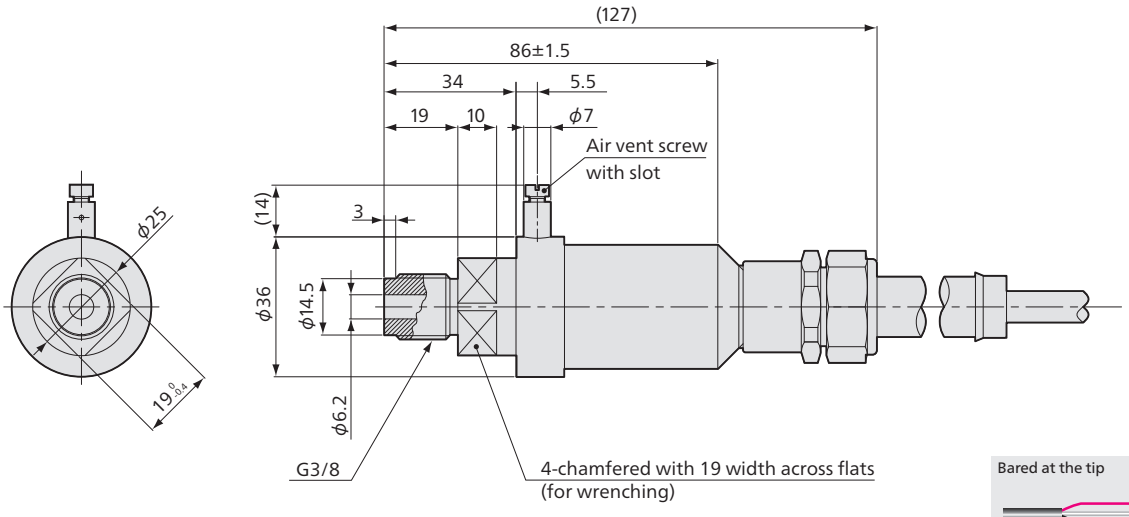
Models	Rated Capacity	Natural Frequencies (Approx.)
●PGR-10KA	1 MPa	12 kHz
●PGR-20KA	2 MPa	17 kHz
●PGR-50KA	5 MPa	29 kHz
●PGR-100KA	10 MPa	42 kHz
●PGR-200KA	20 MPa	60 kHz

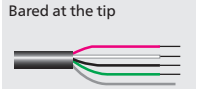
●For delivery date, please contact us.

(*1) Maximum overload which is applied without causing any permanent change in specified characteristics.

(*2) Maximum overload which is applied without causing any structural damage.

■Dimensions





PAB-A

Absolute Pressure Transducer

●Measurement from absolute pressure zero (vacuum)
●200 kPa$_{abs.}$ to 2 MPa$_{abs.}$

*CE compliant models are available. Inquiries are welcome.

Compact & lightweight
Highly stable

●Possible to measure absolute pressure
●Highly stable
●Highly reliable (Conforming to MIL-STD-810C)

PAB-A series pressure transducers allow absolute pressure to be measured from zero to 2 MPa$_{abs.}$ for long-term. Developed for pressure measurement on airplanes and flying objects, these transducers pass high-temperature and vibration tests in conformity to MIL-STD-810C and is widely used in various industrial and engineering fields.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.1% RO
Hysteresis	Within ±0.1% RO
Repeatability	0.1% RO or less
Rated Output	2 mV/V or more

Environmental Characteristics

Safe Temperature	-30 to 80°C
Compensated Temperature	-20 to 70°C
Temperature Effect on Zero	Within ±0.01% RO/°C
Temperature Effect on Output	Within ±0.01%/°C

Electrical Characteristics

Safe Excitation	8 V AC or DC
Recommended Excitation	1 to 3 V AC or DC
Input Resistance	367 Ω ±2%
Output Resistance	350 Ω ±2%
Accessory Cable	4-conductor (0.3 mm^2) chloroprene shielded cable, 7.6 mm diameter by 3 m long Sensor side: Terminated with a waterproof connector plug 1108-12A10-7F Measuring instrument side: Bared at the tip (Shield wire is connected to the case.)

Mechanical Properties

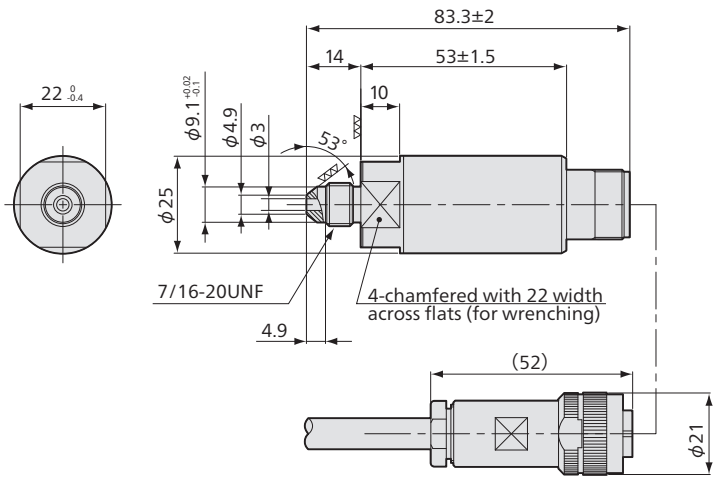
Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: Stainless steel Liquid-contacting part: SUS 630
Weight	Approx. 130 g (Excluding cable)
Mounting Screw	7/16-20UNF, male
Degree of Protection	IP52 (IEC 60529)

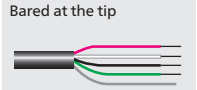
Standard Accessories O-ring JIS B 2401-P15

Models	Rated Capacity	Natural Frequencies (Approx.)
●PAB-A-200KP	200 kPa$_{abs.}$	5 kHz
●PAB-A-500KP	500 kPa$_{abs.}$	8 kHz
●PAB-A-1MP	1 MPa$_{abs.}$	10 kHz
●PAB-A-2MP	2 MPa$_{abs.}$	12 kHz

●For delivery date, please contact us.

■Dimensions

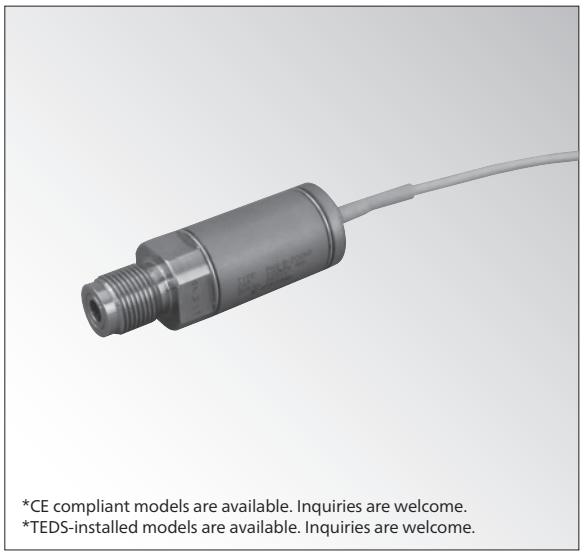




PHS-B

- Long-term stability at 200˚C
- 200 $kPa_{abs.}$ to 20 $MPa_{abs.}$

Highly Reliable Pressure Transducer (Sputter-gage Type)



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.2% RO
Hysteresis	Within ±0.2% RO
Rated Output	1.5 mV/V or more

Environmental Characteristics

Safe Temperature	-196 to 230°C
Compensated Temperature	-30 to 200°C
Temperature Effect on Zero	Within ±0.02% RO/°C
Temperature Effect on Output	Within ±0.015%/°C

Electrical Characteristics

Safe Excitation	15 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	900 Ω $^{100}_{-150}$ Ω
Output Resistance	900 Ω $^{100}_{-150}$ Ω
Cable	4-conductor (0.09 mm^2) fluoroplastic shielded cable, approx. 3 mm diameter by 5 m long, bared at the tip (Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: SUS (Metallic finish) Liquid-contacting part: SUS 630
Weight	Approx. 130 g (Excluding cable)
Mounting Screw	G3/8, male

Standard Accessories Gasket (Mild copper)

Both high and low temperatures Possible to measure absolute pressure

PHS-B series pressure transducers have the thin-film strain gage and temperature-compensating resistive membrane formed directly on the diaphragm by sputtering and photo-lithography, thereby enabling accurate temperature compensation even at high temperatures.

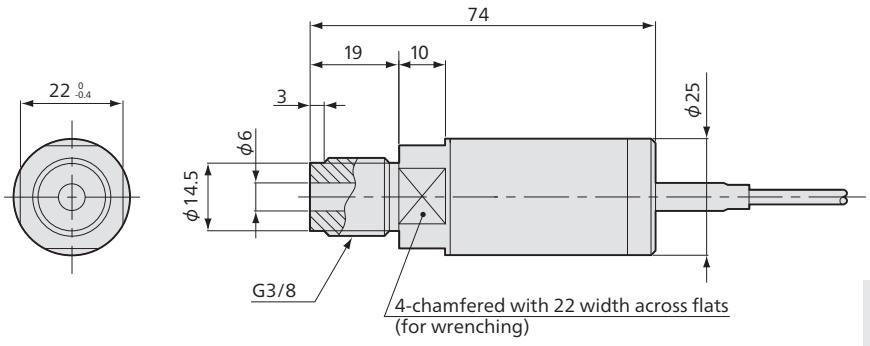
Models	Rated Capacity	Natural Frequencies (Approx.)
●PHS-B-200KP	200 $kPa_{abs.}$	5 kHz
●PHS-B-500KP	500 $kPa_{abs.}$	7 kHz
●PHS-B-1MP	1 $MPa_{abs.}$	20 kHz
●PHS-B-2MP	2 $MPa_{abs.}$	30 kHz
●PHS-B-5MP	5 $MPa_{abs.}$	50 kHz
●PHS-B-10MP	10 $MPa_{abs.}$	70 kHz
●PHS-B-20MP	20 $MPa_{abs.}$	100 kHz

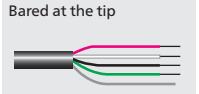
●For delivery date, please contact us.

To Ensure Safe Usage

The rated output may not satisfy its specification if using a dynamic strain amplifier with carrier-wave frequency 12 kHz or more, like DPM- 912B, 952A, 913C, 42B and 92A. Request us to calibrate the transducer in combination with the strain amplifier.

Dimensions

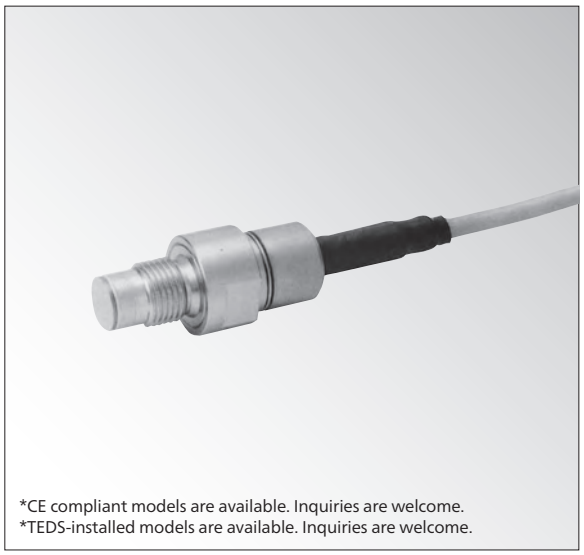




PHC-B

●Excellent heat resistance ●2 to 20 MPa

Flush Diaphragm Type High-temperature Pressure Transducer



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Heat-resistant sputter gages achieve pressure measurement at high-temperature

●Safe temperature: -30 to 240°C
●Heat-resistant sputter gages
●Flush diaphragm ensuring high frequency response
●Compact, flexible, and heat-resistant cable ensuring ease of use

To enable pressure measurement at high temperature, PHC-B series pressure transducers adopt thin-film strain gage formed by sputtering.
The sensor part is a flush diaphragm detecting pressure directly on a flat surface without pressure medium, thus enabling pressure measurement without missing momentary pressure changes.
In addition, the flush diaphragm makes these transducers suitable for measuring not only liquid or gas pressure but also pressure of highly viscous medium.
The small-sized design and flexible cable make them easy to use even in limited space.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.5% RO
Hysteresis	Within ±0.3% RO
Repeatability	0.2% RO or less
Rated Output	0.6 mV/V or more

Environmental Characteristics

Safe Temperature	-30 to 240°C (200°C with cable,
	-25 to 85°C with connector plug)
Compensated Temperature	23 to 230°C (200°C with cable,
	-25 to 85°C with connector plug)
Temperature Effect on Zero	Within ±0.03% RO/°C
Temperature Effect on Output	Within ±0.03%/°C

Electrical Characteristics

Safe Excitation	12 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	380 to 650 Ω
Output Resistance	380 to 650 Ω
Cable	4-conductor (0.08 mm²) fluoroplastic shielded cable,
	3.1 mm diameter by 3 m long, terminated with a connector plug
	PRC03-12A10-7M
	(Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	150%
Natural Frequencies	See table below.
Material	Case: Stainless steel
	Liquid-contacting part: SUS 630
Weight	Approx. 70 g (Excluding cable)
Degree of Protection	IP62 (IEC 60529)
Mounting Screw	G1/8, male

Standard Accessories Gasket (Mild copper)

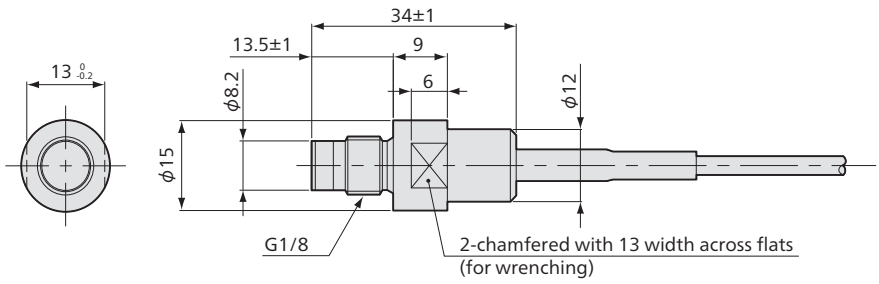
Models	Rated Capacity	Natural Frequencies (Approx.)
●PHC-B-2MP	2 MPa	45 kHz
●PHC-B-5MP	5 MPa	75 kHz
●PHC-B-10MP	10 MPa	85 kHz
●PHC-B-20MP	20 MPa	85 kHz

●For delivery date, please contact us.

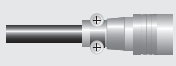
To Ensure Safe Usage

The rated output may not satisfy its specification if using a dynamic strain amplifier with carrier-wave frequency 12 kHz or more, like DPM- 912B, 952A, 913C, 42B and 92A. Request us to calibrate the transducer in combination with the strain amplifier.

Dimensions



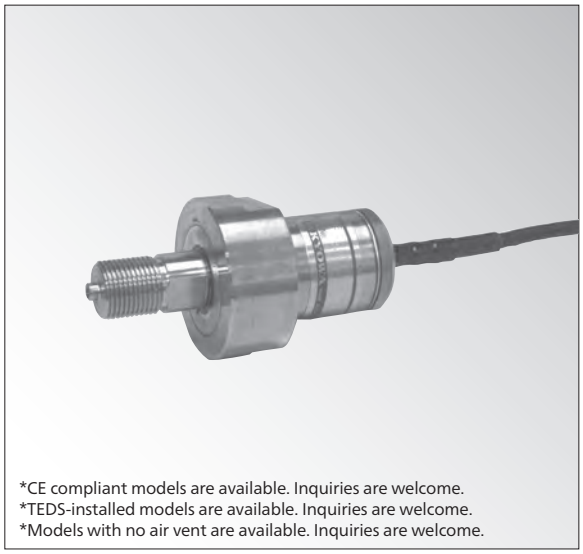
Connector plug
PRC03-12A10-7M



PHB-A

●-196 to 200°C ●1 to 50 MPa

High/Low-temperature Pressure Transducer



*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.
*Models with no air vent are available. Inquiries are welcome.

Suitable for pressure measurement of LPG/LNG tanks and gas or steam turbines

●Usable at both high and low temperatures
●Corrosion resistant
●Hermetically-sealed structure with inert gas filled in
●Highly reliable

PHB-A series is designed for pressure measurement from low to high temperatures. The sensor surface is made by stainless steel diaphragm and inert gas is filled in to increase reliability.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.4% RO
Hysteresis	Within ±0.4% RO
Repeatability	0.2% RO or less
Rated Output	2.2 mV/V ±15%

Environmental Characteristics

Safe Temperature	-196 to 210°C
	(Connector plug: -25 to 85°C)
Compensated Temperature	-196 to 200°C
	(Connector plug: -25 to 85°C)
Temperature Effect on Zero	Within ±0.03% RO/°C
Temperature Effect on Output	Within ±0.03%/°C
	(1MP: Within ±0.035%/°C)

Electrical Characteristics

Safe Excitation	15 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±2%
Output Resistance	350 Ω ±2%
Cable	4-conductor (0.3 mm²) fluoroplastic shielded cable,
	5 mm diameter by 3 m long, terminated with a connector plug
	PRC03-12A10-7M
	(Shield wire is connected to the case.)

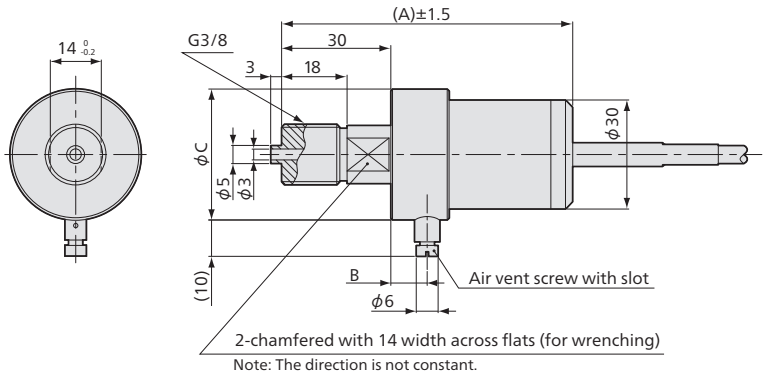
Mechanical Properties

Safe Overloads	120%
Natural Frequencies	See table below.
Material	Case: Stainless steel
	Liquid-contacting part: SUS 630
Weight	See table below.
Degree of Protection	IP51 (IEC 60529)
Mounting Screw	G3/8, male

Standard Accessories Gasket (Mild copper)

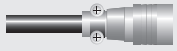
*Do not use PHB-A-20MP to PHB-A-50MP for endurace/fatigue tests.
*Avoid using for a long-term measurement of gas pressure if much importance is attached to the stability of output in a minute range.

■Dimensions



Note: The direction is not constant.

Connector plug
PRC03-12A10-7M



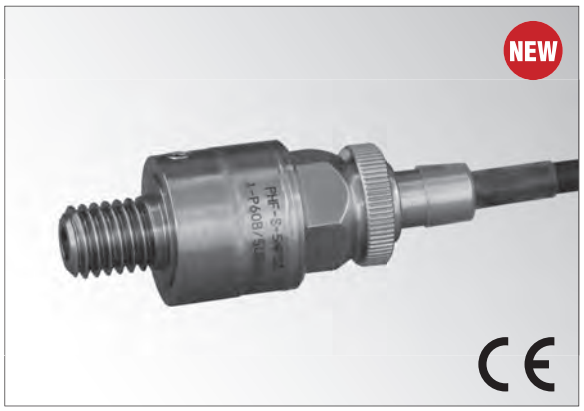
Models	Rated Capacity	(A)	B	ϕC	Natural Frequencies (Approx.)	Weight (Approx.)*
●PHB-A-1MP	1 MPa	80	10	36	8 kHz	230 g
●PHB-A-2MP	2 MPa				13 kHz	
●PHB-A-5MP	5 MPa	84	13	36	21 kHz	270 g
●PHB-A-10MP	10 MPa				29 kHz	
●PHB-A-20MP	20 MPa				40 kHz	
●PHB-A-30MP	30 MPa	84	13	46	45 kHz	360 g
●PHB-A-50MP	50 MPa				50 kHz	

●For delivery date, please contact us. *Excluding cable

PHF-S-S3 Series

●-40 to 150°C
●2 to 20 MPa

Small-sized High-temperature Pressure Transducer



Excellent ability for resisting the special environment.

- Enable to reduce weight effect on measuring objects
- After removing the connector, enables to install in a limited space by a socket wrench

To Ensure Safe Usage

These models are designed for measuring oil pressure.
It is necessary to mount protection covers around the transducer for measuring air pressure.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.3% RO
Hysteresis	Within ±0.2% RO
Rated Output	Approx. 1.75 mV/V

Environmental Characteristics

Safe Temperature	-40 to 160°C (Connector plug: -25 to 85°C)
Compensated Temperature	-40 to 150°C (Connector plug: -25 to 85°C)
Temperature Effect on Zero	Within ±0.008% RO/°C
Temperature Effect on Output	Within ±0.01%/°C

Electrical Characteristics

Safe Excitation	5 V AC or DC
Recommended Excitation	1 to 2 V AC or DC
Input Resistance	350 Ω ±5%
Output Resistance	350 Ω ±5%
Insulation Resistance	500 MΩ (25 VDC) or more
Standard Cable	4-conductor (0.09 mm²) silicone shielded
(Optional Accessory)	cable, 3 mm diameter by 4 m long
	Sensor side: Special connector
	Measuring instrument side: PRC03-12A10-7M
	(Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	150%
Natural Frequencies	See table below.
Material	Liquid-contacting part: SUS 630
Weight	Approx. 20 g (Excluding cable)
Degree of Protection	IP45 (IEC 60529)
Mounting Screw	See table below.
Compliance	Directive 2011/65/EU, (EU)/2015/863 (10 restricted substances) (RoHS)

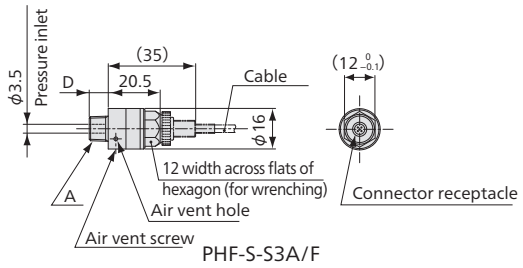
Standard Accessories: Hexagon wrench for air vent screw (Excluding PHF-S-△MPS3E)
O-ring AS568-010, fluororubber × 2 (PHF-S-△MPS3E)

Optional Accessories: Standard cable PHF-S-S3-J1

Models	Rated Capacity	Natural Frequencies (Approx.)
●PHF-S- 2MPS3□	2 MPa	45 kHz
●PHF-S- 5MPS3□	5 MPa	60 kHz
●PHF-S-10MPS3□	10 MPa	70 kHz
●PHF-S-20MPS3□	20 MPa	85 kHz

●For delivery date, please contact us.
*The □ comes from A to F stands different screws.

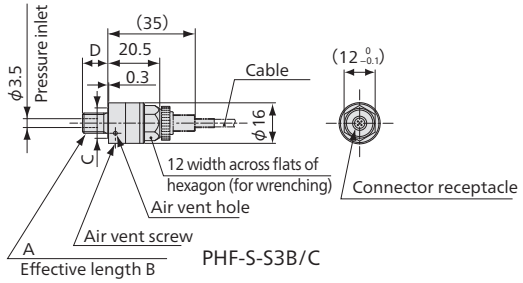
Dimensions



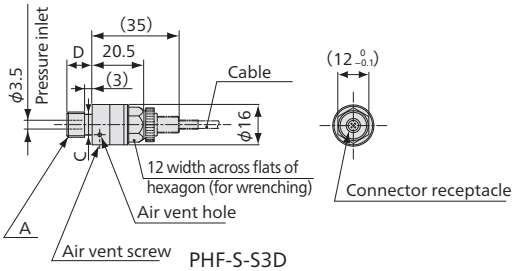
PHF-S-S3A/F

Models	A	B	C	D
PHF-S-△MPS3A	R1/8	–	–	7.5
PHF-S-△MPS3B	M8×1.25	8	ϕ12	10
PHF-S-△MPS3C	M10×1.25	10	ϕ14	12
PHF-S-△MPS3D	M10×1.0	–	ϕ8.2	10
PHF-S-△MPS3E	5/16-24UNF	–	ϕ6.3	10
PHF-S-△MPS3F	G1/8	–	–	9

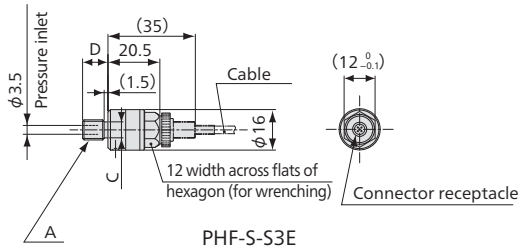
*△ means capacity of each model.



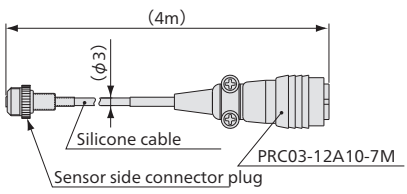
PHF-S-S3B/C



PHF-S-S3D

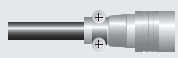


PHF-S-S3E



Standard cable (Optional accessories)

Connector plug
PRC03-12A10-7M



PGH-S-100MPSA17

Large-capacity Pressure Transducer

- Small-sized large capacity
- Usable at high-temperature
- 100 MPa

Specifications

Performance

Rated Capacity	100 MPa
Nonlinearity	Within ±0.3% RO
Hysteresis	Within ±0.2% RO
Rated Output	Approx. 1 mV/V

Environmental Characteristics

Safe Temperature	-40 to 150°C
Compensated Temperature	-20 to 150°C
Temperature Effect on Zero	±0.03% RO/°C
Temperature Effect on Output	±0.05%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 5 V AC or DC
Input Resistance	550 ±150 Ω
Output Resistance	450 ±100 Ω
Cable	Fluoroplastic shielded cable, 3 mm diameter by 4 m long
	Sensor side: MR01-P4F
	Measuring instrument side: PRC03-12A10-7M
	(Shield wire is not connected to the case.)

Mechanical Properties

Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 40 g (Excluding cable)
Mounting Screw	M12, P=1
Degree of Protection	IP64 (IEC 60529)
	(When connector is fastened to the transducer.
	The connector to measuring instrument is not
	waterproofness.)

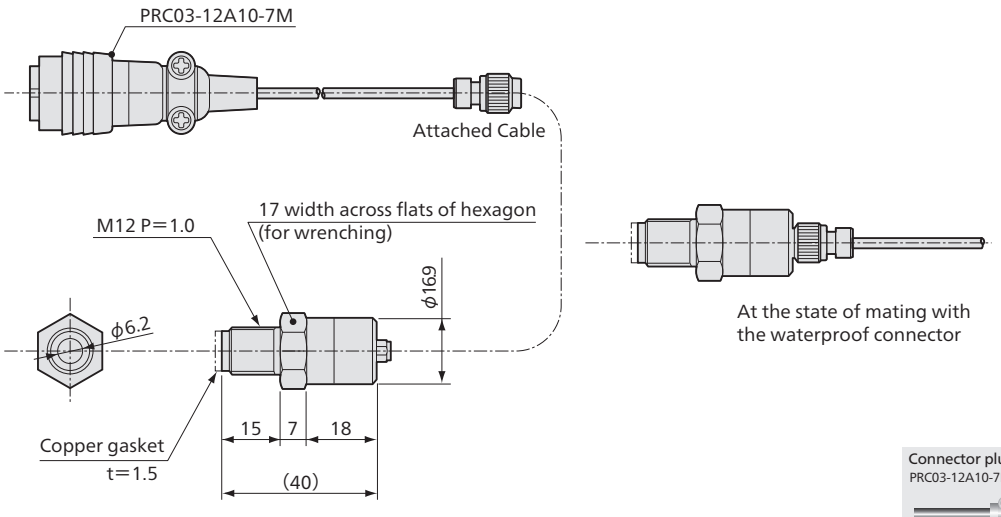
- For delivery date, please contact us.

Standard Accessories Gasket (Mild copper)

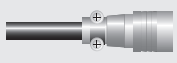
Small-sized large-capacity transducer
Usable at high temperature

- Small Φ20x40 (Including 15 long screw portion)
- Usable at high temperature (150˚C) and large capacity (100 MPa)
- Safe design with just one SUS body without welded part.
- Removable cable
- Degree of protection IP64 (After connecting the connector)
- Mounting screw (M12, P=1)

Dimensions



Connector plug
PRC03-12A10-7M



PGH-S-SA19

Large-capacity Pressure Transducer

- Large capacity
- 250 & 300 MPa

Specifications

Performance

Rated Capacity	See table below
Nonlinearity	±0.4% RO
	(250MPSA19: ±0.2% RO)
Hysteresis	±0.4% RO
	(250MPSA19: ±0.2% RO)
Rated Output	Approx. 0.5 mV/V

Environmental Characteristics

Safe Temperature	-10 to 70°C
Compensated Temperature	0 to 60°C
Temperature Effect on Zero	±0.05% RO/°C
Temperature Effect on Output	±0.05%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 5 V AC or DC
Input Resistance	550 ±150 Ω
Output Resistance	450 ±100 Ω
Cable	Chloroprene cable, 7.6 mm diameter by 5 m long
	Sensor side: 1108-12A10-7F
	Measuring instrument side: PRC03-12A10-7M
	(Shield wire is not connected to the case.)

Mechanical Properties

Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 210 g (Excluding cable)
Mounting Screw	G1/2, male

Standard Accessories Gasket (Mild copper)

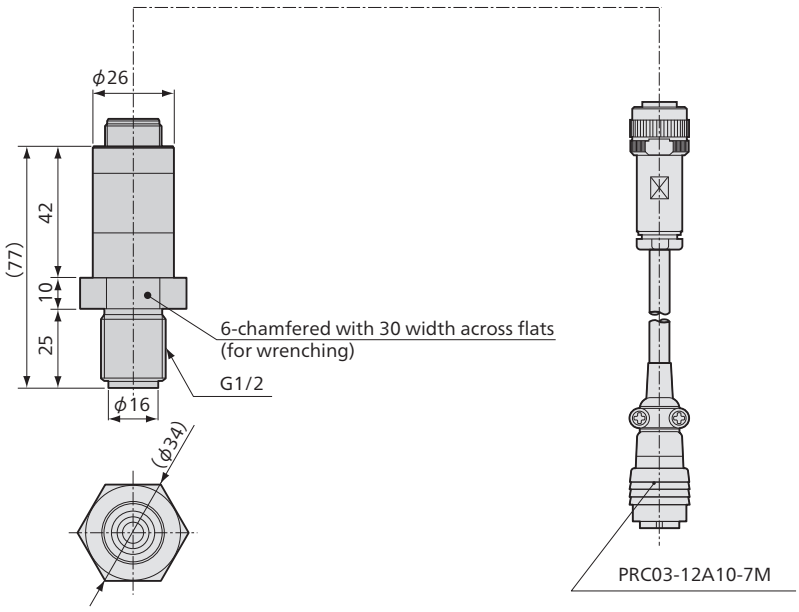
Large-capacity pressure transducer

- For large capacity
- Safe design with just one SUS body without welded part.
- Removable cable
- Mounting screw (G1/2)

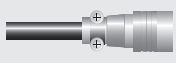
Models	Rated Capacity
●PGH-S-250MPSA19	250 MPa
●PGH-S-300MPSA19	300 MPa

●For delivery date, please contact us.

■Dimensions



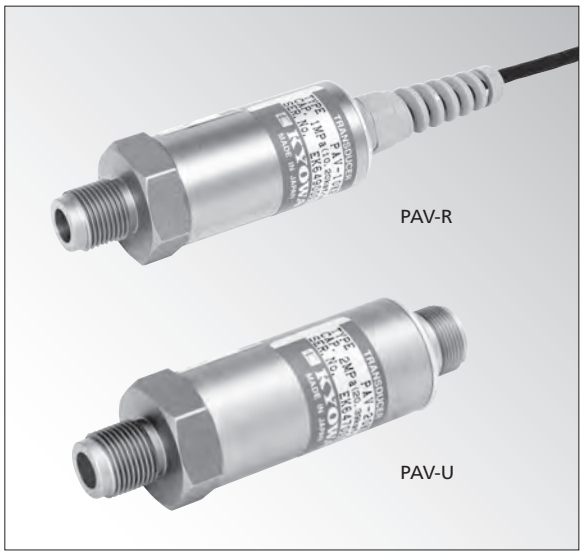
Connector plug
PRC03-12A10-7M



PAV-R/U

- Highly resistant against noise during transmission
- 1 to 50 MPa

Voltage-output Pressure Transducer



Suitable for pressure measurements of industrial equipments and distant pressure measurement by cable extension

- Voltage output in a range of 0 to 5 V
- Noise resistant
- High safe overloads (200%)
- Suitable for industrial equipment/pressure control system
- Wide range of rated capacities

PAV-R/U pressure transducers have dedicated built-in amplifier and output voltage signals from 0 to 5 V. There is no connection by welding in pressure sensor section. The built-in amplifier adopts unique hybrid IC to reduce numbers of components resulting in increasing reliability. Because built-in amplifier amplifies detected slight voltage in transmission, amplified voltage signals have high resistance against noises, such as inductive interference, and ensure high accuracy.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.2% RO
Hysteresis	Within ±0.2% RO
Voltage Output	0 to 5 V

Environmental Characteristics

Safe Temperature	-20 to 80°C
Compensated Temperature	-20 to 70°C
Temperature Effect on Zero	Within ±0.03% RO/°C
Temperature Effect on Output	Within ±0.02%/°C

Electrical Characteristics

SN Ratio	50 dB or more
Load Resistance	1 kΩ or more
Cutoff Frequencies of AMP	1 kHz (Amplitude ratio at cutoff point -3 ± 1 dB)
Power Supply	12 VDC (10.5 to 15 V), 30 mA or less
Cable	PAV-R: 4-conductor (0.18 mm²) vinyl shielded cable,
	4.6 mm diameter by 3 m long, bared at the tip
	PAV-U: 4-conductor (0.3 mm²) chloroprene shielded cable,
	7.6 mm diameter by 3 m long
	Sensor side: Terminated with a waterproof connector plug
	1108-12A10-7F
	Measuring instrument side: Bared at the tip
	(Shield wire is not connected to the case.)

Mechanical Properties

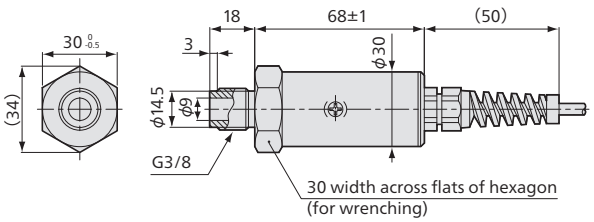
Safe Overloads	200%
Material	Case: Stainless steel (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 200 g (Excluding cable)
Degree of Protection	IP52 (IEC 60529)
Mounting Screw	G3/8, male

Standard Accessories Gasket (Mild copper)

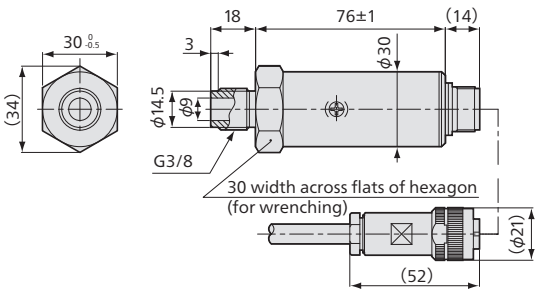
Cable Integrated Type	Connector Type	Rated Capacity
●PAV-10KR	●PAV-10KU	1 MPa
●PAV-50KR	●PAV-50KU	5 MPa
●PAV-100KR	●PAV-100KU	10 MPa
●PAV-200KR	●PAV-200KU	20 MPa
●PAV-300KR	●PAV-300KU	30 MPa
●PAV-500KR	PAV-500KU	50 MPa

●For delivery date, please contact us.

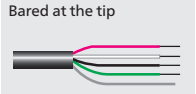
Dimensions



PAV-R



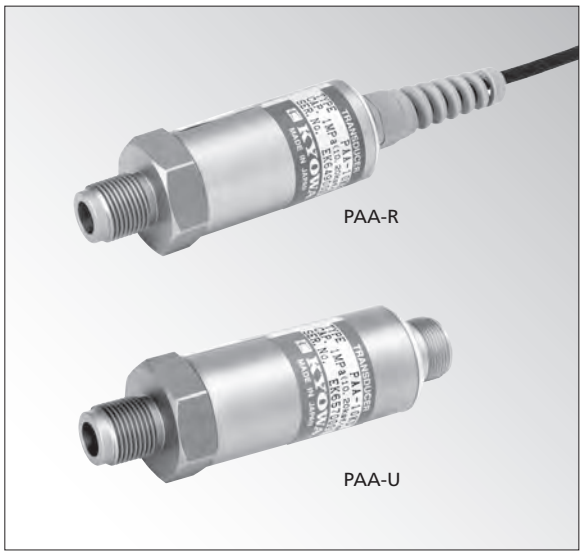
PAV-U



PAA-R/U

●Highly resistant against noise during transmission
●500 kPa to 50 MPa

Current-output Pressure Transducer



Suitable for pressure measurements of industrial equipments and distant pressure measurement by cable extension

●Current output in a range of 4 to 20 mA
●Noise resistant
●High safe overloads (200%)
●Suitable for industrial equipment/pressure control system
●Wide range of rated capacities

PAA-R/U pressure transducers have dedicated built-in amplifier and output current signals from 4 to 20 mA. There is no connection by welding in pressure sensor section. The built-in amplifier adopts unique hybrid IC to reduce numbers of components resulting in increasing reliability. Because built-in amplifier amplifies detected slight voltage in transmission, amplified signals have high resistance against noises, such as inductive interference, and ensure high accuracy.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.2% RO
Hysteresis	Within ±0.2% RO
Current Output	4 to 20 mA

Environmental Characteristics

Safe Temperature	-20 to 80°C
Compensated Temperature	-20 to 70°C
Temperature Effect on Zero	Within ±0.03% RO/°C
Temperature Effect on Output	Within ±0.02%/°C

Electrical Characteristics

SN Ratio	50 dB or more
Load Resistance	0 to 500 Ω
Cutoff Frequencies of AMP	1 kHz (Amplitude ratio at cutoff point -3 ± 1 dB)
Power Supply	24 VDC (21 to 30 V), 30 mA or less
Cable	PAA-R: 4-conductor (0.18 mm²) vinyl shielded cable,
	4.6 mm diameter by 3 m long, bared at the tip (use 3 conductors only)
	PAA-U: 4-conductor (0.3 mm²) chloroprene shielded cable,
	7.6 mm diameter by 3 m long
	Sensor side: Terminated with a waterproof connector plug
	1108-12A10-7F
	Measuring instrument side: Bared at the tip (use 3 conductors only)
	(Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	200%
Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 200 g (Excluding cable)
Degree of Protection	IP64 (IEC 60529)
Mounting Screw	G3/8, male

Standard Accessories: Gasket (Mild copper)

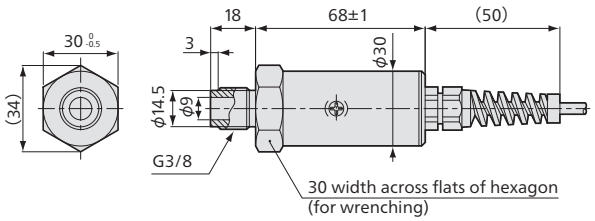
Cable Integrated Type	Connector Type	Rated Capacity
●PAA-5KR	●PAA-5KU	500 kPa
●PAA-10KR	●PAA-10KU	1 MPa
●PAA-20KR	●PAA-20KU	2 MPa
●PAA-50KR	●PAA-50KU	5 MPa
●PAA-100KR	●PAA-100KU	10 MPa
●PAA-200KR	●PAA-200KU	20 MPa
●PAA-300KR	●PAA-300KU	30 MPa
●PAA-500KR	●PAA-500KU	50 MPa

●For delivery date, please contact us.

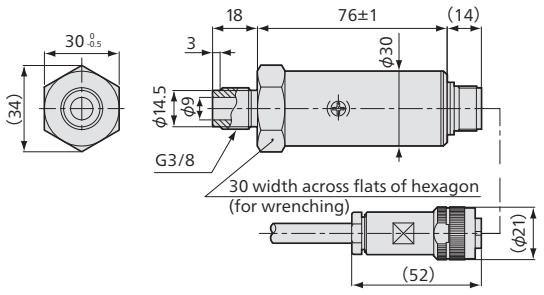
To Ensure Safe Usage

When using the UCAM-60C M14 in voltage mode, use a 250 Ω resistor to convert data to voltage.

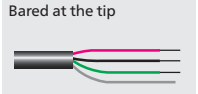
■Dimensions



PAA-R



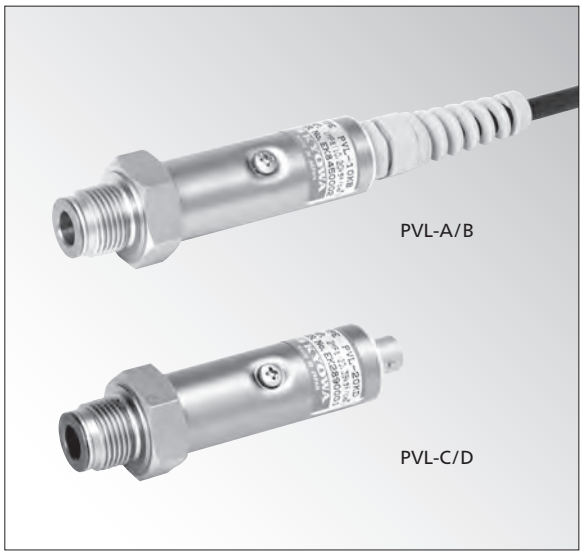
PAA-U



PVL

●Output 0 to 5 V, 1 to 5 V ●500 kPa to 50 MPa

Voltage-output Pressure Transducer



Excellent noise resistance type with a built-in amplifier

●Voltage output in a range of 0 to 5 V or 1 to 5 V
●High frequency response
●Compact & lightweight
●Applicable to highly viscous pressure medium
●Wide range of rated capacities
●Built-in negative power supply achieves to indicate 0 V output as true 0 V (PVL-B/D)

PVL series pressure transducers detect pressures by strain gage and then amplify these slight voltage signals by a built-in amplifier. The pressure sensor part is simply integrated structure and has high reliability. Also, the amplifier is fully tuned. Therefore, PVL series provide high vibration resistant, environmental resistance and stability.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.3% RO (5 to 20K: Within ±0.5% RO)
Hysteresis	Within ±0.3% RO (5 to 20K: Within ±0.5% RO)
Voltage Output	PVL-A/C: 1 to 5 V
	PVL-B/D: 0 to 5 V

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	-10 to 60°C
Temperature Effect on Zero	Within ±0.03% RO/°C
	(5 to 20K: Within ±0.05% RO/°C)
Temperature Effect on Output	Within ±0.03%/°C
	(5 to 20K: Within ±0.05%/°C)

Electrical Characteristics

SN Ratio	50 dB or more
Load Resistance	1 kΩ or more
Frequency Response (Built-in Amplifier)	DC to 1 kHz
	(Sensitivity deviation: ±10%)
Power Supply	12 VDC (10.5 to 15 V), 30 mA or less
Cable	PVL-A/B: 4-conductor (0.14 mm²) chloroprene shielded cable,
	6 mm diameter by 30 cm long, bared at the tip
	PVL-C/D: 4-conductor (0.18 mm²) vinyl shielded cable,
	4.6 mm diameter by 3 m long
	Sensor side: Terminated with a connector plug R06-P5F
	Measuring instrument side: Bared at the tip
	(Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	150%
Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 110 g (Excluding cable)
Degree of Protection	IP52 (IEC 60529)
Mounting Screw	G3/8, male

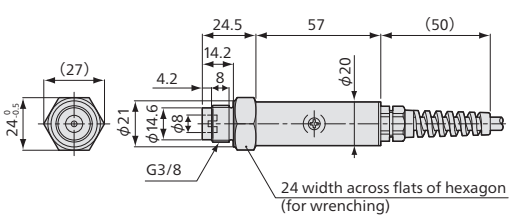
Standard Accessories Gasket (Mild copper)

For every rated capacity, mechanical natural frequency is the same as PGM-H (page 2-88).

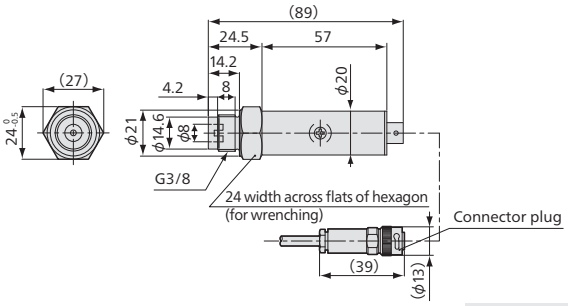
Models				Rated Capacity
Cable Integrated Type		Connector Type		
1 to 5V output	0 to 5V output	1 to 5V output	0 to 5V output	
●PVL-5KA	●PVL-5KB	●PVL-5KC	●PVL-5KD	500 kPa
●PVL-10KA	●PVL-10KB	●PVL-10KC	PVL-10KD	1 MPa
●PVL-20KA	●PVL-20KB	●PVL-20KC	●PVL-20KD	2 MPa
●PVL-50KA	●PVL-50KB	●PVL-50KC	●PVL-50KD	5 MPa
●PVL-100KA	●PVL-100KB	●PVL-100KC	●PVL-100KD	10 MPa
●PVL-200KA	●PVL-200KB	●PVL-200KC	●PVL-200KD	20 MPa
●PVL-300KA	●PVL-300KB	●PVL-300KC	●PVL-300KD	30 MPa
●PVL-500KA	●PVL-500KB	●PVL-500KC	●PVL-500KD	50 MPa

●For delivery date, please contact us.

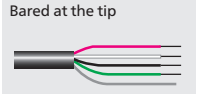
■Dimensions



PVL-A/B



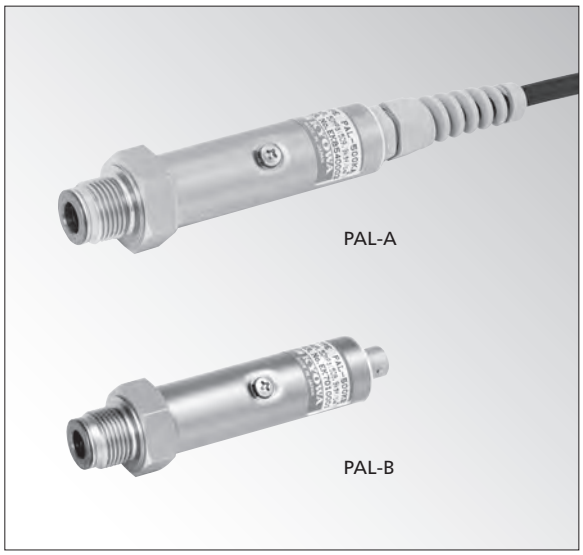
PVL-C/D



PAL

●Output 4 to 20 mA ●500 kPa to 50 MPa

Current-output Pressure Transducer



Excellent noise resistance type with a built-in amplifier

- ●Current output in a range from 4 to 20 mA
- ●High frequency response
- ●Compact & lightweight
- ●Applicable to highly viscous pressure medium
- ●Various capacity range

PAL series pressure transducers amplify detected slight signals by a built-in amplifier and then transmit amplified signals in current. The pressure sensor part is simply integrated structure and has high reliability. Also, the amplifier is fully tuned. Therefore, PAL series not only provide high vibration resistant, environmental resistance and stability but also measure data without adjustment.

To Ensure Safe Usage

When using the UCAM-60C M14 in voltage mode, use a 250 Ω resistor to convert data to voltage.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.3% RO
	(5 to 20K: Within ±0.5% RO)
Hysteresis	Within ±0.3% RO
	(5 to 20K: Within ±0.5% RO)
Current Output	4 to 20 mA

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	-10 to 60°C
Temperature Effect on Zero	Within ±0.03% RO/°C
	(5 to 20K: Within ±0.05% RO/°C)
Temperature Effect on Output	Within ±0.03%/°C
	(5 to 20K: Within ±0.05%/°C)

Electrical Characteristics

SN Ratio	50 dB or more
Load Resistance	0 to 500 Ω
Frequency Response (Built-in Amplifier)	DC to 1 kHz
	(Sensitivity deviation: ±10%)
Power Supply	24 VDC (21 to 30 V), 30 mA or less
Cable	PAL-A: 4-conductor (0.14 mm²) chloroprene shielded cable,
	6 mm diameter by 30 cm long, bared at the tip (use 3 conductors only)
	PAL-B: 4-conductor (0.18 mm²) vinyl shielded cable,
	4.6 mm diameter by 3 m long
	Sensor side: Terminated with a connector plug R06-P5F
	Measuring instrument side: Bared at the tip
	(use 3 conductors only)
	(Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	150%
Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 85 g (Excluding cable)
Degree of Protection	IP52 (IEC 60529)
Mounting Screw	G3/8, male

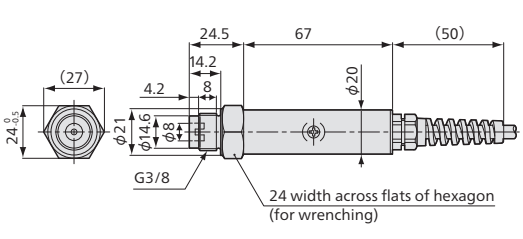
Standard Accessories Gasket (Mild copper)

For every rated capacity, mechanical natural frequency is the same as PGM-H (page 2-88).

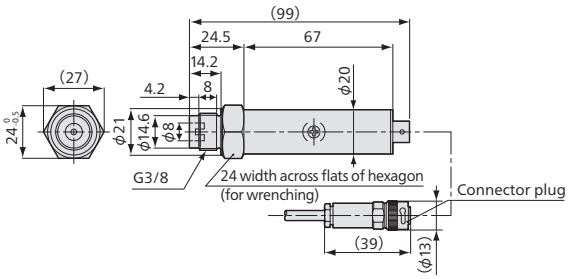
Models		Rated Capacity
Cable Integrated Type	Connector Type	
●PAL-5KA	●PAL-5KB	500 kPa
●PAL-10KA	●PAL-10KB	1 MPa
●PAL-20KA	●PAL-20KB	2 MPa
●PAL-50KA	●PAL-50KB	5 MPa
●PAL-100KA	●PAL-100KB	10 MPa
●PAL-200KA	●PAL-200KB	20 MPa
●PAL-300KA	●PAL-300KB	30 MPa
●PAL-500KA	●PAL-500KB	50 MPa

●For delivery date, please contact us.

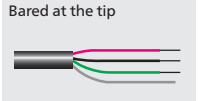
■Dimensions



PAL-A



PAL-B



PAG-2KA

●Excellent in reliability & stability
●200 kPa

Highly Stable Current-output Pressure Transducer

Excellent reliability & stability Fine resolution

●Excellent reliability
●Excellent stability
●Fine resolution
●Current output in a range from 4 to 20 mA
●Noise resistant

PAG-2KA series pressure transducers are stable and their sensor part is designed to be highly stable. Also, inert gas is sealed hermetically in sensor part, ensuring excellent reliability and stability for long-term.
The built-in amplifier is composed of highly-selected reliable components and be fully tuned to provide high-frequency radio noise resistance. Therefore, PAG-2KA series achieves reliable, stable, and high noise resistant measurements.

Specifications

Performance

Rated Capacity	200 kPa
Nonlinearity	Within ±0.1% RO
Hysteresis	Within ±0.2% RO
Current Output	4 to 20 mA

Environmental Characteristics

Safe Temperature	-20 to 75°C
Compensated Temperature	-20 to 70°C
Temperature Effect on Zero	Within ±0.03% RO/°C
Temperature Effect on Output	Within ±0.01%/°C
Zero Stability	Within ±0.5% RO/year

Electrical Characteristics

SN Ratio	60 dB or more
Load Resistance	0 to 500 Ω
Cutoff Frequencies of AMP	650 Hz (Amplitude ratio at cutoff point -3 ± 1 dB)
Power Supply	24 VDC (21 to 30 V), 30 mA or less
Cable	4-conductor (0.3 mm²) chloroprene shielded cable,
	7.6 mm diameter by 5 m long
	Sensor side: Terminated with a waterproof connector plug
	1108-12A10-7F
	Measuring instrument side: Bared at the tip (Use 3 conductors only.)
	(Shield wire is not connected to the case.)

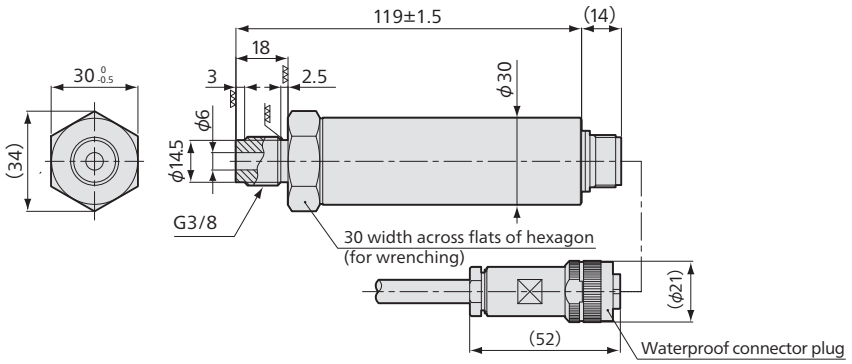
Mechanical Properties

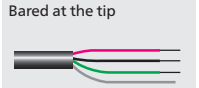
Safe Overloads	150%
Material	Case: SUS (Metallic finish)
	Liquid-contacting part: SUS 630
Weight	Approx. 270 g (Excluding cable)
Degree of Protection	IP62 (IEC 60529)
Mounting Screw	G3/8, male

●For delivery date, please contact us.

Standard Accessories Gasket (Mild copper)

■Dimensions



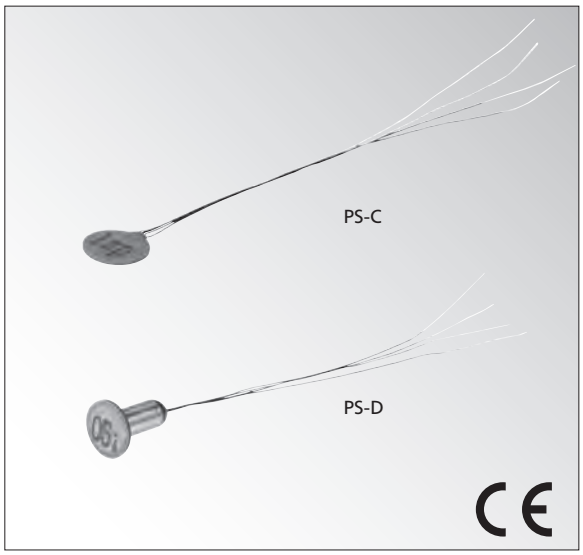


Pressure Transducers
Outline
General
High temp. Low temp.
Absolute pressure High pressure
Pressure transmitter
Differential pressure
Distributed pressure

PS

Miniature Pressure Sensor

●Ultra-thin
●50 kPa to 7 MPa



Ultra-thin & compact design
Wide range of rated capacity

PS series pressure transducers have a bridge of strain gages inside, achieving ultra-thin compact structure. They are installed by adhesives. They are suitable for distributed pressure measurement by using multiple units.

(Note 1) Copper alloy is used for sensing element. Avoid measuring corrosive liquid or gas.
(Note 2) Epoxy adhesive has been used to assemble the liquid contacting section. Avoid measuring organic solvent (toluene, ketone, etc.).
(Note 3) Measuring liquids of 20 to 70K are limited to oil.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
Hysteresis	Within ±1% RO
Rated Output	1 mV/V ±20%
	05KC, D: 0.25 mV/V or more
	1KC, D: 0.5 mV/V or more
	2KC, D: 0.85 mV/V ±30%
Note: Rated output is sorted to one of the classes divided by every 2% difference in output value. Since the rated output stated in the Test Data Sheet is the center value of the class, it may include a maximum error of ±1%.	

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	0 to 50°C
Temperature Effect on Zero	Within ±0.2% RO/°C
	(05K: Within ±0.8% RO/°C)
	(1K: Within ±0.4% RO/°C)
	(2K: Within ±0.3% RO/°C)
Temperature Effect on Output	Within ±0.2%/°C
	(05K to 2K: Within ±0.3%/°C)

Electrical Characteristics

Safe Excitation	3 V AC or DC
Recommended Excitation	1 to 2 V AC or DC
Input Resistance	350 Ω ±10%
Output Resistance	350 Ω ±10%
Cable	Polyurethane coated copper wires, 0.1 mm diameter by 5 cm long (red, brown, black, green each), pre-soldering at the tip
	05KD, 1KD: Polyurethane coated copper wires, 0.08 mm diameter by 5 cm long (red, brown, black, green each), pre-soldering at the tip

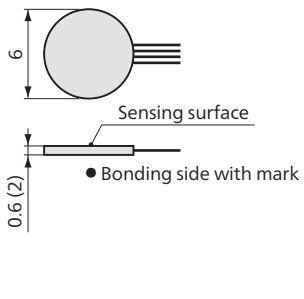
Mechanical Properties

Safe Overloads	150% (100% with 70K M2)
Natural Frequencies	See table below.
Weight	Approx. 0.5 g (Excluding cable)
Material	Metallic finish
Dedicated Adhesive	RC-19 (Request the RC-19 when ordering the transducer.)
Compliance	Directive 2011/65/EU, (EU)/2015/863 (10 restricted substances) (RoHS)

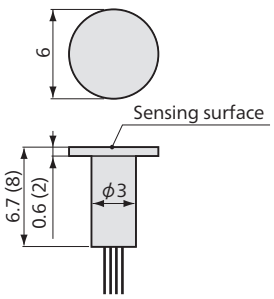
Models		Rated Capacity	Natural Frequencies (Approx.)
Cable Direction to Sensing Surface			
Horizontal	Vertical		
PS-05KC	**●PS-05KD**	50 kPa	10 kHz
●PS-1KC	**●PS-1KD**	100 kPa	10 kHz
●PS-2KC	**●PS-2KD**	200 kPa	14 kHz
PS-5KC	**●PS-5KD**	500 kPa	20 kHz
PS-10KC	**●PS-10KD**	1 MPa	37 kHz
●PS-20KC M2	**●PS-20KD M2**	2 MPa	46 kHz
●PS-30KC M2	**●PS-30KD M2**	3 MPa	58 kHz
●PS-50KC M2	**●PS-50KD M2**	5 MPa	71 kHz
●PS-70KC M2	**●PS-70KD M2**	7 MPa	86 kHz

●For delivery date, please contact us.

■Dimensions



PS-C



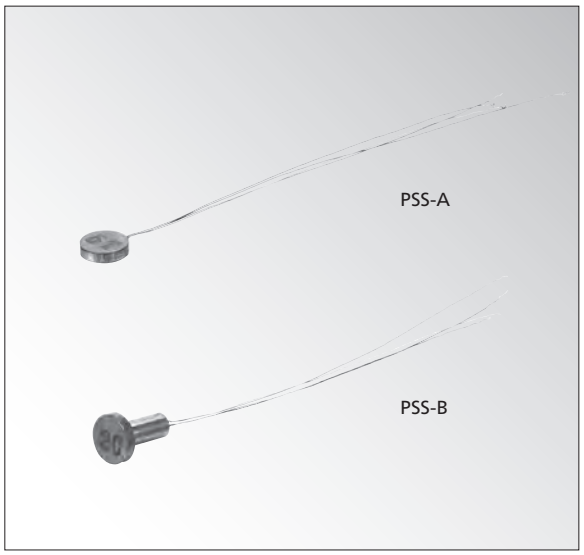
PS-D

Figures in parentheses are for 2 to 7 MPa.

PSS

Miniature Pressure Sensor

●Ultra-small
●20 to 100 kPa



Ultra-small & lightweight design with small rated capacities

PSS series pressure transducers have a bridge of strain gages inside, achieving ultra-thin compact structure. A thin-film strain gage is directly formed on a diaphragm by sputtering and photo lithography. PSS transducers are installed by adhesives and developed mainly for gas pressure measurement.

(Note 1) Copper alloy is used for sensing element. Avoid measuring corrosive liquid or gas.
(Note 2) An epoxy adhesive is used to assemble the sensing element. Therefore, avoid using the sensor to measure organic solvents (Toluene, ketone, etc.)
(Note 3) It should not be used under high temperature and high humidity environments for a long time.
(Note 4) It should not be used under water.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±3% RO (02K), ±1% RO (05K, 1K)
Hysteresis	Within ±3% RO (02K), ±1% RO (05K, 1K)
Rated Output	1 mV/V or more
	02KAF, BF: 0.75 mV/V or more
Note: Rated output is sorted to one of the classes divided by every 2% difference in output value. Since the rated output stated in the Test Data Sheet is the center value of the class, it may have a maximum error of ±1%.	

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	0 to 50°C (Non-condensing)
Temperature Effect on Zero	Within ±0.8% RO/°C (05K, 1K)
	Within ±0.6% RO/°C (02K)
Temperature Effect on Output	Within ±0.3%/°C
	(02KAF, BF: Within ±0.5%/°C)

Electrical Characteristics

Safe Excitation	4 V AC or DC
Recommended Excitation	1 to 2 V AC or DC
Input Resistance	350 to 1000 Ω
Output Resistance	350 to 1000 Ω
Cable	Polyurethane coated copper wires, 0.08 mm diameter by 5 cm long × 3 (red, brown, blue each), 6 cm long × 1 (green), pre-soldering at the tip

Mechanical Properties

Safe Overloads	150%
Natural Frequencies	See table below.
Weight	PSS-A: Approx. 0.15 g (Excluding cable)
	PSS-B: Approx. 0.3 g (Excluding cable)
Dedicated Adhesive	RC-19 (Request the RC-19 when ordering the transducer.)

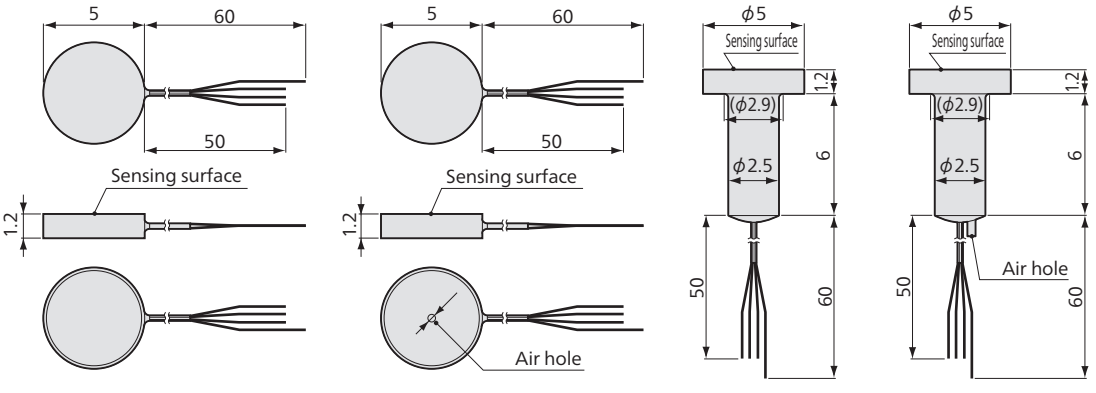
Models		Rated Capacity	Natural Frequencies (Approx.)	Remarks
Cable Direction to Sensing Surface				
Horizontal	Vertical			
●PSS-05KAE	●PSS-05KBE	50 kPa	18 kHz	Sealed type
●PSS-1KAE	●PSS-1KBE	100 kPa	31 kHz	
●PSS-02KAF	●PSS-02KBF	20 kPa	6 kHz	Atmospheric

●For delivery date, please contact us.

To Ensure Safe Usage

High-carrier-based dynamic strain amplifier DPM-912, 913 or 952 may not satisfy the specified rated output in some rare case. Use dynamic strain amplifier DPM-911, 951, signal conditioner CDV-900A or request us to calibrate the transducer in combination with the strain amplifier.

Dimensions

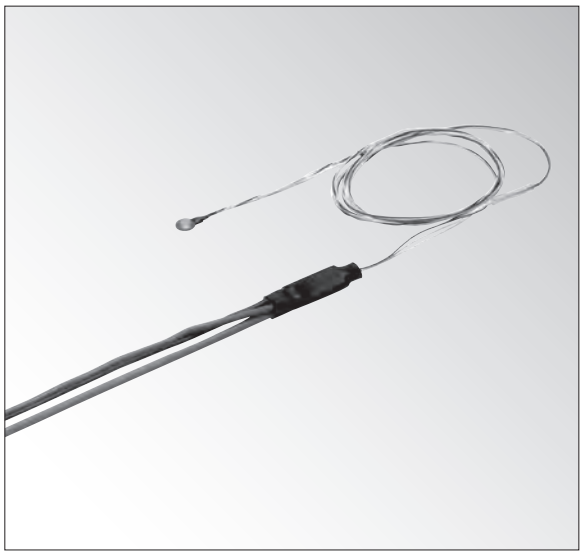


PSS-AE PSS-AF PSS-BE PSS-BF

PSM-AB

Miniature Pressure Sensor

●Kyowa's smallest pressure sensors
●100 & 200 kPa



Ultra-small sized pressure transducers with strong fluoroplastic coated cable

●The bridge adapter is provided.

PSM-AB series are the smallest pressure sensors in Kyowa's products designed based on integration of sensor element and diaphragm. This sensor adopts quarter-bridge 3-wire system and configures a full bridge in a bridge adapter. In addition, this sensor is installed by adhesives. Developed mainly for gas pressure measurement, PSM-AB series allow denser points than conventional transducers to be measured.

(Note 1) Copper alloy is used for sensing element. Avoid measuring corrosive liquid or gas.
(Note 2) The mainframe has been assembled using an epoxy adhesive. Do not therefore use the transducer to measure organic solvent. (e.g. Toluene, ketone and others)

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
Hysteresis	Within ±1% RO
Rated Output	PSM-1KAB: 0.275 mV/V ±25%
	PSM-2KAB: 0.38 mV/V ±25%
Note: Rated output is sorted to one of the classes divided by every 0.007 mV/V difference in output value. Since the rated output stated in the Test Data Sheet is the center value of the class, it may have a maximum error of ±0.0035 mV/V.	

Environmental Characteristics

Safe Temperature	-20 to 70°C
Compensated Temperature	0 to 50°C
Temperature Effect on Zero	Within ±0.5% RO/°C
	(PSM-1KAB: Within ±1% RO/°C)
Temperature Effect on Output	Within ±0.3%/°C

Electrical Characteristics

Safe Excitation	5 V AC or DC
Recommended Excitation	1 to 2 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω ±1%
Cable	Sensor side: 3-conductor fluoroplastic coated cable, 0.25 mm diameter by 50 cm long
	Measuring instrument side: 4-conductor vinyl coated cable, 1.3 mm diameter by 15 cm long, bared at the tip (Shield wire is not connected to the case.)

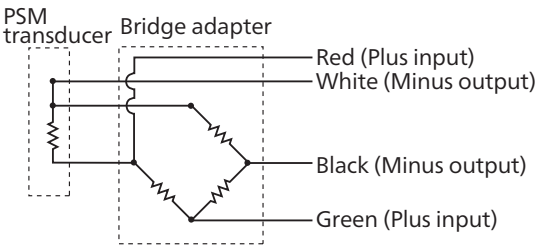
Mechanical Properties

Safe Overloads	150%
Weight	Approx. 0.5 g (Including cable but not bridge adapter)
Degree of Protection	IP61 (IEC 60529) (Excluding bridge adapters)
Dedicated Adhesive	RC-19 (Request the RC-19 when ordering the transducer.)

Models	Rated Capacity	Natural Frequencies (Approx.)	Remarks
●PSM-1KAB	100 kPa	3 kHz	Bridge adapter Attached standard
●PSM-2KAB	200 kPa	3 kHz	

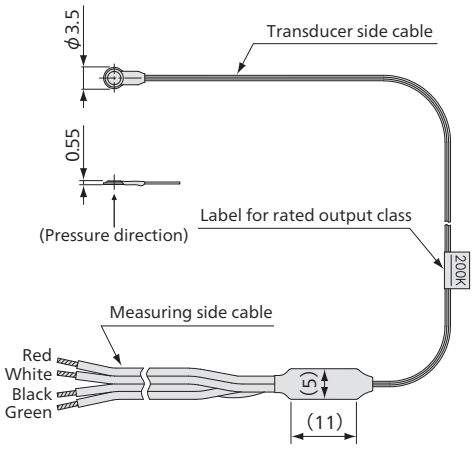
●For delivery date, please contact us.

■Circuit Diagram



PSM-AB (Full bridge system)

■Dimensions



PDS-A

●For wind pressure measurement ●1 to 7 kPa

Minute Differential Pressure Transducer

*TEDS installation not possible.

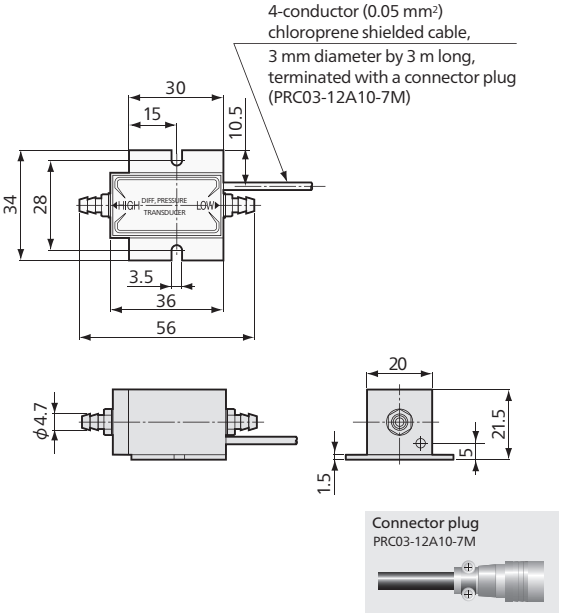
For wind pressure measurement

●High frequency response
●Highly accurate
●High sensitivity
●Noise resistant
●Compact & lightweight

PDS-A series pressure transducers have diffusional semiconductor strain gages on a silicone diaphragm. PDS-A transducers detect pressures as resistance variation and then convert this variation to electrical signals. These signals are indicated by Kyowa's signal conditioners.

(Note 1) Use the transducer with general air
(Note 2) If water or any other liquid enters the low side, the transducer gets out of order.

■Dimensions



Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.5% RO
	(25GA: Within ±0.7% RO)
Hysteresis	Within ±0.3% RO
Rated Output	13 to 23 mV
	(10GA: 7 to 23 mV)
Rated Output Accuracy	Within ±1.0% RO
	(Sensitivity error due to loaddirection)
	(50GA: Within ±1.5% RO)
	(70GA: Within ±2.0% RO)

Environmental Characteristics

Safe Temperature	-20 to 70°C
Safe Humidity	20 to 85% (At 0 to 50°C)
Compensated Temperature	0 to 50°C
Temperature Effect on Zero	Within ±0.08% RO/°C
	(10GA: Within ±0.1% RO/°C)
Temperature Effect on Output	Within ±0.08%/°C
	(10GA: Within ±0.1%/°C)
Pressure Medium	General air (Non-corrosive gas)

Electrical Characteristics

Initial Unbalance	Within ±10 mV
Bridge Output Resistance	2 to 6 kΩ
Power Supply	10 VDC (9.5 to 15 V), 5 mA or less
	(Bridge power supply of strain measuring instrument may be used.)
Cable	4-conductor (0.05 mm²) chloroprene shielded cable, 3 mm diameter by 3 m long, terminated with a connector plug PRC03-12A10-7M (Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	300% (10GA: 600%)
Maximum Line Pressure	100 kPa
Natural Frequencies	Approx. 1.7 kHz
Weight	Approx. 40 g (Excluding cable)
Posture Effect	Zero drift: Within ±0.3% RO (10GA: Within ±0.8% RO) when inclined by 90° referring to horizontal condition
Internal Volume	High side: Approx. 0.2 x 10^{-6} m^3 (0.2 ml) Low side: Approx. 1 x 10^{-6} m^3 (1 ml)
Pressure Connection	4.7 mm diameter barb fitting

Models	Rated Capacity
●PDS-10GA	1 kPa
●PDS-25GA	2.5 kPa
●PDS-50GA	5 kPa
●PDS-70GA	7 kPa

●For delivery date, please contact us.

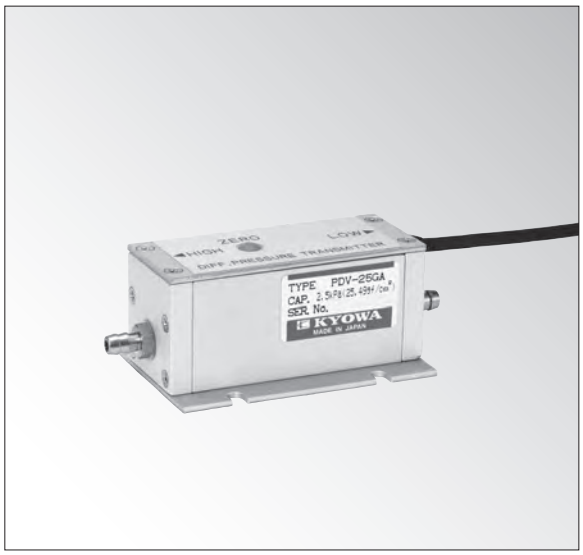
To Ensure Safe Usage

●Avoid dew condensation or freeze because the transducer is not drip-proof.
●If using as a gage pressure meter, apply pressure to the HIGH side, and open the LOW side to the atmosphere.
●For atmospheric observation, prepare piping to prevent rainwater from entering the pressure inlet.
●When using the bridge power supply of a strain amplifier, use a model (CDV-900A, WGA-710C) which supports 10 VDC.
●The suitable power supply is a series regulator type which generates less noise than the switching type.

PDV-A

●For wind pressure measurement
●1 to 7 kPa

Minute Differential Pressure Transducer



For wind pressure measurement Built-in amplifier

●High frequency response
●Highly accurate
●High sensitivity
●Noise resistant
●Voltage output of ±5 V
●Compact & lightweight

PDV-A series pressure transducers have diffusional semiconductor strain gages on a silicone diaphragm. PDV-A transducers detect pressures as resistance variation and then amplify this signal by built-in amplifier.

(Note 1) Use the transducer with general air.
(Note 2) If water or any other liquid enters the low-pressure line the transducer gets out of order.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.5% RO
	(25GA: Within ±0.7% RO)
Hysteresis	Within ±0.3% RO
Rated Output	5 V
Rated Output Accuracy	Within ±1.0% RO
	(Sensitivity error due to load direction)
	(50GA: Within ±1.5% RO)
	(70GA: Within ±2.0% RO)

Environmental Characteristics

Safe Temperature	-20 to 70°C
Safe Humidity	20 to 85% (At 0 to 50°C)
Compensated Temperature	0 to 50°C
Temperature Effect on Zero	Within ±0.08% RO/°C
	(10GA: Within ±0.1% RO/°C)
Temperature Effect on Output	Within ±0.08%/°C
	(10GA: Within ±0.1%/°C)
Pressure Medium	General air (Non-corrosive gas)

Electrical Characteristics

Load Resistance	5 kΩ or more
Power Supply	12 VDC (11 to 15 V), 30 mA or less
Cable	4-conductor (0.05 mm²) chloroprene shielded cable, 3 mm diameter by 3 m long, bared at the tip

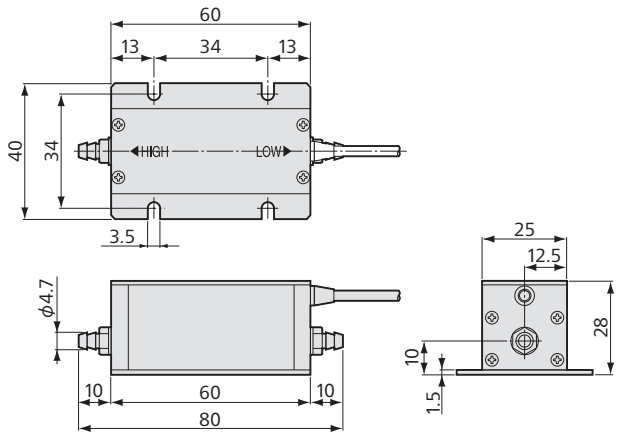
Mechanical Properties

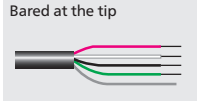
Safe Overloads	300% (10GA: 600%)
Maximum Line Pressure	100 kPa
Natural Frequencies	Approx. 1.7 kHz
Weight	Approx. 100 g (Excluding cable)
Posture Effect	Zero drift: Within ±0.3% RO
	(10GA: Within ±0.8% RO)
	when inclined by 90° referring to horizontal condition
Internal Volume	High side: Approx. 0.2 x 10^{-6} m³ (0.2 ml)
	Low side: Approx. 1 x 10^{-6} m³ (1 ml)
Pressure Connection	4.7 mm diameter barb fitting

Models	Rated Capacity
●PDV-10GA	1 kPa
●PDV-25GA	2.5 kPa
●PDV-50GA	5 kPa
●PDV-70GA	7 kPa

●For delivery date, please contact us.

■Dimensions





To Ensure Safe Usage

●Avoid dew condensation or freeze because the transducer is not drip-proof.
●When using for a pressure meter, apply pressure to the high side and open the low side to the atmosphere.
●For atmospheric observation, prepare piping to prevent rainwater from entering the pressure inlet.

PD-A

Differential Pressure Transducer

●Max. line pressure: 3 MPa
●10 to 200 kPa

*TEDS-installed models are available. Inquiries are welcome.

Wide line pressure margin and highly accurate

PD-A series pressure transducers allow slight differential pressure to be accurately measured. They are suitable for long-term measurements and measurements requiring high accuracy. Furthermore, they are for not only differential pressure measurement but also indication and control of automation systems based on characteristics of differential pressure sensor like flow rate measurement.

Note: Copper alloy is used for sensing element. Avoid measuring corrosive liquid or gas.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.3% RO
Hysteresis	Within ±0.2% RO
Rated Output	1.5 mV/V ±1%

Environmental Characteristics

Safe Temperature	-10 to 70°C
Compensated Temperature	0 to 60°C
Temperature Effect on Zero	Within ±0.01% RO/°C
	(100GA: Within ±0.05% RO/°C)
Temperature Effect on Output	Within ±0.03%/°C
	(100GA: Within ±0.5%/°C)

Electrical Characteristics

Safe Excitation	15 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω ±1%
Cable	4-conductor (0.3 mm²) chloroprene shielded cable,
	7.6 mm diameter by 5 m long, terminated with a connector plug
	PRC03-12A10-7M
	(Shield wire is connected to the case.)

Mechanical Properties

Safe Overloads	Differential Pressure 200% (100, 200GA)
	150% (500GA, 1KA)
	125% (2KA)
Natural Frequencies	See table below.
Maximum Line Pressure	3 MPa
Weight	Approx. 5 kg (Excluding cable)

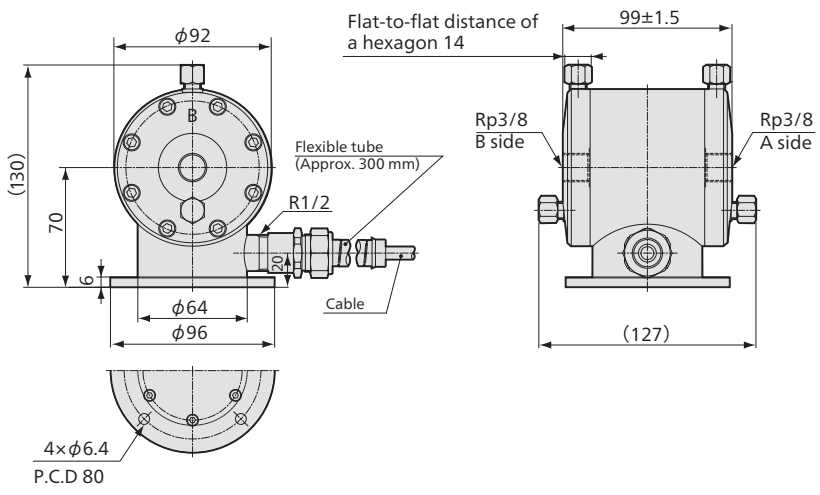
*To use for gas, contact us.

When A side is a high pressure, plus output.
When B side is a high pressure, minus output.
(For A-side and B-side, see the dimension below.)

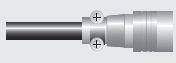
Models	Rated Capacity	Natural Frequencies (Approx.)
●**PD-100GA**	10 kPa	60 Hz
●**PD-200GA**	20 kPa	110 Hz
●**PD-500GA**	50 kPa	230 Hz
●**PD-1KA**	100 kPa	400 Hz
●**PD-2KA**	200 kPa	700 Hz

●For delivery date, please contact us.

■Dimensions



Connector plug
PRC03-12A10-7M



PDU-A

●Max. line pressure: 30 MPa
●50 kPa to 2 MPa

Stainless Steel Differential Pressure Transducer

*CE compliant models are available. Inquiries are welcome.
*TEDS-installed models are available. Inquiries are welcome.

Corrosion resistant Built-in variable damping mechanism

●Overload protection mechanism

The differential pressure transducer which equipped with a damping adjustment mechanism that can adjust the response frequency.

Note: Copper alloy is used for sensing element. Avoid measuring corrosive liquid or gas.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±0.2% RO (50KP to 500KP)
	Within ±0.25% RO (1, 2 MP)
Hysteresis	Within ±0.2% RO (50KP to 500KP)
	Within ±0.25% RO (1, 2 MP)
Repeatability	0.1% RO or less
Rated Output	1.5 mV/V ±0.5%

Environmental Characteristics

Safe Temperature	-30 to 90°C
Compensated Temperature	-20 to 80°C
Temperature Effect on Zero	Within ±0.01% RO/°C
	(50KP, 100KP: Within ±0.02% RO/°C)
Temperature Effect on Output	Within ±0.01%/°C
	(50KP, 100KP: Within ±0.02%/°C)

Electrical Characteristics

Safe Excitation	15 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω ±1%
Cable	4-conductor (0.3 mm²) chloroprene shielded cable,
	7.6 mm diameter by 5 m long, terminated with a connector plug
	PRC03-12A10-7M
	(Shield wire is connected to the case.)

Mechanical Properties

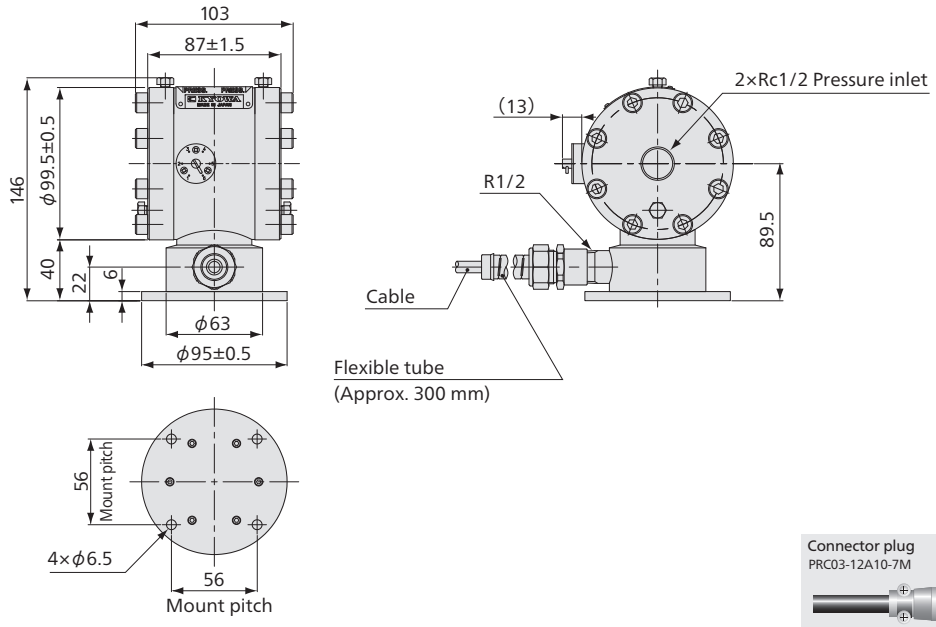
Safe Overloads	150% (If an overload of 30 MPa is applied to either high or low pressure side, the transducer is not damaged.)
Maximum Line Pressure	30 MPa
Weight	Approx. 6 kg (Excluding cable)

*To use for gases, contact us.

Models	Rated Capacity
●PDU-A-50KP	50 kPa
●PDU-A-100KP	100 kPa
●PDU-A-200KP	200 kPa
●PDU-A-500KP	500 kPa
●PDU-A-1MP	1 MPa
●PDU-A-2MP	2 MPa

●For delivery date, please contact us.

■Dimensions



Connector plug
PRC03-12A10-7M

Civil Engineering & Construction Instruments

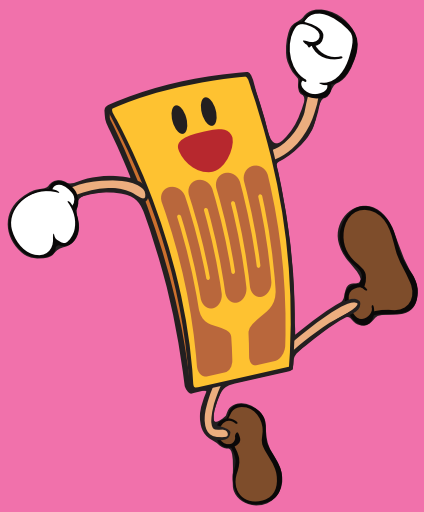
7

Civil Engineering & Construction Instruments

Strain-gage Civil Engineering Transducers

Measuring Instruments

Countermeasures against Induced Lightning Surge



*When using for special purposes, please contact us.
*For prices and delivery date, please contact us.
*For specific cataloges, please contact us.

BPB-A/BPB-A-T

Pore Pressure Transducer

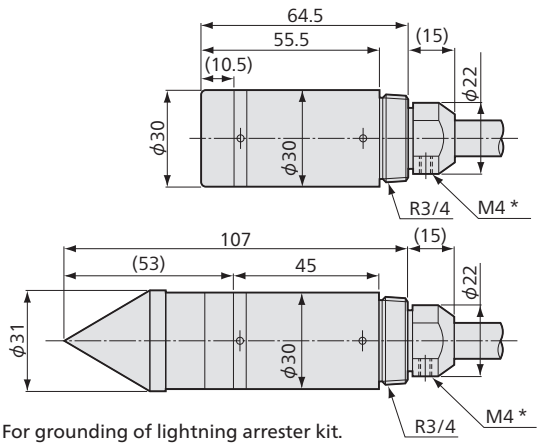
- Water pressure measurement
- 200 kPa to 2 MPa
- With temperature measuring function

Embedded in a boring or together with a pile or steel sheet pile. These transducers measure pore water pressure

- Small-sized design, 30 mm in outer diameter, enables installation in borings of small diameters.
- Flat filters FB-10SUS (10 μm mesh standard) are provided to prevent the sensing part from clogging.
- Stainless steel case (Including a FB-10SUS)

Embedded in a boring or together with a pile or steel sheet pile, BPB-A/BPB-A-T series transducers measure pore water pressures or pore pressures. If desired, they can be used as pressure-based underground water level transducers by installing in a well. The BPB-A-T series is provided with temperature measuring function for simultaneous measurement of pore pressure and temperature. The cable length may be changed as specified.

Dimensions



* For grounding of lightning arrester kit.

BPF and FB Filters for Pore Pressure Transducers

BPF-B

FB

These filters are used to prevent the sensing portion of the pore pressure transducer which is embedded in clay soil or mud from clogging. The standard mesh size is 10 μm. If grouting is made around the embedded site, use the 2 μm mesh filters.

Cone Filters	Flat Filters	Mesh Size
BPF-2B	FB-2	2 μm
BPF-5B	FB-5	5 μm
BPF-10B	FB-10SUS	10 μm
—	FB-40	40 μm
—	FB-100	100 μm

*Filter section is made of brass, sintered metallic finish.
*FB-10SUS (10 μm flat filters) only are made of stainless steel.

Specifications

Performance

Pore Pressure Measurement	
Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
	(200KP: Within ±2% RO)
Hysteresis	Within ±1% RO
Rated Output	1 mV/V or more
	200KP: 0.75 mV/V or more
Temperature Measurement (BPB-A-T)	
Rated Capacity	-30 to 70°C
Measurement Error	±0.5°C (-30 to 70°C)
(When measuring temperatures by using Kyowa's civil engineering transducers with a thermal sensor.)	

Environmental Characteristics

Safe Temperature	-30 to 80°C (Non-freezing)
Compensated Temperature	0 to 60°C (Non-freezing)
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 10 V AC or DC
Input Resistance	350 Ω ±1% (BPB-A-T at 0°C)
Output Resistance	350 Ω ±1%
	450 Ω ±0.8 % (BPB-A-T at 0°C)
Cable	4-conductor (0.5 mm²) chloroprene cable,
	11.5 mm diameter by 1 m long, bared at the tip

Mechanical Properties

Safe Overloads	150%
Weight	Approx. 320 g (Excluding cable)

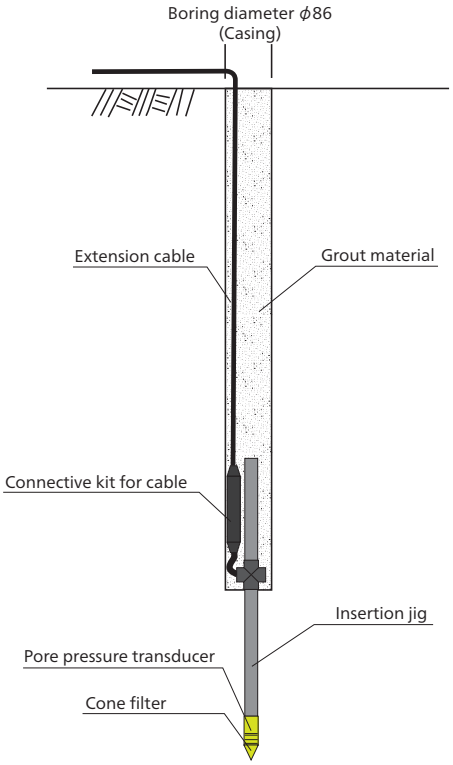
*Double shielded cable can also be manufactured. Please contact us.

Temperature Measuring Function		Rated Capacity
No	Yes	
●BPB-A-200KP	—	200 kPa
●BPB-A-500KP	●BPB-A-500KP-T	500 kPa
●BPB-A-1MP	●BPB-A-1MP-T	1 MPa
●BPB-A-2MP	—	2 MPa

●For delivery date, please contact us.

Application Example

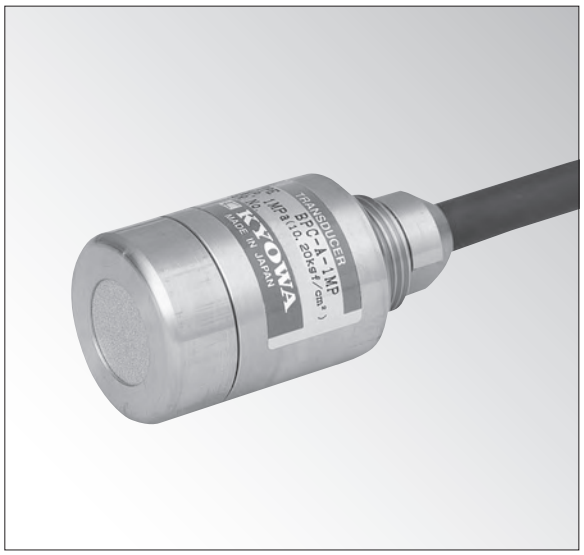
Wall Joint Reinforcing Bars



BPC-A

Pore Pressure Transducer

●Water pressure measurement
●200 kPa to 2 MPa

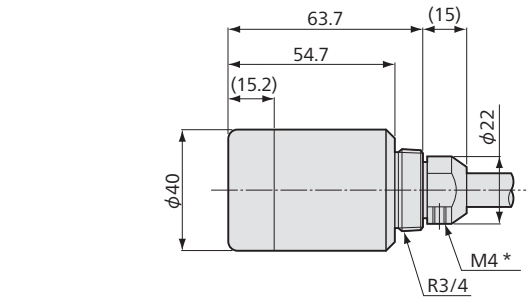


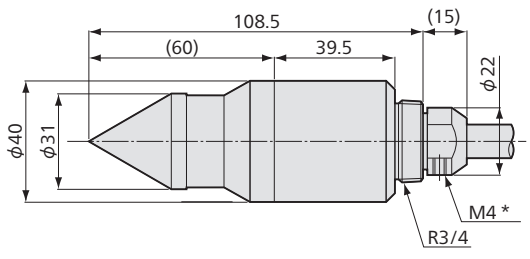
For underground pore pressure measurement

●Double-cased structure ensures measurement without receiving any effect of lateral pressure.
●Flat Filters (10 μm mesh standard) are provided to prevent the sensing part from clogging.
● Stainless steel case (Including a flat filter FB-10SUS)

Embedded in soil, BPC-A transducers measure underground pore pressures. A double-cased structure lets them perform without receiving any adverse effect from lateral pressures and makes them suitable for measurement where underground soil pressures change significantly. The cable length may be as desired.

■Dimensions





* For grounding of lightning arrester kit.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
	(200KP: Within ±2% RO)
Hysteresis	Within ±1% RO
Rated Output	1 mV/V or more
	200KP: 0.75 mV/V or more

Environmental Characteristics

Safe Temperature	-30 to 80°C (Non-freezing)
Compensated Temperature	0 to 60°C (Non-freezing)
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 10 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω± 1%
Cable	4-conductor (0.5 mm²) chloroprene cable,
	11.5 mm diameter by 1 m long, bared at the tip

Mechanical Properties

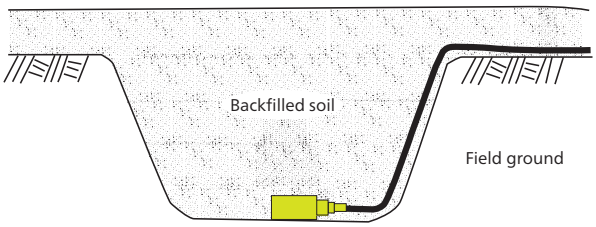
Safe Overloads	150%
Weight	Approx. 550 g (Excluding cable)

*Double shielded cable can also be manufactured.

Models	Rated Capacity
●BPC-A-200KP	200 kPa
●BPC-A-500KP	500 kPa
●BPC-A-1MP	1 MPa
●BPC-A-2MP	2 MPa

●For delivery date, please contact us.

■Application Example



■BPF and FB Filters for Pore Pressure Transducers

BPF-C

FB

These filters are used to prevent the sensing portion of the pore pressure transducer which is embedded in clay soil or mud from clogging. The standard mesh size is 10 µm. If grouting is made around the embedded site, use the 2 µm mesh filters.

Cone Filters	Flat Filters	Mesh Size
BPF-2C	FB-2	2 µm
BPF-5C	FB-5	5 µm
BPF-10C	FB-10SUS	10 µm
—	FB-40	40 µm
—	FB-100	100 µm

*Filter section is made of brass, sintered metallic finish.
*FB-10SUS (10 µm flat filters) only are made of stainless steel.

BPG-A-S

●Water pressure measurement ●200, 500 kPa

High-sensitivity Pore Pressure Transducer

Suitable for high sensitivity measurement of underground water level.

- ●High sensitivity, high accuracy
- ●Excellent temperature characteristics
- ●Cone filter attached (Possible to replace to a flat filter)

Featuring rated output of 2 mV/V±2%, the BPG-A-S series pore pressure transducers provide a sensitivity twice as high as ordinary units. Thus, they are suitable for precise measurement of underground water level by embedding in a well, etc.

Specifications

Performance

Rated Capacity	●**BPG-A-200KPS**: 200 kPa
	●**BPG-A-500KPS**: 500 kPa
Nonlinearity	Within ±0.5% RO
Hysteresis	Within ±0.5% RO
Rated Output	2 mV/V ± 2%

Environmental Characteristics

Safe Temperature	-20 to 70°C (Non-freezing)
Compensated Temperature	-10 to 60°C (Non-freezing)
Temperature Effect on Zero	Within ±0.02% RO/°C
Temperature Effect on Output	Within ±0.02%/°C

Electrical Characteristics

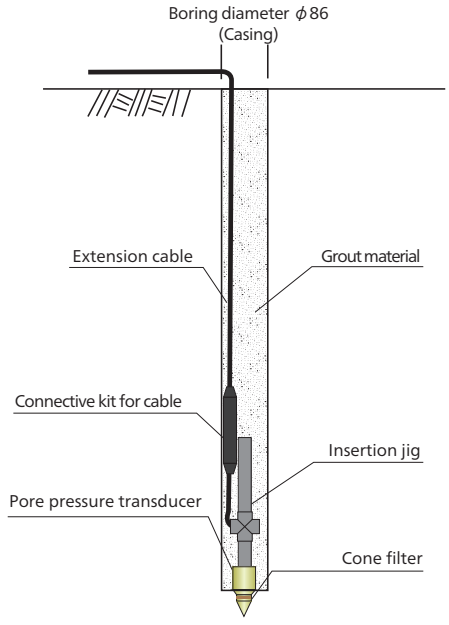
Safe Excitation	10 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω ±1%
Cable	4-conductor (0.5 mm²) chloroprene shielded cable,
	9.6 mm diameter by 1 m long, bared at the tip
	(Shield wire is not connected to the case.)

Mechanical Properties

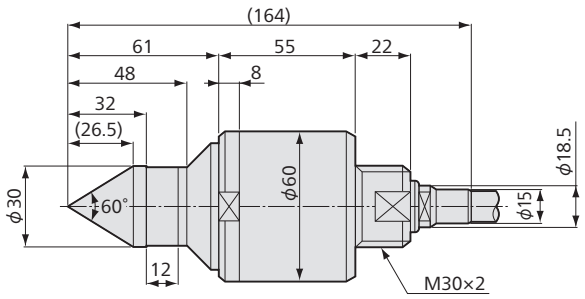
Safe Overloads	120%
Material	Stainless steel metallic finish
	(Filter is sintered brass metallic finish) (Note)
Water Pressure Resistance	240 kPa (200KPS)
	600 kPa (500KPS)
Degree of Protection	IP68 (IEC 60529) (Safe overloads)
Weight	Approx. 800 g

●For delivery date, please contact us.
Note: 10 µm flat filter stainless steel only

■Application Example



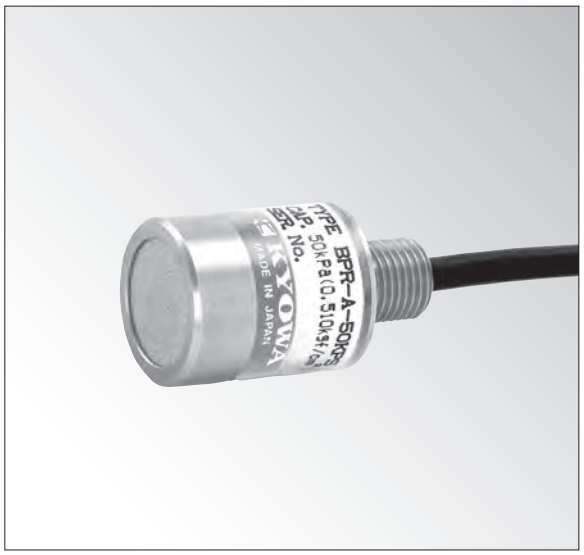
■Dimensions



BPR-A-S

●Water pressure measurement ●50 to 200 kPa

Small-sized Pore Pressure Transducer



Suitable for model experiments, highly-sensitive, small levels of pore pressure.

●Small-size (20 mm diameter), small rated capacity (50 to 200 kPa) and high sensitivity (1 mV/V)
●Filters are stainless (Standard 10 μm)

Featuring an outer diameter of 20 mm, the BPR-A-S series is highly sensitive transducers for measurement of small levels of pore pressure. A watertight design enables embedment applications and makes them suitable for model experiments.

To Ensure Safe Usage

For long-term measurement, it is recommended to separately measure temperature and atmospheric pressure for compensation of measured values.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
	(50KPS: Within ±2% RO)
Hysteresis	Within ±1% RO
Rated Output	0.4 mV/V or more (50KPS)
	0.8 mV/V or more (100KPS)
	1 mV/V or more (200KPS)

Environmental Characteristics

Safe Temperature	0 to 80°C (Non-freezing)
Compensated Temperature	0 to 70°C (Non-freezing)
Temperature Effect on Zero	Within ±0.8% RO/°C (50KPS)
	Within ±0.4% RO/°C (100KPS)
	Within ±0.2% RO/°C (200KPS)
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	8 V AC or DC
Recommended Excitation	1 to 5 V AC or DC
Input Resistance	120 Ω ±5%
Output Resistance	120 Ω ±5%
Cable	4-conductor (0.08 mm²) chloroprene shielded cable,
	4 mm diameter by 10 m long, terminated with a connector plug
	PRC03-12A10-7M
	(Shield wire is not connected to the case.)

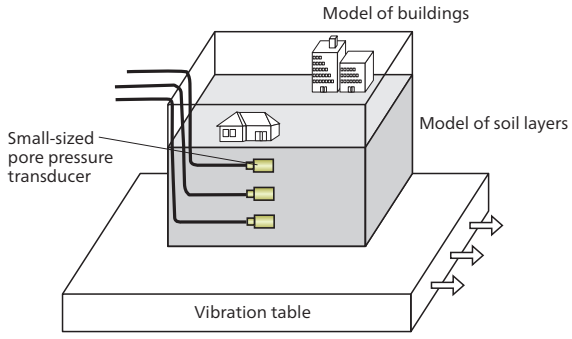
Mechanical Properties

Safe Overloads	120%
Material	Stainless steel metallic finish
Degree of Protection	IP68 (IEC 60529) (Safe overloads)
Weight	Approx. 35 g

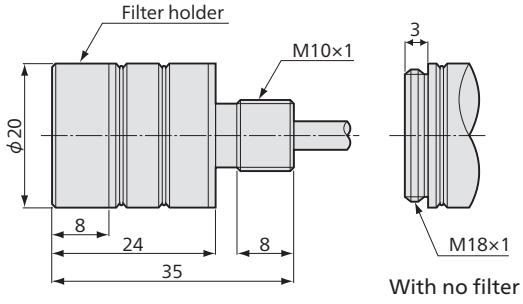
Models	Rated Capacity
●BPR-A-50KPS	50 kPa
●BPR-A-100KPS	100 kPa
●BPR-A-200KPS	200 kPa

●For delivery date, please contact us.

■Application Example



■Dimensions



With no filter

*Filter is thrust into the filter holder, which can be removed from the pressure sensor.
*Flat filter only is usable and any cone filter cannot be used.

BPA-F-S

●Water pressure measurement ●200, 500 kPa

Small-sized Pore Pressure Transducer

Suitable for indoor model experiments such as liquefaction tests.

- ●Small-sized, 10 mm in diameter
- ●Watertight design enabling embedment applications for short-term experiments
- ●Suitable for indoor experiments such as liquefaction tests
- ●Cone or flat tip type can be used properly.

Featuring an outer diameter of 10 mm, the BPA-F-S series pore pressure transducers are suitable for indoor model experiments such as liquefaction tests. Cone or flat tip type can properly be used according to the test condition.

Specifications

Performance

Rated Capacity	●**BPA-F-200KPS**: 200 kPa
	●**BPA-F-500KPS**: 500 kPa
Nonlinearity	Within ±1% RO
Hysteresis	Within ±1% RO
Rated Output	0.85 mV/V ±30% (200KPS)
	1 mV/V ±20% (500KPS)

Environmental Characteristics

Safe Temperature	0 to 70°C (Non-freezing)
Compensated Temperature	0 to 50°C (Non-freezing)
Temperature Effect on Zero	Within ±0.3% RO/°C
Temperature Effect on Output	Within ±0.3%/°C

Electrical Characteristics

Safe Excitation	3 V AC or DC
Input Resistance	350 Ω ±10%
Output Resistance	350 Ω ±10%
Cable	4-conductor (0.08 mm^2) ETFE shielded cable,
	4 mm diameter by 3 m long, bared at the tip
	(Shield wire is not connected to the case.)

Mechanical Properties

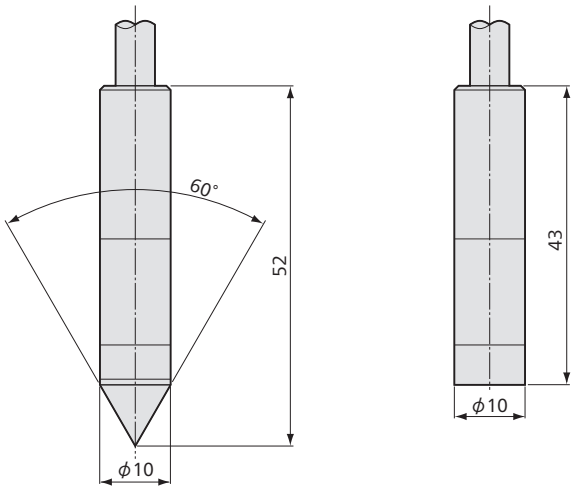
Safe Overloads	120% (500KPS: 100%)
Water Pressure Resistance	240 kPa (200KPS)
	500 kPa (500KPS)
Material	Stainless steel
	(Filter is sintered brass metallic finish.)
Degree of Protection	IP67 (IEC 60529)
Weight	Approx. 40 g

●For delivery date, please contact us.

Standard Accessories

Filters
Cone type, 40 µm (Attached with main body) and 100 µm
Flat type, 40 µm and 100 µm
Cone filter fixture (Attached with main body)
Flat filter fixture

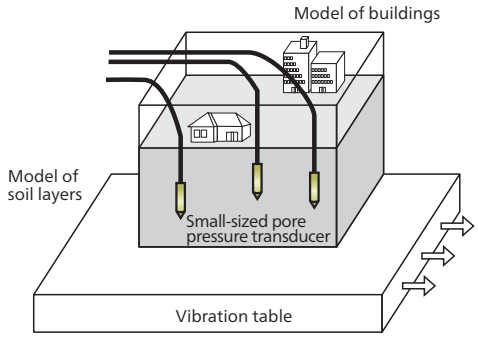
■Dimensions



With cone filter mounted　　With flat filter mounted

■Application Example

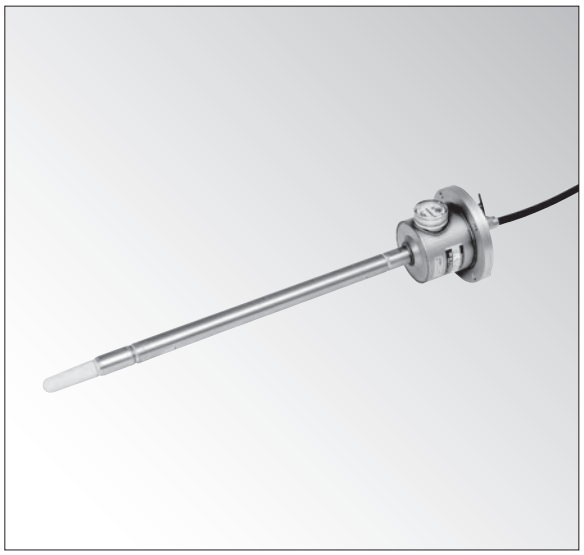
For Liquefaction Tests



BPT-A-80KPS

Soil Moisture Transducer

- Water pressure measurement
- -80 kPa



Suitable for measurement of soil moisture absorbing force and proper for management of plant cultivation

The BPT-A-80KPS is a soil moisture transducer designed to measure water pressure in a vessel equipped with a porous cup (Porous ceramic tube) and filled with degassed water. If the soil around the embedded porous cup is dry, the soil absorbs water from the vessel via the porous cup. By measuring this negative pressure (Water absorbing pressure), the amount of moisture in the soil is obtained. Thus, this transducer is applicable not only to check for possible landslide or grasp the stability of a banking but also to know changing soil moisture and proper irrigation time in plant cultivation.

Specifications

Performance

Rated Capacity	-80 kPa
	200 kPa for positive pressure
Nonlinearity	Within ±0.5% RO
Hysteresis	Within ±0.5% RO
Rated Output	Approx. -0.8 mV/V

Environmental Characteristics

Safe Temperature	0 to 80°C (Non-freezing)
Compensated Temperature	0 to 70°C (Non-freezing)
Temperature Effect on Zero	Within ±0.05% RO/°C
Temperature Effect on Output	Within ±0.05%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Input Resistance	350 Ω ±2%
Output Resistance	350 Ω ±2%
Cable	4-conductor (0.5 mm^2) chloroprene shielded cable,
	9.6 mm diameter by 1 m long, bared at the tip
	(Shield wire is not connected to the case.)

Mechanical Properties

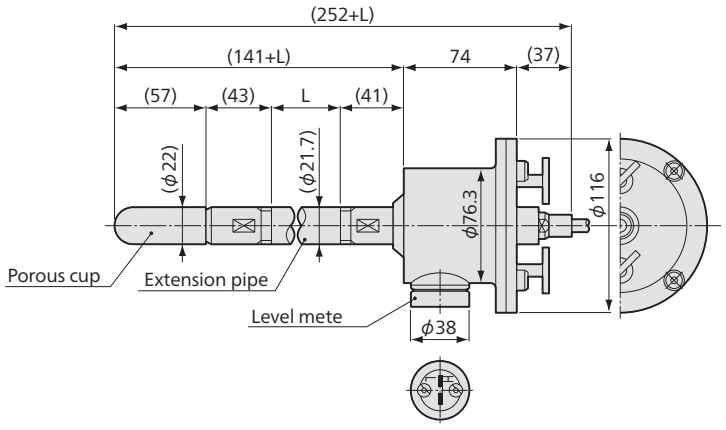
Safe Overloads	100%
Material	Stainless steel metallic finish
	(Excluding porous cup and level meter)
Weight	Approx. 3.5 kg

- For delivery date, please contact us.

To Ensure Safe Usage

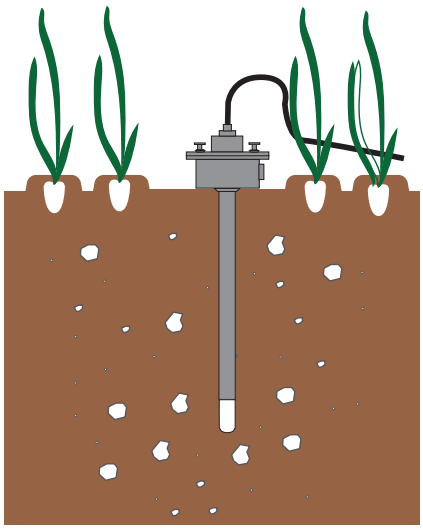
The BPT-A-80KPS is delivered with a vessel filled with degassed water. Never store it unused for a long period. Embed it upon purchasing.

Dimensions



L = 100 to 2000 mm (As specified)

Application Example



Embedded the extension pipe in the soil layer.

BWL-ET

Water Level Transducer

●Water level measurement ●10 to 30 m
●With temperature measuring function

Suitable for measuring underground water levels in landslide areas.

- ●Stainless steel enclosure ensures excellent corrosion resistance, while a built-in lightning arrester assures safe operation.
- ●Simultaneous measurement of water level and water temperature
- ●Easy installation, maintenance and inspection
- ●Applicable for measurement of underground water levels in landslide areas and water levels of dams, rivers, intake wells and tanks
- ●Capillary-equipped cable for pressure release.

The BWL-ET series is strain-gage type water level transducers designed to measure changing underground water levels in landslide areas, etc. They do not require any compensation against fluctuations in atmospheric pressure, and thus ensure measurement. A temperature measuring function lets them perform simultaneous measurement of water level and temperature.

Specifications

Performance

●Water Level Measurement	
Rated Capacity	See table below.
Nonlinearity	Within ±0.15% RO
Hysteresis	Within ±0.10% RO
Repeatability	0.05% RO or less
Rated Output	2 mV/V or more
●Temperature Measurement	
Rated Capacity	-20 to 60°C
Measurement Error	±0.5°C (-20 to 60°C)
(See page 7-31 for Small-sized Temperature Transducer BTS-100AT.)	

Environmental Characteristics

Safe Temperature	-20 to 60°C (Non-freezing)
Compensated Temperature	0 to 50°C (Non-freezing)
Temperature Effect on Zero	Within ±0.01% RO/°C
Temperature Effect on Output	Within ±0.01%/°C

Electrical Characteristics

Safe Excitation	10 V (Current 28.5 mA)
Recommended Excitation	2 to 6 V (Current 5.7 to 17.1 mA)
Input Resistance	350 Ω ±2% at 0°C
Output Resistance	450 Ω ±2% at 0°C
Cable	4-conductor (0.5 mm²) capillary-equipped chloroprene
	shielded cable, 11.3 mm diameter, bared at the tip
	Cable length: See table below.
	(Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	150%
Weight	Approx. 400 g

Other

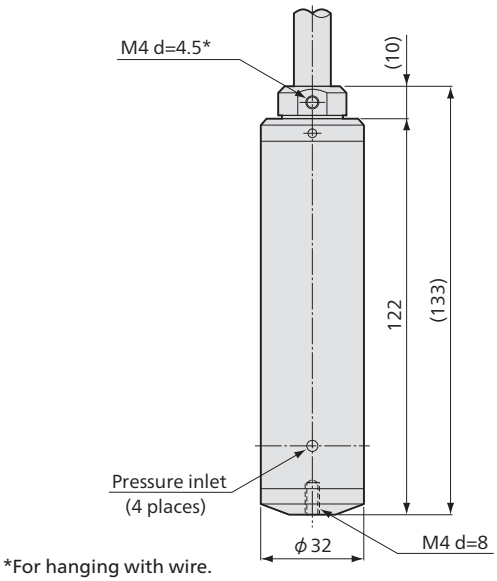
Built-in lightning arrester
Atmospheric pressure compensation type

*For use under freezing environment or where the transducer is exposed to corrosive liquid or gases, please contact a Kyowa sales representative.

Models	Rated Capacity (Water Level)	Cable Length
●BWL-10MET	10 m	30 m
●BWL-20MET	20 m	40 m
●BWL-30MET	30 m	50 m

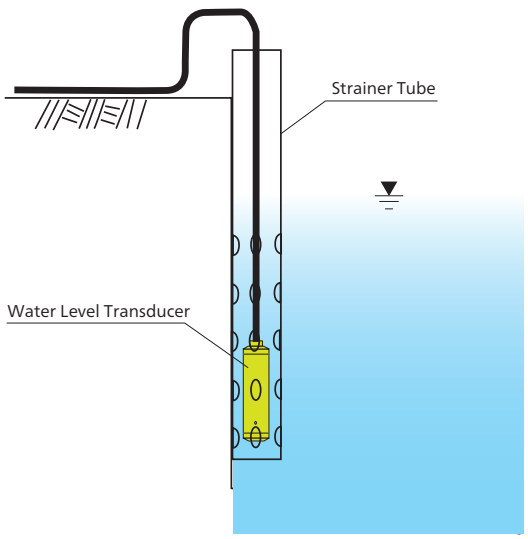
●For delivery date, please contact us.

■Dimensions



*For hanging with wire.

■Application Example



BEE-A/BEF-A

Soil Pressure Transducer

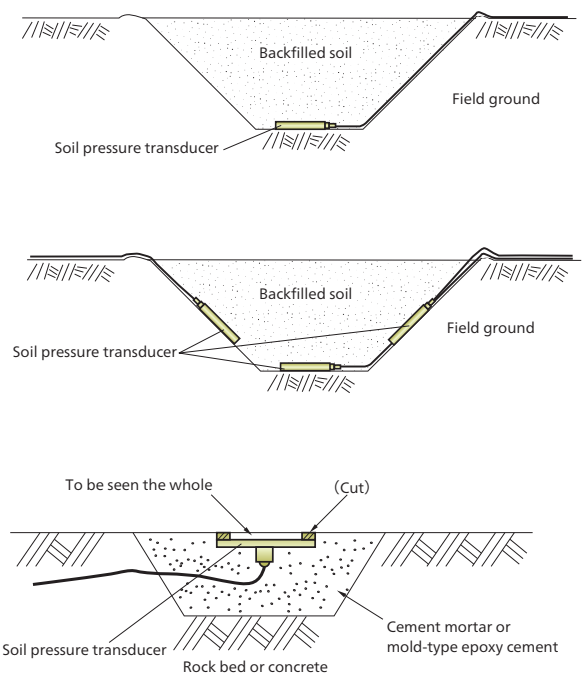
●Pressure measurement
●200 kPa to 2 MPa

A pressure-sensing surface 160 mm in diameter, used most popularly in measuring fields.

- ●Applied pressure causes minimal diaphragm displacement thanks to a dual diaphragm design.
- ●Highly accurate displacement ratio of the pressure-sensing surface to its diameter is less than 1/100000.
- ●It is possible to measure dynamic soil pressure caused by earthquake, etc.

The BEE-A and BEF-A series are soil pressure transducers with an outer diameter of 200 mm which are used most popularly in measuring fields. The BEE-A series for underground soil pressure measurement is embedded in a core zone of a rock-fill dam or ordinary banking. The BEE-A series can also measure soil pressure of 3 or 4-face objects. The BEF-A series can be used for soil pressure measurement of a continuous underground earth retaining wall.

■Application Example



Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO (200KP: Within ±3% RO)
Hysteresis	Within ±1% RO
Rated Output	1 mV/V or more
	200KP: 0.9 mV/V or more

Environmental Characteristics

Safe Temperature	-20 to 80°C
Compensated Temperature	-15 to 70°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 10 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω ±1%
Cable	4-conductor (0.5 mm^2) chloroprene cable, 11.5 mm diameter by 1 m long, bared at the tip

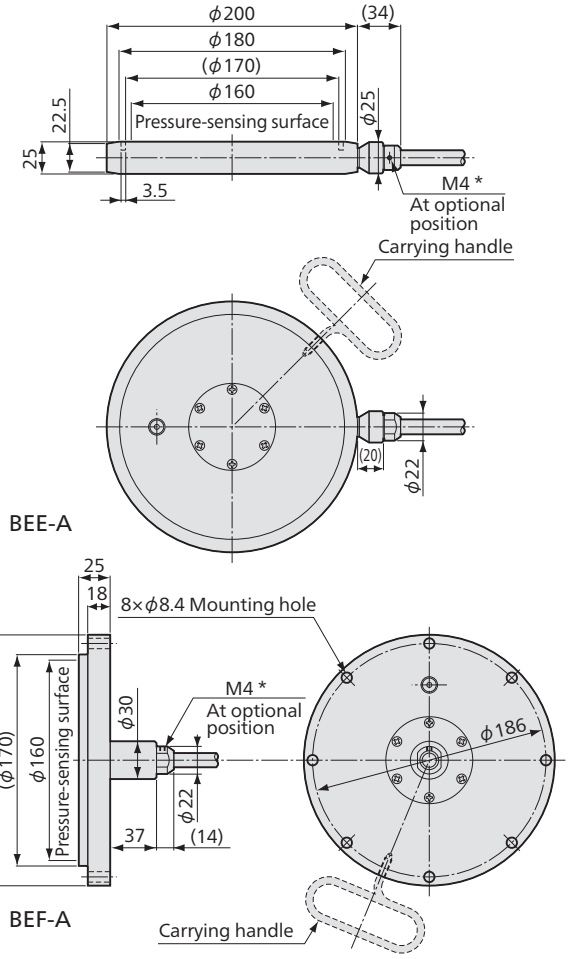
Mechanical Properties

Safe Overloads	120%
Weight	BEE: Approx. 5.9 kg (Excluding cable)
	BEF: Approx. 5.6 kg (Excluding cable)

Models	Rated Capacity	Use
●BEE-A-200KP	200 kPa	Underground soil pressure measurement
●BEE-A-500KP	500 kPa	
●BEE-A-1MP	1 MPa	
●BEE-A-2MP	2 MPa	
●BEF-A-200KP	200 kPa	Wall surface soil pressure measurement
●BEF-A-500KP	500 kPa	
●BEF-A-1MP	1 MPa	
●BEF-A-2MP	2 MPa	

●For delivery date, please contact us.

■Dimensions

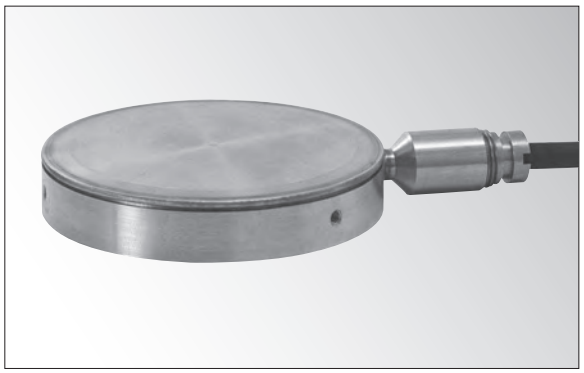


*For grounding of lightning arrester kit.

BEM-A

Soil Pressure Transducer

●Pressure measurement ●50 kPa to 1 MPa



An embedment type with pressure-sensing surface 80 mm in diameter.

- ●Dual diaphragm design with the pressure medium sealed between the pressure-sensing surface and strain-gage bonded diaphragm enables transmission of minute displacement through enlargement.
- ●Stainless steel construction

The BEM-A series is underground soil pressure transducers with a pressure-sensing surface 80 mm in diameter. Stainless steel construction.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±2% RO
	(500KP, 1MP: Within ±1% RO)
Hysteresis	Within ±1% RO
Rated Output	0.25 mV/V or more (50KP)
	0.5 mV/V or more (100KP)
	1 mV/V or more (200KP or larger)

Environmental Characteristics

Safe Temperature	-20 to 80°C
Compensated Temperature	-15 to 70°C
Temperature Effect on Zero	Within ±0.5% RO/°C (50KP)
	Within ±0.3% RO/°C (100, 200KP)
	Within ±0.2% RO/°C (500KP, 1MP)
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 8 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω ±1%
Cable	4-conductor (0.5 mm²) chloroprene cable, 8 mm diameter by
	1 m long, bared at the tip

Mechanical Properties

Safe Overloads	120%
Weight	Approx. 1 kg

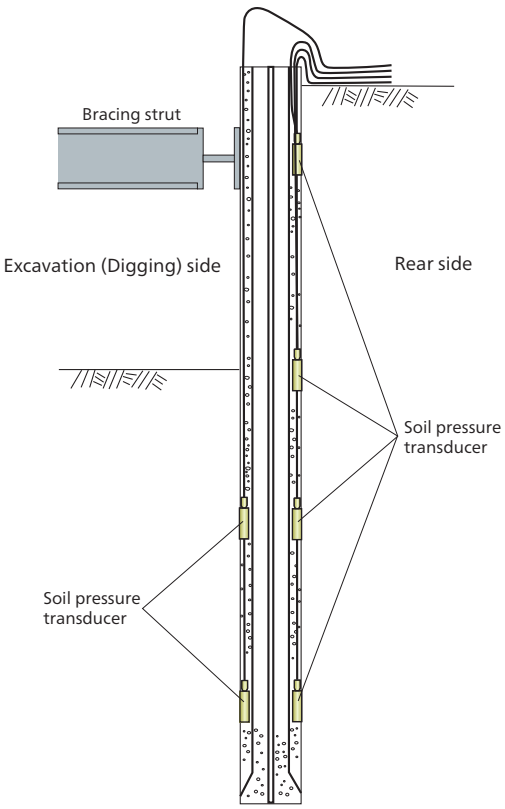
Models	Rated Capacity
●**BEM-A-50KP**	50 kPa
●**BEM-A-100KP**	100 kPa
●**BEM-A-200KP**	200 kPa
●**BEM-A-500KP**	500 kPa
●**BEM-A-1MP**	1 MPa

●For delivery date, please contact us.

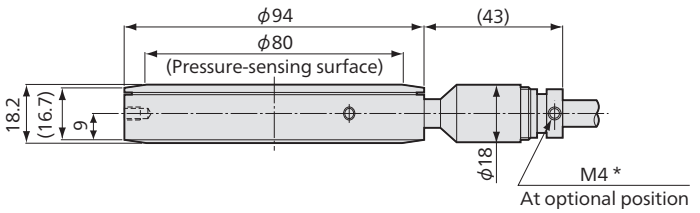
To Ensure Safe Usage

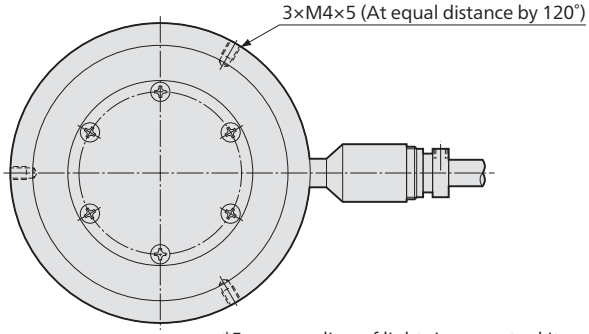
When installing the product onto a wall surface, make sure the wall surface is flat to prevent bending force.

■Application Example



■Dimensions





*For grounding of lightning arrester kit.

BEN-A

Soil Pressure Transducer

●Pressure measurement ●500 kPa to 1 MPa

A pressure-sensing surface 70 mm in diameter. Vibration-resistant design for installation on driven materials

- ●Dual diaphragm design, with the pressure medium sealed between the pressure-sensing surface and strain-gage bonded diaphragm, enables transmission of minute displacement through enlargement.
- ●Vibration-resistant design for installation on driven materials
- ●Highly wear-resistant pressure-sensing surface

The BEN-A series soil pressure transducers are specially designed to endure vibrations. Thus, they are suitable for installation on driven materials such as sheet piles and steel pipe piles.

Specifications

Performance

Rated Capacity	●BEN-A-500KP: 500 kPa
	●BEN-A-1MP: 1 MPa
Nonlinearity	Within ±1% RO
Hysteresis	Within ±1% RO
Rated Output	1 mV/V or more

Environmental Characteristics

Safe Temperature	-20 to 80°C
Compensated Temperature	-10 to 50°C
Temperature Effect on Zero	Within ±0.4% RO/°C (500KP)
	Within ±0.2% RO/°C (1MP)
Temperature Effect on Output	Within ±0.2%/°C (500KP)
	Within ±0.1%/°C (1MP)

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 8 V AC or DC
Input Resistance	350 Ω ±1%
Output Resistance	350 Ω ±1%
Cable	4-conductor (0.5 mm²) chloroprene cable,
	8 mm diameter by 1 m long, bared at the tip

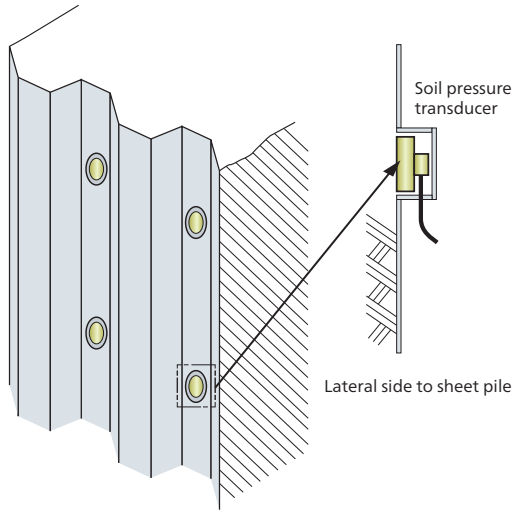
Mechanical Properties

Safe Overloads	150%
Weight	Approx. 1 kg

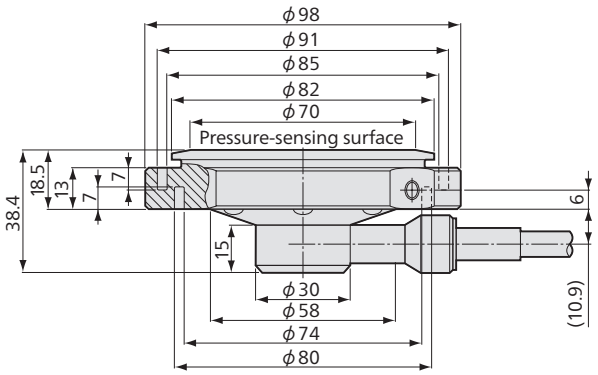
●For delivery date, please contact us.

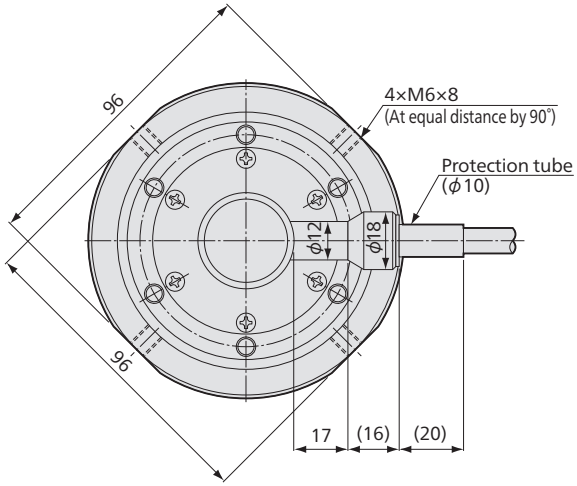
■Application Example

Sheet Pile



■Dimensions

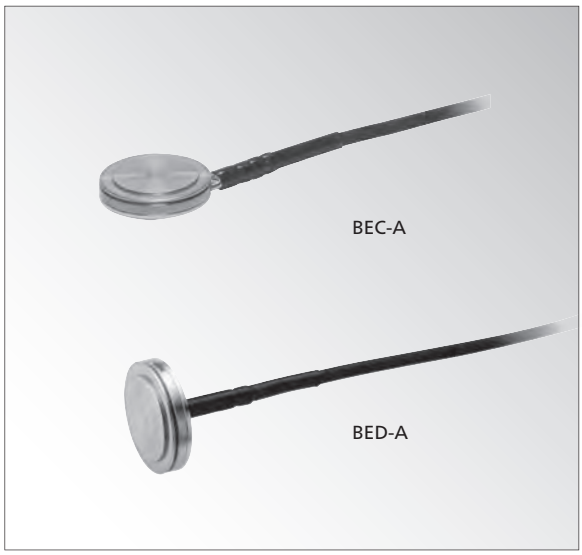




BEC-A/BED-A

Small-sized Soil Pressure Transducer

●Pressure measurement
●200 kPa to 1 MPa



Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±2% RO
Hysteresis	Within ±1% RO
Rated Output	0.25 mV/V or more

Environmental Characteristics

Safe Temperature	-10 to 60°C
Compensated Temperature	0 to 50°C
Temperature Effect on Zero	Within ±0.4% RO/°C
Temperature Effect on Output	Within ±0.4%/°C

Electrical Characteristics

Safe Excitation	4 V AC or DC
Recommended Excitation	2 to 4 V AC or DC
Input Resistance	120 Ω ±1.7%
Output Resistance	120 Ω ±1.7%
Cable	4-conductor (0.08 mm²) chloroprene shielded cable, 4 mm diameter by 3 m long, bared at the tip (Shield wire is connected to the case.)

Mechanical Properties

Safe Overloads	120%
Weight	Approx. 120 g

Models	Rated Capacity	Use
●BEC-A-200KP	200 kPa	Underground soil pressure measurement
●BEC-A-500KP	500 kPa	
●BEC-A-1MP	1 MPa	
●BED-A-200KP	200 kPa	Wall surface soil pressure measurement
●BED-A-500KP	500 kPa	
●BED-A-1MP	1 MPa	

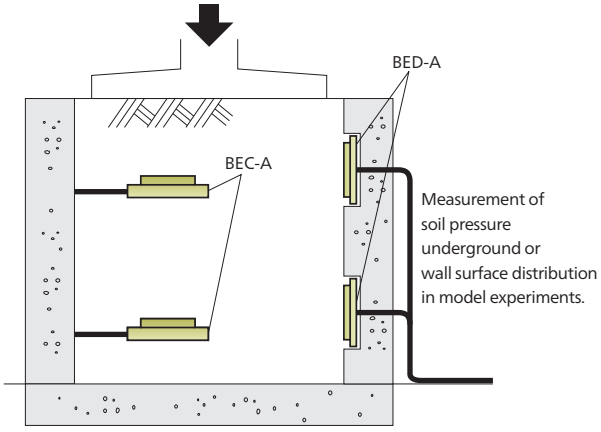
●For delivery date, please contact us.

A pressure-sensing surface 23 mm in diameter. Suitable for measurement of soil pressure distribution in short-term or model experiment

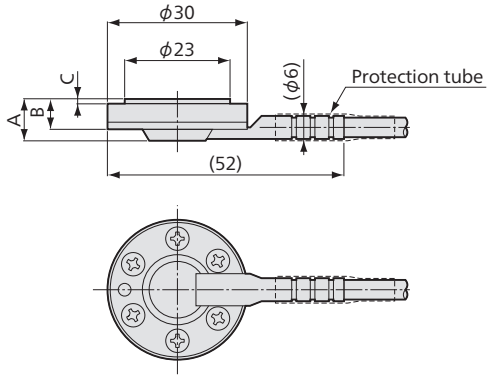
●Suitable for short-term experiments

The BEC-A or BED-A series is a small-sized soil pressure transducer with an outer diameter of 30 mm and a pressure-sensing surface diameter of 23 mm. They are used for measurement of soil pressure distribution in short-term or model experiments.

■Application Example

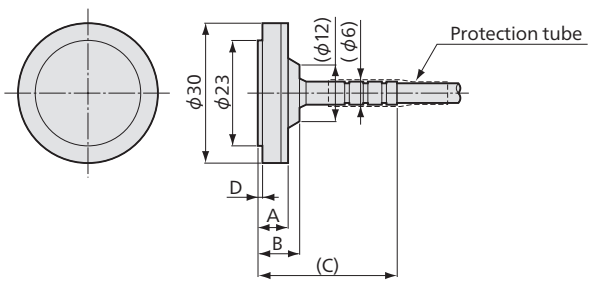


■Dimensions



Models	A	B	C
BEC-A-200KP	8.7	6.2	0.5
BEC-A-500KP	9	6.5	0.8
BEC-A-1MP			

BEC-A



Models	A	B	C	D
BED-A-200KP	6.2	8.7	29.7	0.5
BED-A-500KP	6.5	9	30	0.8
BED-A-1MP				

BED-A

BER-A-110S

Wall-surface Soil Pressure Transducer

●Pressure measurement
●100 kPa to 2 MPa

Stainless steel models can be manufactured for wave pressure measurement.

- ●Wear of the pressure-sensing surface does not affect output or initial values.
- ●Load cell-based design is less affected by bending effects.
- ●Usable for pressure measurement of coal or grain in a silo
- ●For pressure measurement of pulverulent (Powder) bodies of approximately 15 mm in diameter

The BER-A-110S soil pressure transducers come with the cable attached in parallel to the pressure-sensing surface.

To Ensure Safe Usage

Do not apply a load more than the rated capacity (pressure, load) to the applied pressure surface.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
Hysteresis	Within ±1% RO
Rated Output	1 mV/V or more

Environmental Characteristics

Safe Temperature	-30 to 80°C
Compensated Temperature	0 to 70°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	1 to 5 V AC or DC
Input Resistance	350 Ω ±2%
Output Resistance	350 Ω ±2%
Cable	4-conductor (0.5 mm²) chloroprene shielded cable, 9.6 mm diameter by 1 m long, bared at the tip (Shield wire is not connected to the case.)

Mechanical Properties

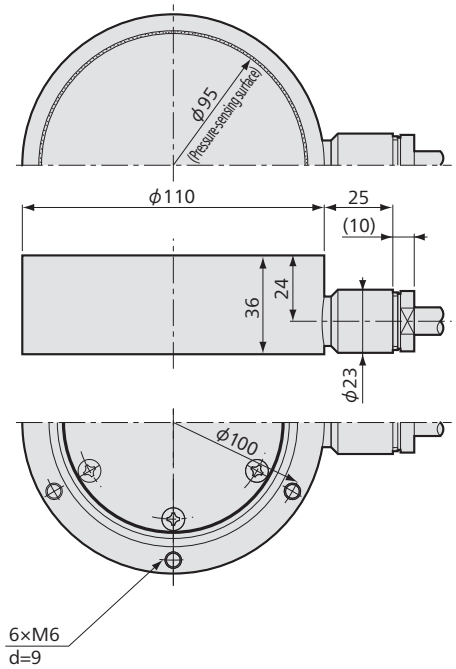
Safe Overloads	120%
Maximum Load	See table below.
Pressure-sensing Surface	Approx. ϕ 95 mm
Material	Pressure sensing surface: Stainless steel metallic finish Flange and cable outlet: ZnC-plated MF
Water Pressure Resistance (Cable outlet)	600 kPa
Degree of Protection	IP68 (IEC 60529) (600 kPa)
Weight	Approx. 2.2 kg

*Optionally coated with anti-biofouling paint is possible.

Models	Rated Capacity	Calculated Loads
●BER-A-100KP110S	100 kPa	709 N
●BER-A-200KP110S	200 kPa	1.4 kN
●BER-A-500KP110S	500 kPa	3.5 kN
●BER-A-1MP110S	1 MPa	7.1 kN
●BER-A-2MP110S	2 MPa	14.2 kN

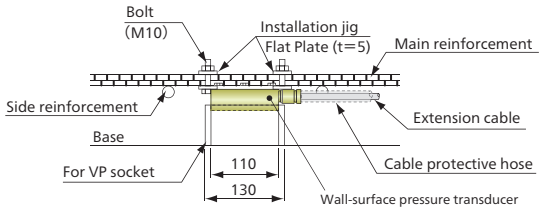
●For delivery date, please contact us.

■Dimensions

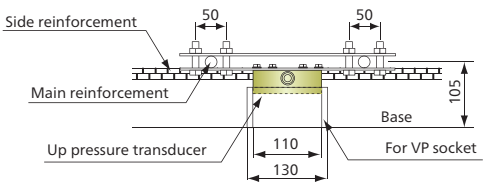


■Application Example

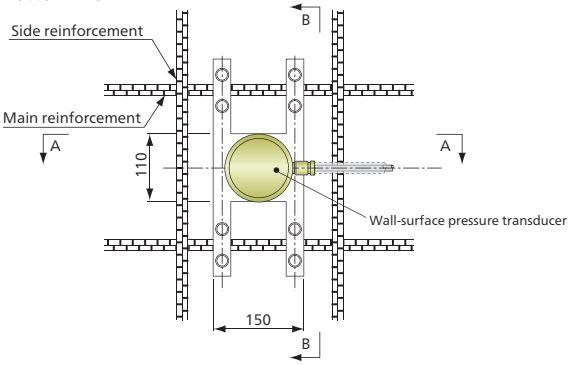
A-A Section



B-B Section



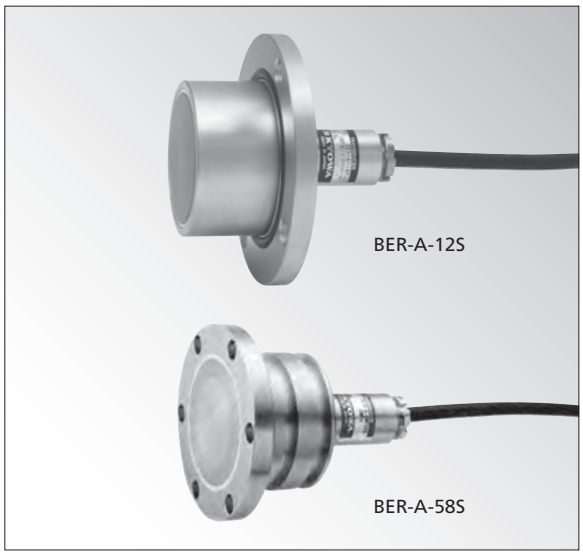
Bottom View



BER-A-12S/58S

●Pressure measurement
●100 kPa to 5 MPa

Wall-surface Soil Pressure Transducer



Suitable for the chamber soil pressure of a shield machine or backfill pressure measurement.

- ●Wear of the pressure-sensing surface does not affect output or initial values.
- ●Load cell-based design is less affected by bending effects.
- ●For granular material pressure measurement whose particle diameter is about ϕ10.

BER-A-12S/58S are load cell type soil pressure transducers designed not to be subject to the influence of a structure bending. These are suitable for surface-of-a-wall soil pressure measurement. Two models (12S, 58S) are available to suit the installation directions.

To Ensure Safe Usage

Do not apply a load more than the rated capacity (pressure, load) to the applied pressure surface.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
Hysteresis	Within ±1% RO
Rated Output	1 mV/V or more

Environmental Characteristics

Safe Temperature	-30 to 80°C
Compensated Temperature	0 to 70°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 5 V AC or DC
Input Resistance	350 Ω ±2%
Output Resistance	350 Ω ±2%
Cable	4-conductor (0.5 mm²) chloroprene shielded cable, 9.6 mm diameter by 30 m long, bared at the tip (Shield wire is not connected to the case.)

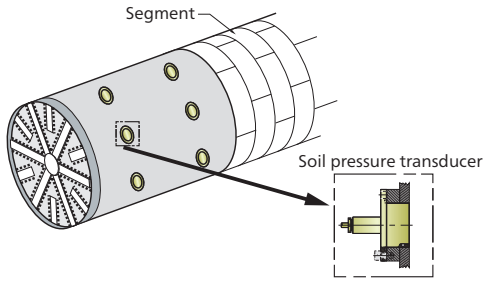
Mechanical Properties

Safe Overloads	120%
Pressure-sensing Surface	Approx. ϕ 73
Material	Pressure sensing surface: Stainless steel Flange and cable outlet: ZnC-plated MF
Water Pressure Resistance(Cable outlet)	600 kPa
Weight	Approx. 3.2 kg (12S) Approx. 3.1 kg (58S)

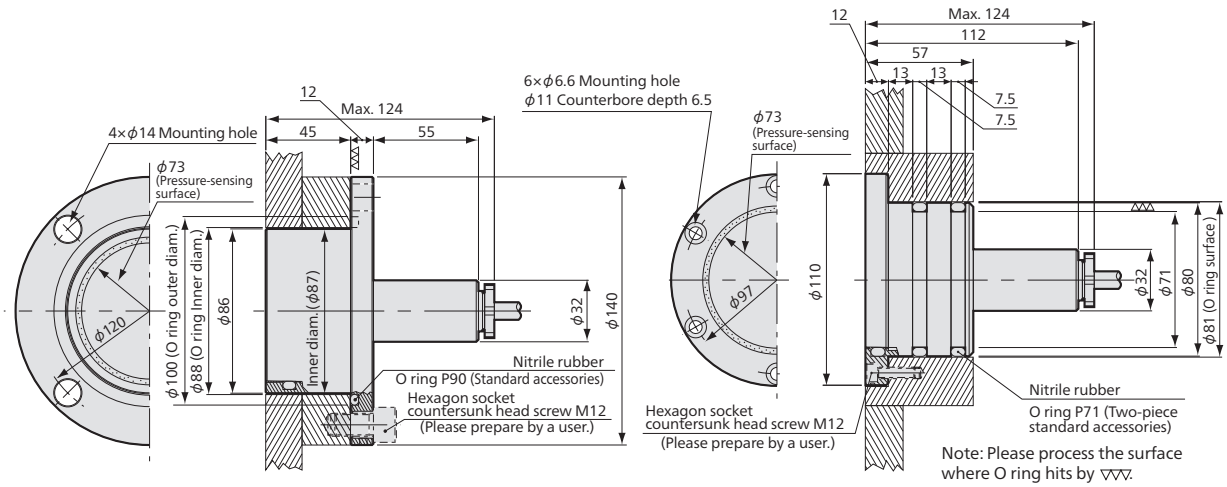
Models	Rated Capacity	Calculated Loads
●BER-A-100KP12S	100 kPa	419 N
●BER-A-200KP12S	200 kPa	837 N
●BER-A-500KP12S	500 kPa	2.1 kN
●BER-A-1MP12S	1 MPa	4.2 kN
BER-A-2MP12S	2 MPa	8.4 kN
●BER-A-5MP12S	5 MPa	20.9 kN
●BER-A-500KP58S	500 kPa	2.1 kN
●BER-A-1MP58S	1 MPa	4.2 kN
●BER-A-2MP58S	2 MPa	8.4 kN
●BER-A-5MP58S	5 MPa	20.9 kN

●For delivery date, please contact us.

■Application Example



■Dimensions



BER-A-15S/17S

Wall-surface Soil Pressure Transducer

●Pressure measurement
●500 kPa to 5 MPa

Suitable for surface-of-a-wall soil pressure measurement of a small shield machine.

●Wear of the pressure-sensing surface does not affect output or initial values.
●Load cell-based design is less affected by bending effects.
●For granular material pressure measurement whose particle diameter is about ϕ3.

This is the small and lightweight wall-surface soil pressure transducers which made the most use of the feature of BER-A-12S. Two models (15S, 17S) are available to suit the installation directions.

To Ensure Safe Usage

Do not apply a load more than the rated capacity (pressure, load) to the applied pressure surface.

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±2% RO
Hysteresis	Within ±2% RO
Rated Output	1 mV/V or more

Environmental Characteristics

Safe Temperature	-30 to 80°C
Compensated Temperature	0 to 70°C
Temperature Effect on Zero	Within ±0.1% RO/°C
	(500KP: Within ±0.3% RO/°C)
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	10 V AC or DC
Recommended Excitation	2 to 5 V AC or DC
Input Resistance	350 Ω ±2%
Output Resistance	350 Ω ±2%
Cable	4-conductor (0.3 mm²) chloroprene shielded cable,
	8 mm diameter by 30 m long, bared at the tip
	(Shield wire is not connected to the case.)

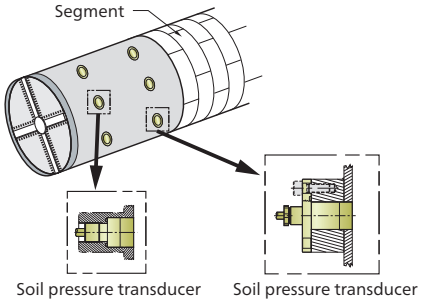
Mechanical Properties

Safe Overloads	120%
Pressure-sensing Surface	Approx. ϕ 24.5
Material	Whole surface: Stainless steel metallic finish
	Cable fittings: Brass
Water Pressure Resistance (Cable outlet)	600 kPa
Weight	Approx. 400 g (15S)
	Approx. 500 g (17S)

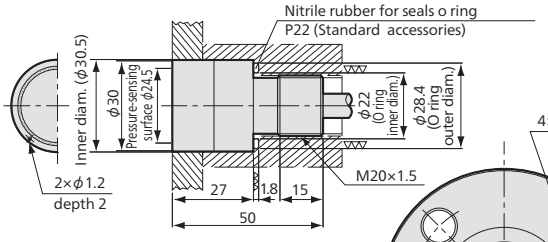
Models	Rated Capacity	Calculated Loads
●BER-A-500KP15S	500 kPa	236 N
●BER-A-1MP15S	1 MPa	471 N
●BER-A-2MP15S	2 MPa	943 N
●BER-A-5MP15S	5 MPa	2.4 kN
●BER-A-500KP17S	500 kPa	236 N
●BER-A-1MP17S	1 MPa	471 N
●BER-A-2MP17S	2 MPa	943 N
●BER-A-5MP17S	5 MPa	2.4 kN

●For delivery date, please contact us.

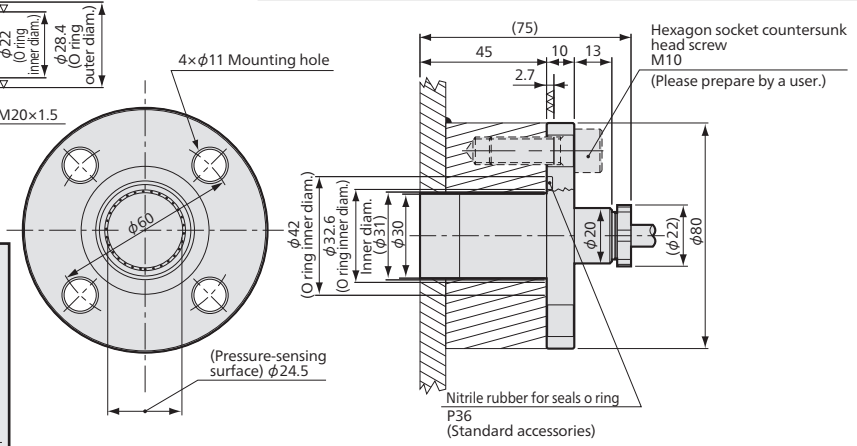
■Application Example



■Dimensions

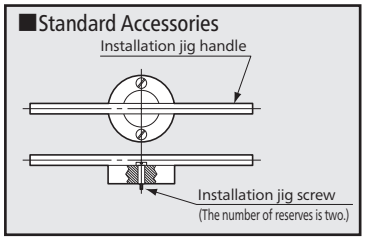


BER-A-15S



BER-A-17S

■Standard Accessories

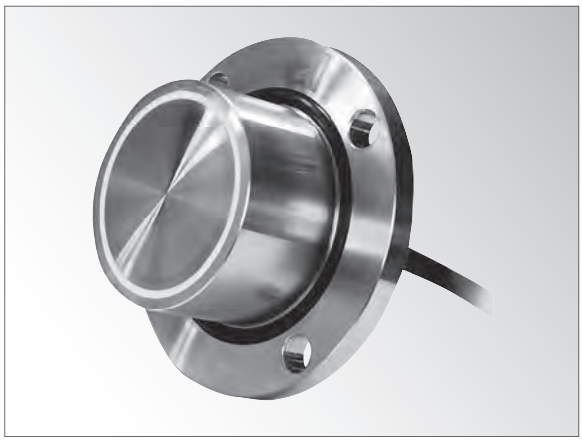


Note: Please process the surface where O ring hits by ▽▽▽.

BER-S-12SA3

●Pressure measurement
●500 kPa to 3 MPa

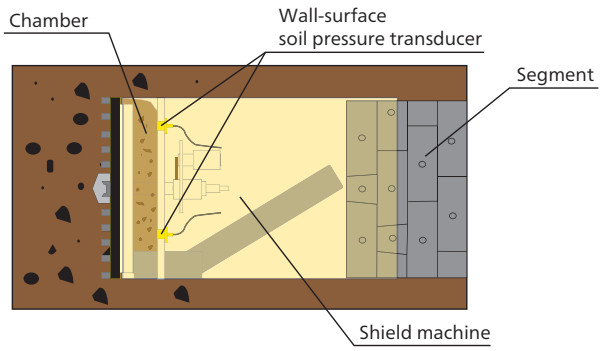
Wall-surface Soil Pressure Transducer



With a stopper
Safe overloads: 1000%

- ●High overload protection (Safe overloads up to 1000%)
- ●Excellent characteristics against eccentric load (Little change in sensitivity and others)

■Application Example



Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±1% RO
Hysteresis	Within ±1% RO
Rated Output	Approx. 1.0 mV/V

Environmental Characteristics

Safe Temperature	-20 to 60°C
Compensated Temperature	0 to 60°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	12 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±5%
Output Resistance	350 Ω ±5%
Cable	4-conductor (0.5 mm²) chloroprene shielded cable, 10 mm diameter by 30 m long, bared at the tip (Shield wire is not connected to the case.)

Mechanical Properties

Safe Overloads	1000% soil pressure (Soil pressure = Effective stress + Pore water pressure) Safe overload of pore water pressure (including gas pressure) is 3 MPa. Only when soil pressure is applied to the pressure receiving surface equally.
Exterior	Pressure-sensing surface: Stainless steel metallic finish Flange and cable outlet: ZnC-plated MF
Water Pressure Resistance (Cable outlet)	600 kPa
Weight	See table below.

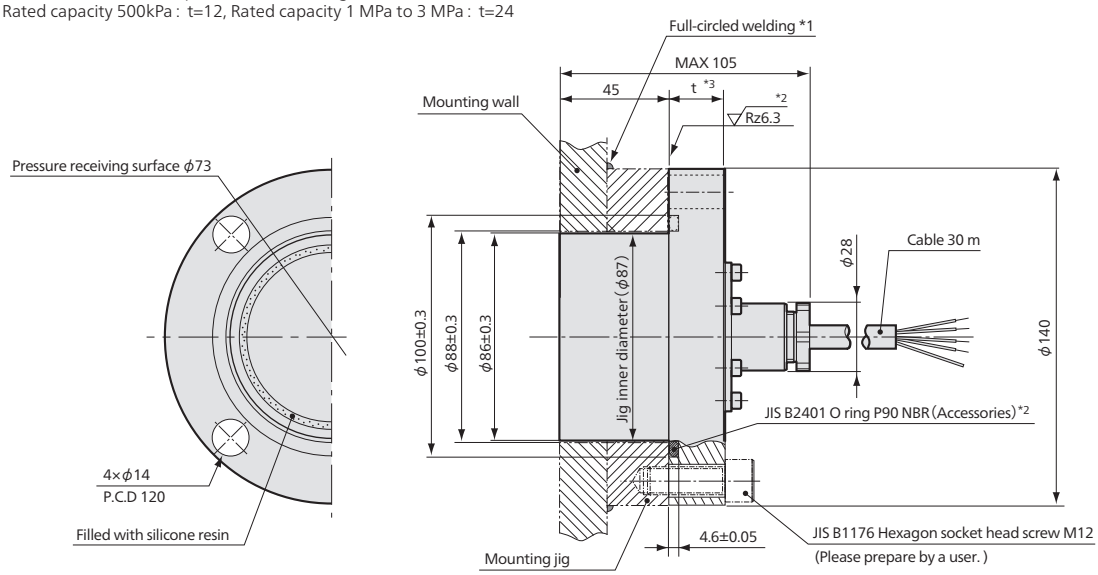
Models	Rated Capacity	Calculated Loads	Weight (Excluding cable)
●BER-S-500KP12SA3Z30	500 kPa	2.1 kN	3.1 kg
●BER-S-1MP12SA3Z30	1 MPa	4.2 kN	4.4 kg
●BER-S-2MP12SA3Z30	2 MPa	8.4 kN	4.4 kg
●BER-S-3MP12SA3Z30	3 MPa	12.6 kN	4.4 kg

●For delivery date, please contact us.

*For pressure measurement of pulverulent bodies within ϕ10 mm (Powdered & pore pressure)

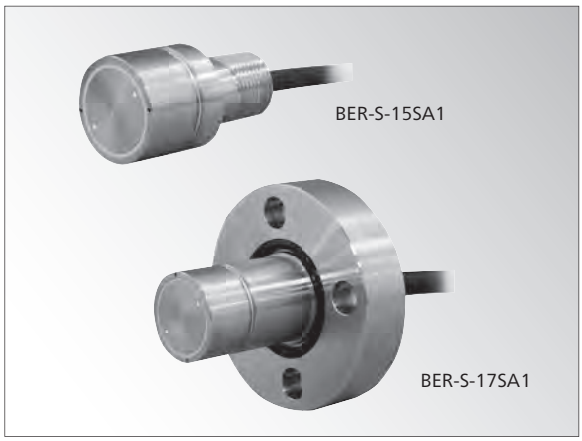
■Dimensions

(*1) Please don't weld the mounting jig with wall surface soil pressure transducer attached.
(*2) Please manufacture the part where the O ring contacts with ▽Rz6.3.
(*3) Rated capacity 500kPa : t=12, Rated capacity 1 MPa to 3 MPa : t=24



BER-S-15SA1/17SA1

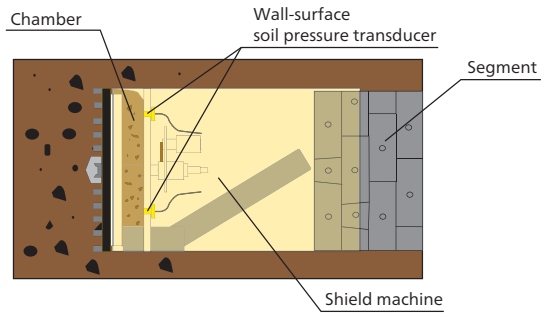
Wall-surface Soil Pressure Transducer



With a stopper
Safe overloads: 1000%

- Outstanding 1000% overload
- Regular capacity models are available

Application Example



- Pressure measurement
- 500 kPa to 3 MPa

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±2% RO
Hysteresis	Within ±2% RO
Rated Output	Approx. 1.5 mV/V

Environmental Characteristics

Safe Temperature	-30 to 80°C
Compensated Temperature	0 to 70°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	12 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±5%
Output Resistance	350 Ω ±5%
Cable	4-conductor (0.3 mm² for 15SA1, 0.5 mm² for 17SA1)
	chloroprene shielded cable, 8 mm (17SA1: 10 mm) diameter
	by 30 m long, bared at the tip
	(Shield wire is not connected to the case.)

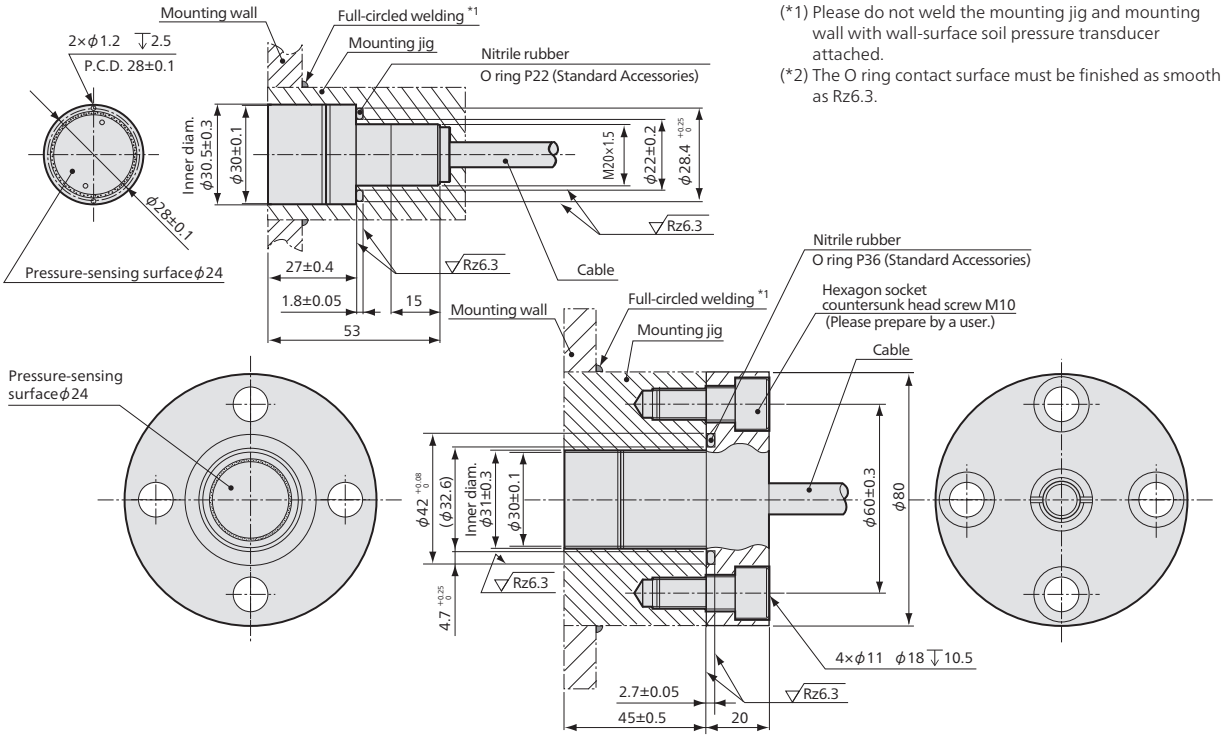
Mechanical Properties

Safe Overloads	1000% soil pressure
	(Soil pressure = Effective stress + Pore water pressure)
	Safe overload of pore water pressure (including gas pressure) is 3 MPa.
	Only when soil pressure is applied to the pressure receiving surface equally.
Exterior	Stainless steel metallic finish
Water Pressure Resistance (Cable outlet)	600 kPa
Weight	BER-S-15SA1: 150 g (Excluding cable)
	BER-S-17SA1: 800 g (Excluding cable)

Models	Rated Capacity	Calculated Loads
●BER-S-500KP15SA1	500 kPa	230 N
●BER-S-1MP15SA1	1 MPa	460 N
●BER-S-2MP15SA1	2 MPa	910 N
●BER-S-3MP15SA1	3 MPa	1360 N
●BER-S-500KP17SA1	500 kPa	236 N
●BER-S-1MP17SA1	1 MPa	460 N
●BER-S-2MP17SA1	2 MPa	910 N
●BER-S-3MP17SA1	3 MPa	1360 N

●For delivery date, please contact us.
*For pressure measurement of pulverulent bodies ϕ3 mm or less (Powdered & pore pressure)

Dimensions

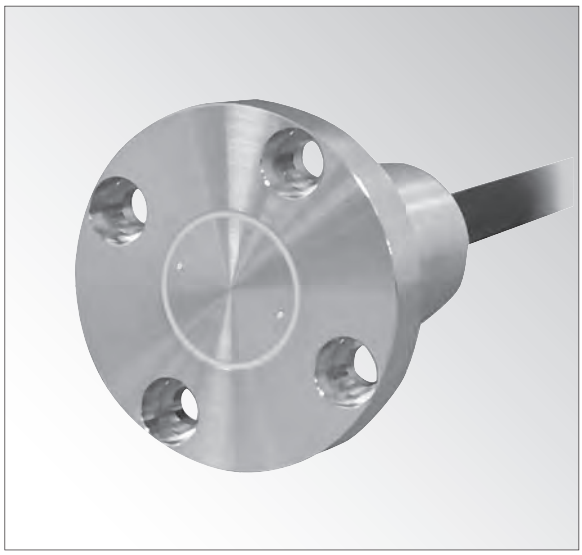


(*1) Please do not weld the mounting jig and mounting wall with wall-surface soil pressure transducer attached.
(*2) The O ring contact surface must be finished as smooth as Rz6.3.

BER-S-35SA1

●Pressure measurement
●500 kPa to 3 MPa

Wall-surface Soil Pressure Transducer



With a stopper
Safe overloads: 1000%

●Outstanding 1000% overload
●Regular capacity models are available

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±2% RO
Hysteresis	Within ±2% RO
Rated Output	Approx. 1.5 mV/V

Environmental Characteristics

Safe Temperature	-30 to 80°C
Compensated Temperature	0 to 70°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	12 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±5%
Output Resistance	350 Ω ±5%
Cable	4-conductor (0.5 mm²) chloroprene shielded cable,
	10 mm diameter by 30 m long, bared at the tip
	(Shield wire is not connected to the case.)

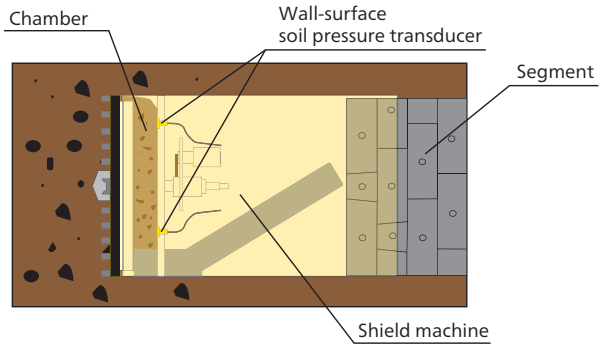
Mechanical Properties

Safe Overloads	1000% soil pressure
	(Soil pressure = Effective stress + Pore water pressure)
	Safe overload of pore water pressure (including gas
	pressure) is 3 MPa.
	Only when soil pressure is applied to the pressure
	receiving surface equally.
Exterior	Stainless steel metallic finish
Water Pressure Resistance (Cable outlet)	600 kPa
Weight	Approx. 400 g (Excluding cable)

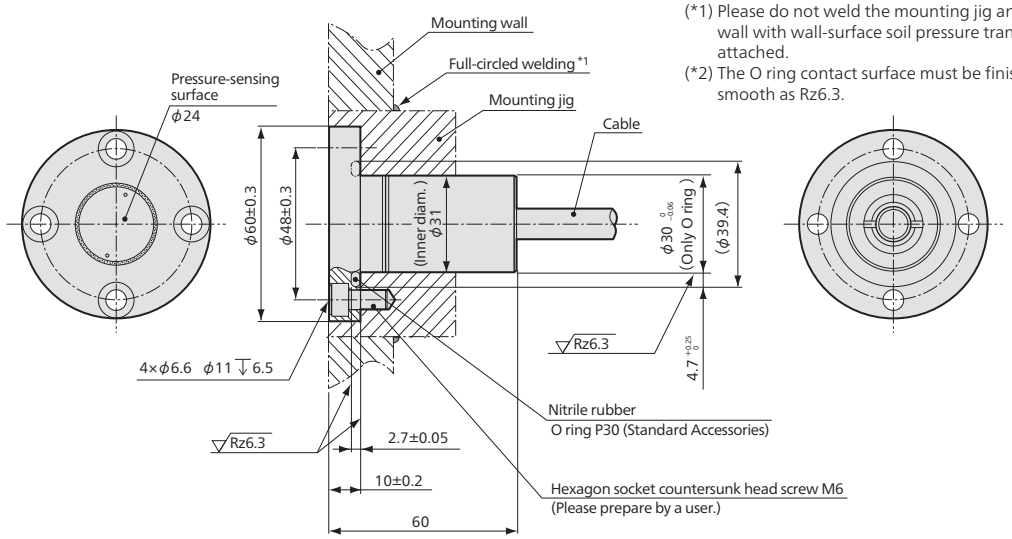
Models	Rated Capacity	Calculated Loads
●**BER-S-500KP35SA1**	500 kPa	230 N
●**BER-S-1MP35SA1**	1 MPa	460 N
●**BER-S-2MP35SA1**	2 MPa	910 N
●**BER-S-3MP35SA1**	3 MPa	1360 N

●For delivery date, please contact us.
*For pressure measurement of pulverulent bodies ϕ3 mm or less (Powdered & pore pressure)

■Application Example



■Dimensions

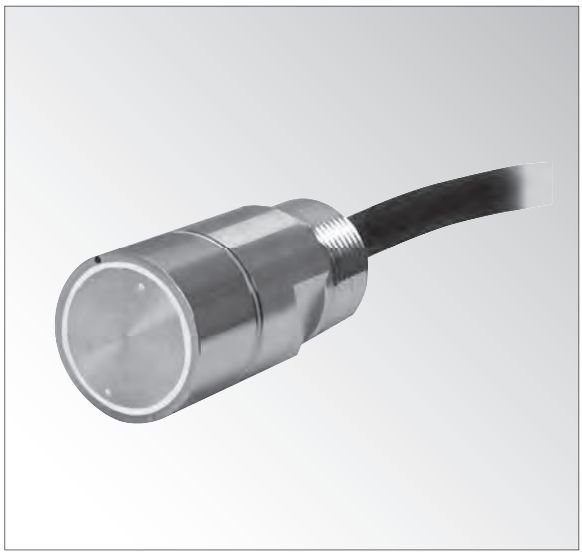


(*1) Please do not weld the mounting jig and mounting wall with wall-surface soil pressure transducer attached.
(*2) The O ring contact surface must be finished as smooth as Rz6.3.

BER-S-79SA1

Wall-surface Soil Pressure Transducer

●Pressure measurement
●500 kPa to 3 MPa



With a stopper
Safe overloads: 1000%

●Outstanding 1000% overload
●Excellent characteristics against eccentric load
(Little change in sensitivity and others)

Specifications

Performance

Rated Capacity	See table below.
Nonlinearity	Within ±2% RO
Hysteresis	Within ±2% RO
Rated Output	Approx. 1.5 mV/V

Environmental Characteristics

Safe Temperature	-30 to 80°C
Compensated Temperature	0 to 70°C
Temperature Effect on Zero	Within ±0.1% RO/°C
Temperature Effect on Output	Within ±0.1%/°C

Electrical Characteristics

Safe Excitation	12 V AC or DC
Recommended Excitation	1 to 10 V AC or DC
Input Resistance	350 Ω ±5%
Output Resistance	350 Ω ±5%
Cable	4-conductor (0.5 mm²) chloroprene shielded cable,
	9.7 mm diameter by 30 m long, bared at the tip
	(Shield wire is not connected to the case.)

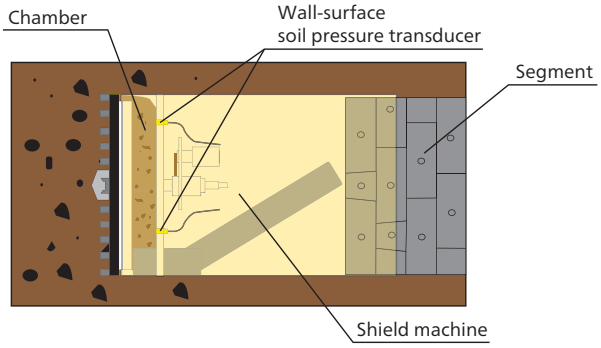
Mechanical Properties

Safe Overloads	1000% soil pressure
	(Soil pressure = Effective stress + Pore water pressure)
	Safe overload of pore water pressure (including gas
	pressure) is 3 MPa.
	Only when soil pressure is applied to the pressure
	receiving surface equally.
Exterior	Stainless steel metallic finish
Water Pressure Resistance (Cable outlet)	600 kPa
Weight	Approx. 230 g (Excluding cable)

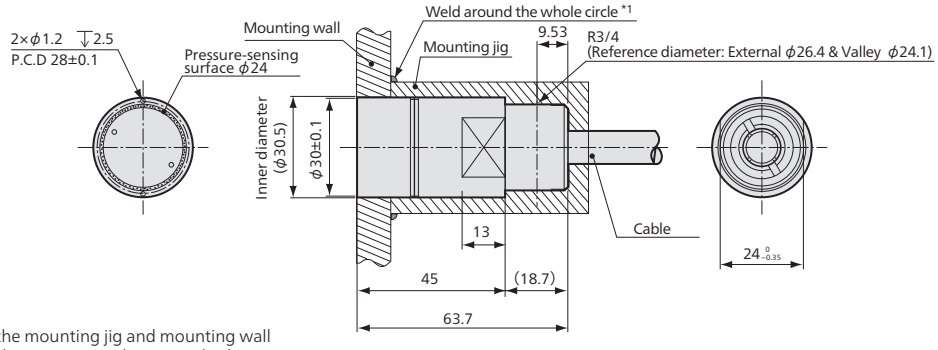
Models	Rated Capacity	Calculated Loads
●BER-S-500KP79SA1	500 kPa	230 N
●BER-S-1MP79SA1	1 MPa	460 N
●BER-S-2MP79SA1	2 MPa	910 N
●BER-S-3MP79SA1	3 MPa	1360 N

●For delivery date, please contact us.
*For pressure measurement of pulverulent bodies ϕ3 mm or less (Powdered & pore pressure)

■Application Example



■Dimensions



*Please do not weld the mounting jig and mounting wall with wall-surface soil pressure transducer attached.

■ Specifications and designs are subject to change without notice.
■ Please contact us if using the detailed products for special applications.
■ Detailed company and product names are the trademarks or registered trademarks of their respective owners.

Safety Precautions

- Be sure to observe the safety precautions given in the instruction manual, in order to ensure correct and safe operation.
- Do not use in locations subject to significant water, dampness, steam, dust, or flammable gases.
  Doing so may lead to fire, electrical shock, or malfunction.

ISO 9001
ISO 14001
JQA-0821
JQA-EM4824

Move into the future with reliable measurements

KYOWA

KYOWA ELECTRONIC INSTRUMENTS CO., LTD.

Manufacturer's Representative

ZSE ELECTRONIC GMBH

ZSE ELECTRONIC MESS-SYSTEME & SENSORTECHNIK GmbH
Postfach 1830 ■ 74308 Bietigheim-Bissingen
Telefon: 07142 6845 ■ Fax: 07142 6997
e-mail: info@zse.de ■ **www.zse.de**

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