

Pressure Sensor

F SERIES



▲FHS series



▲FHL series

▲FHX series



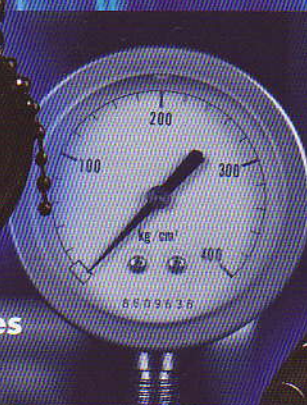
▲FHJ series



▲FHG series



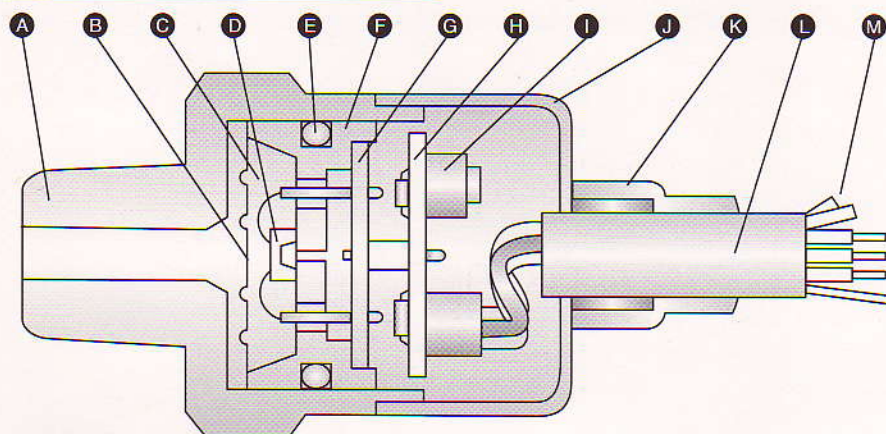
◀▲FTT series



▲FHM series

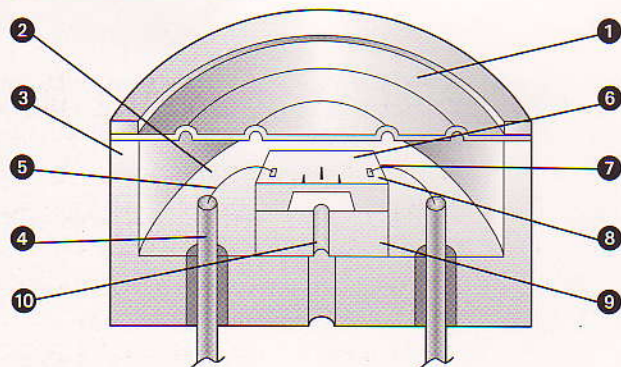
*F Series Pressure Sensor means one product to be applicable for both Air & Liquid.
Vacuum and Compound Types are available upon custom request of measuring range.
Stainless or Titanium body as tough as 100G of Shock Resistance.*

[Mechanical structure : FHG series]



A	Pressure Port
B	Stainless Diaphragm
C	Silicon Oil
D	Semiconductor Pressure Sensor
E	O-ring
F	Inner Housing
G	Temperature compensating plate
H	Printed Circuit Board
I	Adjuster
J	Outer Housing
K	Protection tube
L	Cable
M	Vent Pipe

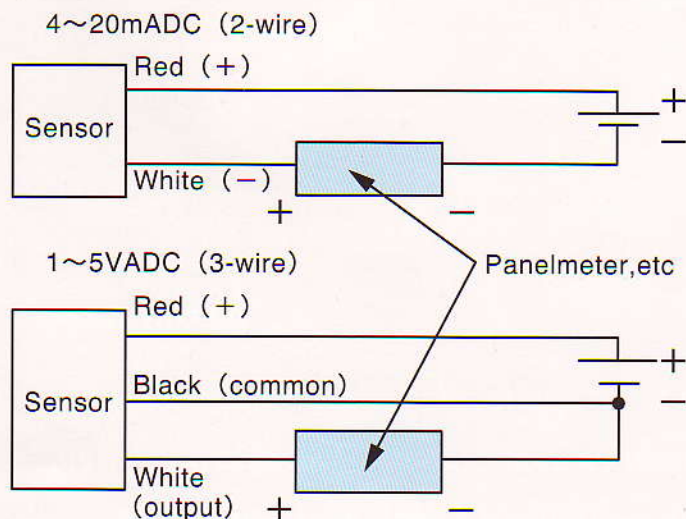
2 [Sensor part]



1	Stainless Diaphragm
2	Silicon Oil
3	Inner Housing
4	Lead
5	Bonding wires
6	Silicon Plate
7	Piezzo Resistor Gauge
8	Bonding Pad
9	Glass Base
10	Vent Pipe

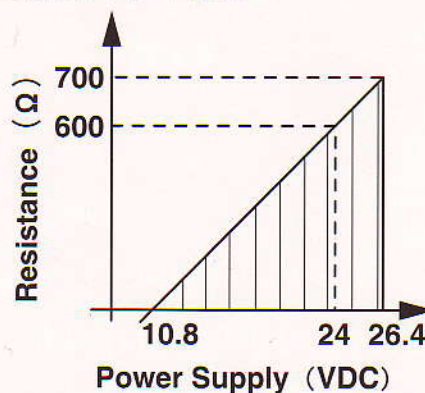
The pressure is detected first at the diaphragm(1). The pressure is conducted to Semiconductor Pressure Sensor through Silicon Oil(2). The Semiconductor Pressure Sensor consists of Silicon Plate (6) and Glass Base (9) and its central part is thinned by etching giving diaphragm like appearance. The conducted pressure gives distortion to the diaphragm which energy influences Piezzo Resistor Gauge (7). Piezzo Resistor Gauge outputs electric signal in accordance with pressure value through Bonding Wire. The electric signal is amplified and adjusted for Current or Voltage signal. Semiconductor Pressure Sensor is so influenced by ambient temperature (temperature drift) that Temperature Compensation Circuit is designed in.

3 [Wiring Diagram]



4 [Relation between Power supply and Resistance]

Output : 4-20mA
Supply : 10.8~26.4VDC
Resistance : 0~700Ω



2 [Product Selection]

Pressure sensor

F	H	T	1	C	-	5	0	0	K	P
Product Series			Output	Special	Pressure Range				Unit	
FHA	FHJ		I=Current	C=Compound					KP=kPa	
FHT	FHFE		V=Voltage	N=Negative					MP=MPa	
FHG	FTT									
FHL	FTL									
FHS	FTS									
FHX										

Remark: Connector type is named by placing "C" instead of "H" and "T". (For instance, connector type of FHA is called as FCA).

Water depth sensor

F	H	M	-	3	0	0	-	1	0
Product Series								Pressure Range	
FHM	300							02	
	200							05	
	700							10	
	600							30	
	920								
	900								

Remark: "30" is not available for FHM-900 and 920

International translation of pressure unit

kPa	bar	mbar	kg/cm ²	mmH ₂ O(*1)	psi	mmHg(*2)	atm
1	10 ⁻²	10	1.01972 × 10 ⁻²	1.02064 × 10 ²	1.45038 × 10 ⁻¹	7.50062	9.86923 × 10 ⁻³
10 ²	1	10 ³	1.01972	1.02064 × 10 ⁴	1.45038 × 10 ¹	7.50062 × 10 ²	9.86923 × 10 ⁻¹
10 ⁻¹	10 ⁻³	1	1.01972 × 10 ⁻³	1.02064 × 10 ¹	1.45038 × 10 ⁻²	7.50062 × 10 ⁻¹	9.86923 × 10 ⁻⁴
9.80665 × 10 ¹	9.80665 × 10 ⁻¹	9.80665 × 10 ²	1	1.00090 × 10 ⁴	1.42233 × 10 ¹	7.35559 × 10 ²	9.67841 × 10 ⁻¹
9.79781	9.79781 × 10 ⁻⁵	9.79781 × 10 ⁻²	9.99099 × 10 ⁻⁵	1	1.42105 × 10 ⁻³	7.34896 × 10 ⁻²	9.66969 × 10 ⁻⁵
6.89476	6.89476 × 10 ⁻²	6.89476 × 10 ¹	7.03070 × 10 ⁻²	7.03704 × 10 ²	1	5.17149 × 10 ¹	6.80460 × 10 ⁻²
1.33322 × 10 ⁻¹	1.33322 × 10 ⁻³	1.33322	1.35951 × 10 ⁻³	1.36074 × 10 ¹	1.93368 × 10 ⁻²	1	1.31579 × 10 ⁻³
1.01325 × 10 ²	1.01325	1.01325 × 10 ³	1.03323	1.03416 × 10 ¹	1.46959 × 10 ¹	7.60000 × 10 ²	1

(*1) : at 15 degree C. (*2) : mmHg = Torr

GLOSSARY

Absolute	Pressure value referred to absolute vacuum pressure.	Linearity	Maximum error between nominal value and actual value that may be indicated by a line that starts from no pressure up to rated pressure. Given in % against Full Scale (FS)
Break-down Pressure	Pressure value that may damage the sensor electrically or mechanically.	Hysteresis	Maximum error that may happen at the same value of pressure. This value is different between the ways of increasing/decreasing pressure.
Compensated Temp Range	Temperature range that all the specifications are guaranteed within.	Temperature Drift	Maximum error that may be caused by change of ambient temperature. The unit is % against 1 Celsius/Fahrenheit of change. Standard point is 25 Celsius (77F)
Dielectric Strength	The strength which a sensor can stand against a certain voltage during a certain period of time.	Rated Pressure	Pressure range that all the specifications are guaranteed.
Differential	Relative pressure value between two inputs of pressures.	Ambient Temperature	The range of temperature that all the specifications are guaranteed. It however operates even over or under the Ambient Temperature range without guarantee of performance.
Gauge	Pressure referred to atmospheric pressure. Atmospheric pressure is taken via Vent Pipe.	Response Time	The time required for the pulse to become up to 90%.
Insulation Resistance	Insulating resistance value given by taking measurement at a given voltage between two terminals or between terminal and earth.	Gravitational Effect	The error that may happen by installation angle. 90 degree face-down is the standard. This happens by slight change of offset value caused by weight of silicon oil impressed inside.
Maximum Pressure	Maximum pressure value when all the specifications are secured but except linearity and hysteresis.		
Shield Gauge	Pressure referred to a fixed pressure at around atmospheric pressure		
Absolute Accuracy	Maximum error that sensor may give. Absolute Accuracy = Linearity + Hysteresis + Repeatability. Absolute Accuracy is given in % value against Full Scale (FS)		

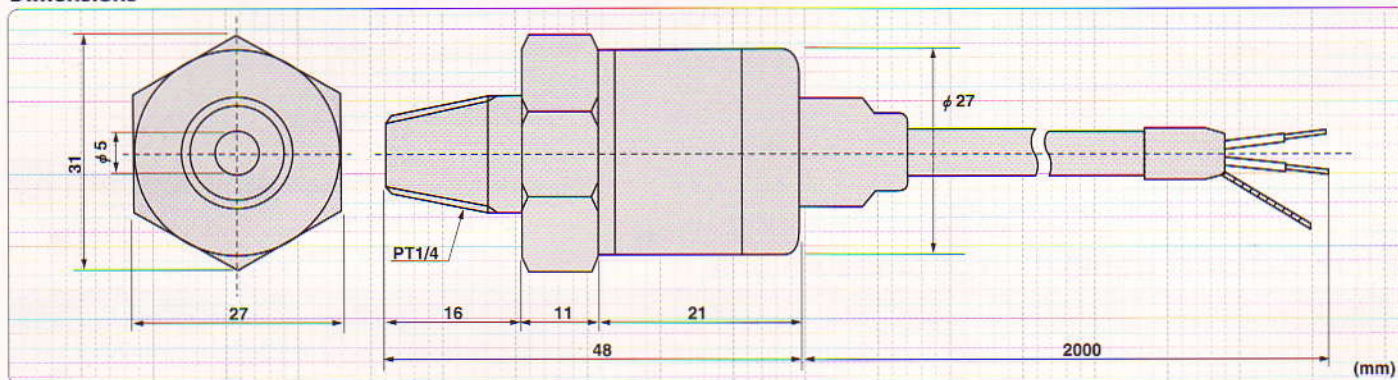


FHA series

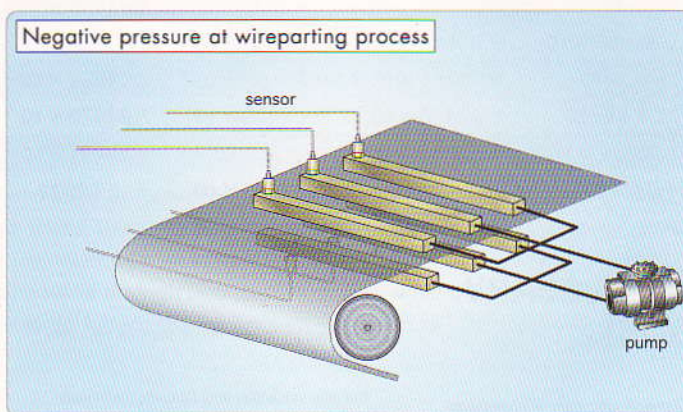
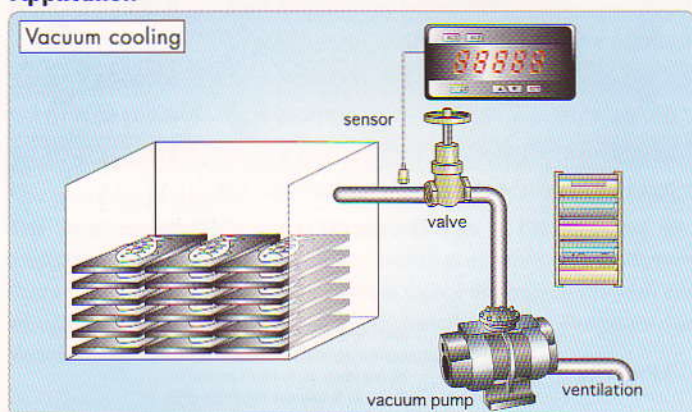
Absolute Type

- Absolute Pressure from 0 to 600kPa abs.
- 4-20mA output (FHA series) and 1-5V output (FHAV series)
- Applicable both to Air and Liquid.
- Connector types (FCAI series, FCAV series) are available.
- Box housing types (FTAI series) are available.

Dimensions



Application



Specifications/■FHA (Current) /FHAV (Voltage)

Product Type	FHA /FHAV Series		
	FCAI / FCAV = Connector Type, FTAI = Box type	-300KP	-600KP
Pressure Range	0~100 k Pa abs	0~300 k Pa abs	0~600 k Pa abs
Pressure Reference	Absolute		
Max Pressure	Voltage : Max 200% of Rated Pressure Range Current : Max 150%, at 60 Celsius of ambient temp		
Sensor Material	SUS 316 except Diaphragm of SUS316L, Fluoro Rubber (O-ring)		
Sealed Liquid	Silicon Oil		
Applicable Media	Air & Liquid (not harmful to the sensor material)		
Power Supply	10.8~26.4VDC		
Output	FHA : 4~20mA DC / FHAV 1~5 V DC		
Load Resistance	FHA : 600ΩMAX (24V DC) / FHAV : 1KΩ or more		
Response Time	5msec Max		
Absolute Accuracy	±0.5% FS		
(Linearity)	(±0.2%FS Max)		
Temp Drift	±0.05% FS/°C Max (0~60°C)		
Compensated Temp Range	0~60°C		
Operating Temp Range	-20~80°C (no condensation)		
Ambient Humidity	35~85% RH (no dew)		
Pressure Port	R4/1 (PT1/4)		
Cable	φ6 Vinyl : 2000mm Shield cable		
Protection Category	IP65		

Isolation Resistance	100MΩ or more / 500V DC		
Dielectric Strength	500V AC 1 minute		
Vibration Resistance	10G , 100~500Hz Two hours XYZ directions		
Shock Resistance	100G X 3 times		
Net Weight	170 g		
Gravitational Effect	±0.1% F S	±0.03% F S	±0.01% F S

■Cable wiring

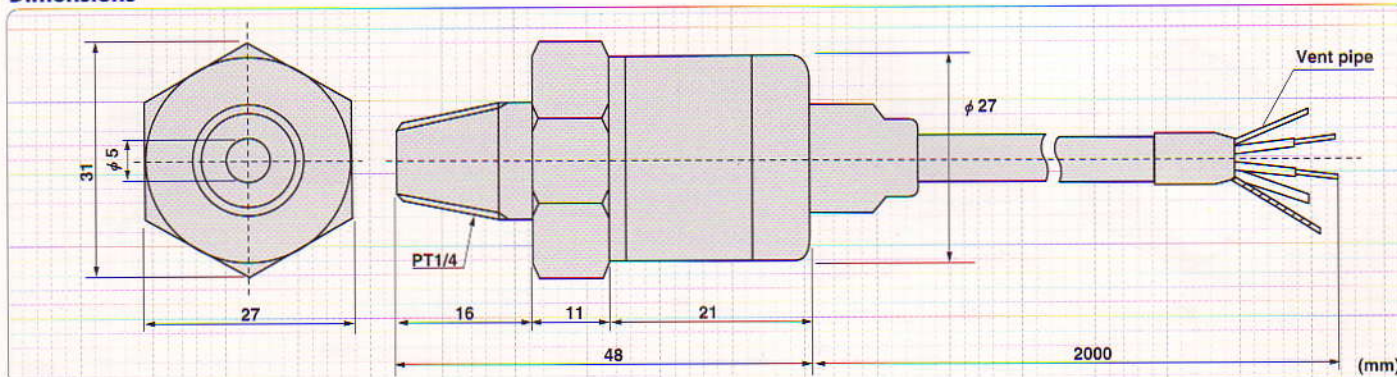
	FHA	FHAV
Red	+	+
White	-	Output
Black		Common

FHT series

General use for low pressure

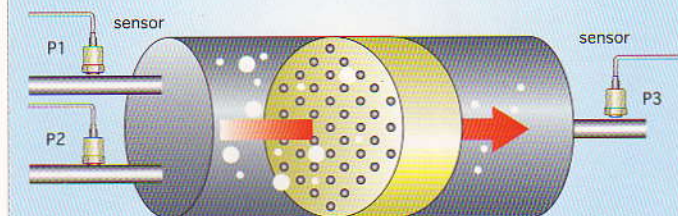
- Gauge pressure from Minus 100kPa up to 500kPa.
- 4-20mA output (FHTI series) and 1-5V output (FHTV series)
- Applicable both to Air and Liquid.
- Compound type is available.
(Recommended range :①-50 to 50kPa, ②-100 to 100kPa, ③-100 to 300kPa, ④-100 to 500kPa)
- Connector Type is available (FCTI series, FCTV series).

Dimensions

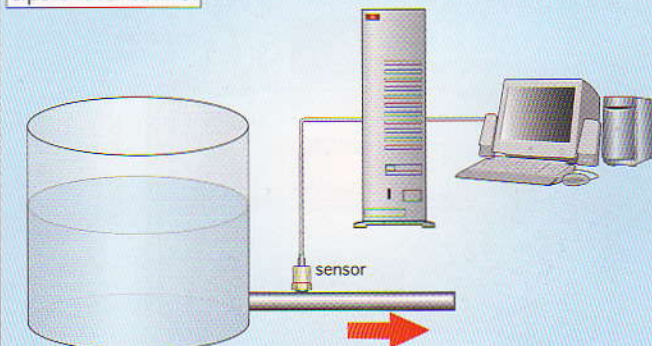


Application

Filtering Process



Liquid level control



Specifications/■FHTI (Current) /FHTV (Voltage)

Product Type	FHTI / FHTV Series					
	FHTIC / FHTVC = Compound type on custom					
	N-100KP	-020KP	-050KP	-100KP	-300KP	-500KP
Pressure Range	0~100k Pa	0~20k Pa	0~50k Pa	0~100k Pa	0~300k Pa	0~500k Pa
Pressure Reference	Gauge					
Max Pressure	Voltage : Max 200% of Rated Pressure Range Current : Max 150%, at 60 Celsius of ambient temp					
Sensor Material	SUS 316 except Diaphragm of SUS316L, Fluoro Rubber (O-ring)					
Sealed Liquid	Silicon Oil					
Applicable Media	Air & Liquid (not harmful to the sensor material)					
Power Supply	10.8~26.4VDC					
Output	FHTI : 4~20mA DC / FHTV : 1~5 V DC					
Load Resistance	FHTI : 600ΩMAX (24V DC) / FHTV : 1KΩ or more					
Response Time	5msec Max					
Absolute Accuracy (Linearity)	±0.5% FS (±0.2%FS Max)					
Temp Drift	±0.05% FS/°C Max (0~60°C)					
Compensated Temp Range	0~60°C					
Operating Temp Range	-20~80°C (no condensation)					
Ambient Humidity	35~85% RH (no dew)					
Pressure Port	R1/4 (PT1/4)					
Cable	φ6 Vinyl : 2000mm Shield + Vent Pipe					
Protection Category	IP 65					

Isolation Resistance	100MΩ or more / 500V DC					
Dielectric Strength	500V AC 1 minute					
Vibration Resistance	10G, 100~500Hz Two hours XYZ directions					
Shock Resistance	100G X 3 times					
Net Weight	170 g					
Gravitational Effect	±0.1%FS	±0.5%FS	±0.3%FS	±0.1%FS	±0.03%FS	±0.02%FS

Remark: Specs are guaranteed, for vacuum use, under 10kPa abs or more. Ambient Temp is to be 0-60°C

Cable wiring

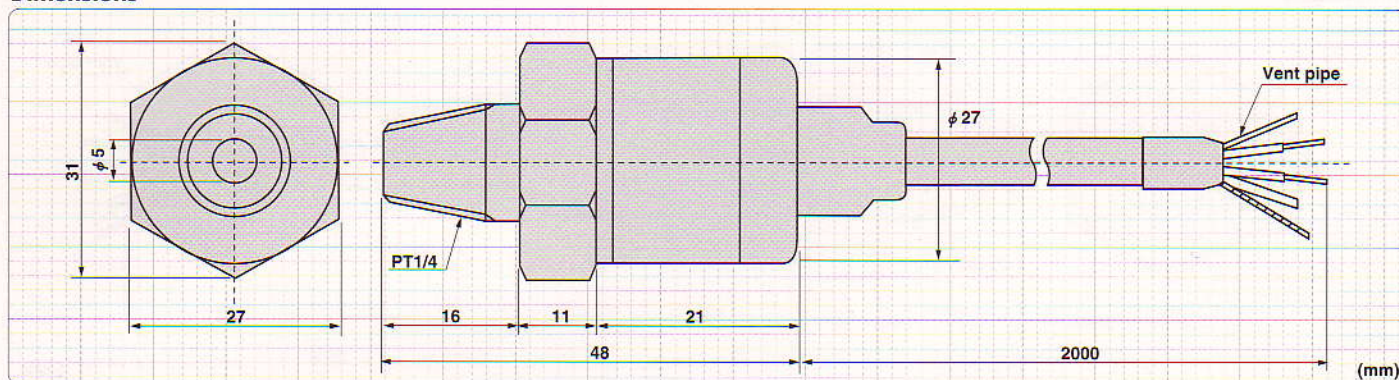
	FHTI	FHTV
Red	+	+
White	-	Output
Black		Common
Vent pipe		



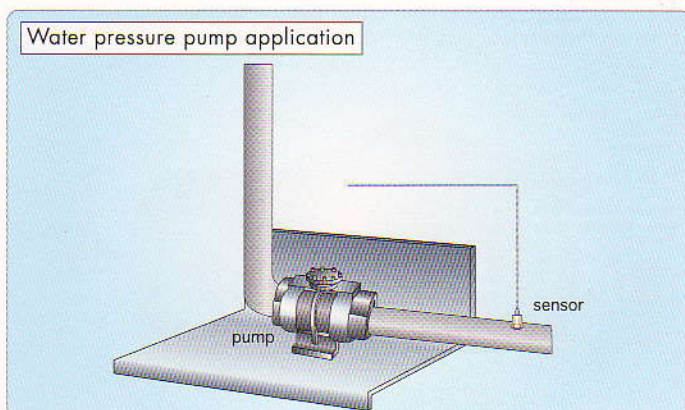
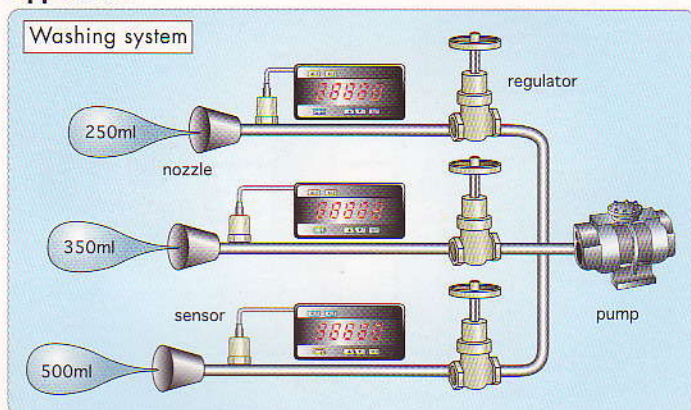
FHG series | General use for middle pressure

- Gauge pressure from 0 to 2MPa.
- 4-20mA output (FHGI series) and 1-5V output (FHGV series)
- Applicable both to Air and Liquid.
- Connector type is available (FCGI Series, FCGV series).

Dimensions



Application



Specifications/■FHGI (Current)/FHGV (Voltage)

FHGI /FHGV Series	
Product Type	-001MP -002MP
Pressure Range	0~1MPa 0~2MPa
Pressure Reference	Gauge
Max Pressure	Voltage : Max 200% of Rated Pressure Range Current : Max 150% , at 60 Celsius of ambient temp.
Sensor Material	SUS316 except Diaphragm of SUS316L, Fluoro Rubber (O-ring)
Sealed Liquid	Silicon Oil
Applicable Media	Air & Liquid (not harmful to the sensor material)
Power Supply	10.8~26.4VDC
Output	FHGI : 4~20mA DC / FHGV : 1~5V DC
Load Resistance	FHGI : 600Ω Max (DC24 V) / FHGV : 1KΩ or more
Response Time	5 msec Max
Absolute Accuracy	±0.5%FS Max
(Linearity)	(±0.2%FS Max)
Temp Drift	±0.05% FS/°C Max (0~60°C)
Compensated Temp Range	0~60°C
Operating Temp Range	-20~80°C (no condensation)
Ambient Humidity	35~85%RH (no dew)
Pressure Port	R1/4 (PT1/4)
Cable	φ6 Vinyl 2000mm, Shield + Vent Pipe
Protection Category	IP65
Isolation Resistance	100MΩ or more /500 V DC

Dielectric Strength	500V AC 1minute
Vibration Resistance	100~500Hz Two hours XYZ directions
Shock Resistance	100G X 3 times
Net Weight	170 g

Cable wiring

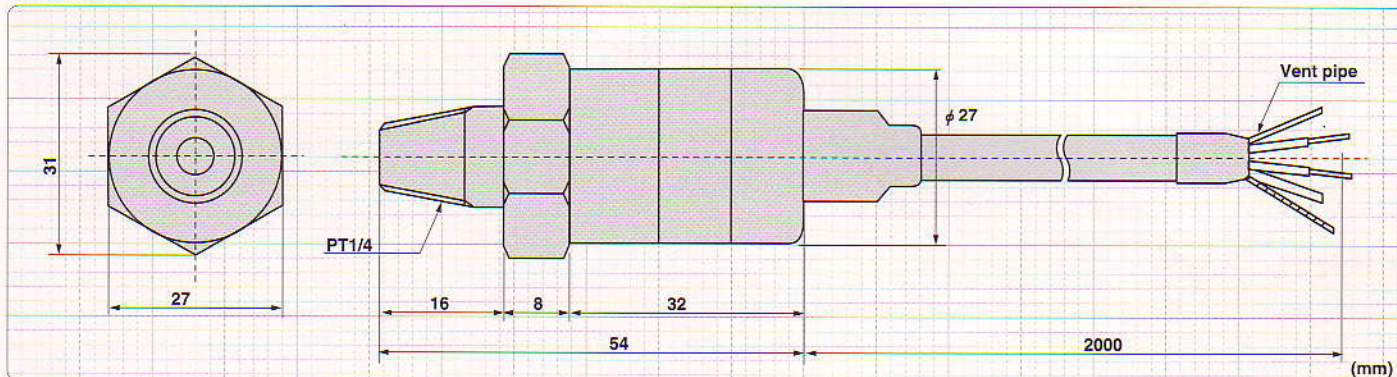
	FHGI	FHGV
Red	+	+
White	-	Output
Black		Common
Vent pipe		



FHL series For gas or chemical application

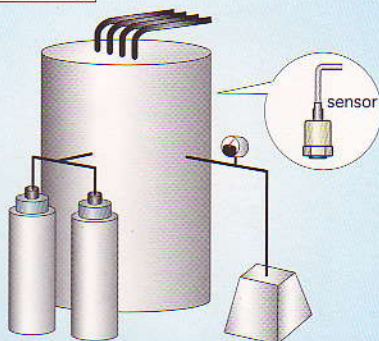
- Junction molded, not using O-ring.
- Gauge pressure from Minus 20kPa up to 1MPa.
- 4-20mA output (FHLI series) and 1-5V output (FHLV series)
- Applicable both to Air and Liquid.
- Compound type is available.
(Recommended range : ①-50 to 50kPa, ②-100 to 100kPa, ③-100 to 300kPa, ④-100 to 500kPa)
- Connector Type is available (FCLI series, FCLV series).

Dimensions

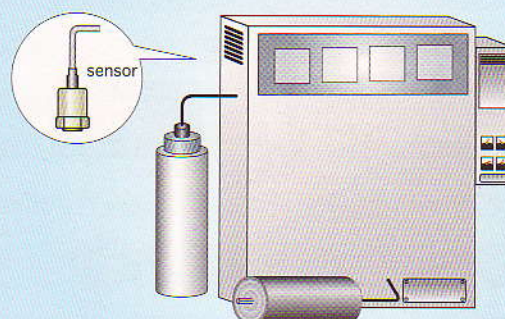


Application

Semicon water processing



Coolant gas



Specifications/■FHLI (Current)/FHLV (Voltage)

Product Type	FHLI / FHLV Series						
	FHLIC / FHLVC = Compound type on custom (Max 500kPa),						
	N-100KP	-020KP	-050KP	-100KP	-300KP	-500KP	-001MP
Pressure Range	0~100kPa	0~20kPa	0~50kPa	0~100kPa	0~300kPa	0~500kPa	0~1MPa
Pressure Reference	Gauge						
Max Pressure	Voltage : Max 200% of Rated Pressure Range Current : Max 150%, at 60 Celsius of ambient temp						
Sensor Material	SUS 316 except Diaphragm of SUS 316L						
Sealed Liquid	Silicon Oil						
Applicable Media	Air & Liquid (not harmful to the sensor material)						
Power Supply	10.8~26.4VDC						
Output	FHLI : 4~20A DC / FHLV : 1~5 V DC						
Load Resistance	FHTI : 600Ω MAX (24V DC) / FHTV : 1KΩ or more						
Response Time	5msec Max						
Absolute Accuracy	±0.5% FS						
(Linearity)	(±0.2% FS Max)						
Temp Drift	±0.05% FS/°C Max (0~60°C)						
Compensated Temp Range	0~60°C						
Operating Temp Range	-20~80°C (no condensation)						
Ambient Humidity	35~85% RH (no dew)						
Pressure Port	R1/4 (PT1/4)						
Cable	φ6 Vinyl : 2000mm, Shield + Vent Pipe						
Protection Category	IP 65						

Isolation Resistance	100MΩ or more / 500V DC						
Dielectric Strength	500V AC 1 minute						
Vibration Resistance	10G, 100~500Hz Two hours XYZ directions						
Shock Resistance	100G X 3 times						
Net Weight	180 g						
Gravitational Effect	±0.1%FS	±0.5%FS	±0.3%FS	±0.1%FS	±0.03%FS	±0.02%FS	±0.01%FS

Remark : Specs are guaranteed, for vacuum use, under 10kPa abs or more. Ambient Temp is to be 0-60 °C

■Cable wiring

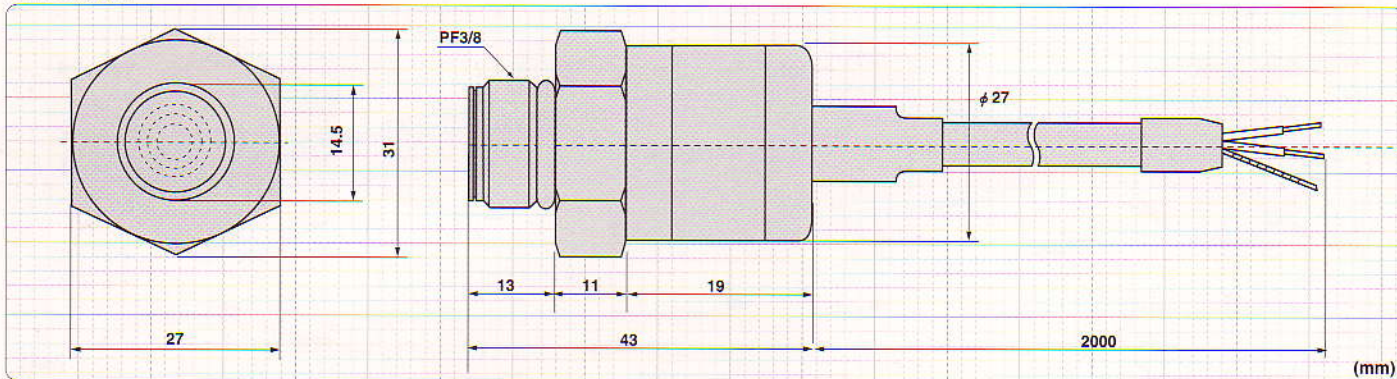
	FHLI	FHLV
Red	+	+
White	-	Output
Black		Common
Vent pipe		



FHS series Flat type for high pressure use

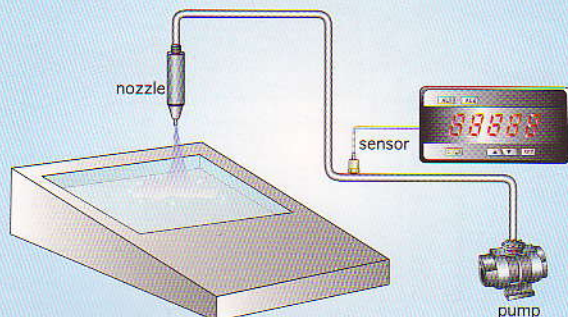
- Flat diaphragm, ideal for condensed liquid.
- Shield Gauge pressure type from 0 to 35MPa.
- 4-20mA output (FHSI series) and 1-5V output (FHSV series)
- Applicable both to Air and Liquid.
- Applicable up to 100°C of ambient temperature.
- Damper junction (FG3R3-DSM5) is available for avoiding surge pressure.
- Connector Type is available (FCSI series, FCSV series).

Dimensions

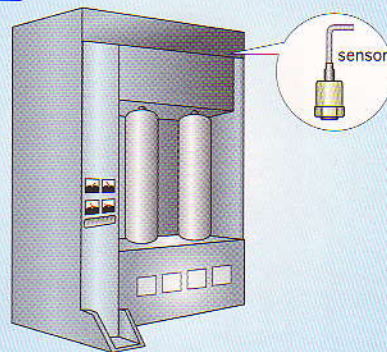


Application

Pressure monitoring high-pressure washing



Plastic dispenser



Specifications/■ FHSI (Current)/FHSV (Voltage)

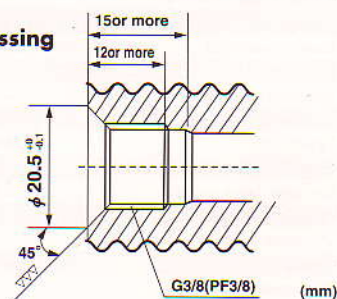
Product Type	FHSI / FHSV Series					
	-002MP	-003MP	-005MP	-010MP	-020MP	-035MP
Pressure Range	0~2MPa	0~3MPa	0~5MPa	0~10MPa	0~20MPa	0~35MPa
Pressure Reference	Shield Gauge					
Max Pressure	Voltage : Max 200% of Rated Pressure Range Current : Max 150%, at 60 Celsius of ambient temp, Max 140% at 35MPa					
Sensor Material	SUS 316 except Diaphragm of SUS316L, Fluoro Rubber (O-ring)					
Sealed Liquid	Silicon Oil					
Applicable Media	Air & Liquid (not harmful to the sensor material)					
Power Supply	10.8~26.4VDC					
Output	FHSI : 4~20mA DC / FHSV : 1~5 V DC					
Load Resistance	FHSI : 600Ω MAX (24V DC) / FHSV : 1K Ω or more					
Response Time	5msec Max					
Absolute Accuracy	±0.5% FS					
(Linearity)	(±0.3%FS Max)					
Temp Drift	±0.05% FS/°C Max (0~60°C)					
Compensated Temp Range	0~60°C					
Operating Temp Range	-20~100°C (no condensation)					
Ambient Humidity	35~85% RH (no dew)					
Pressure Port	G3/8 (PF3/8)					
Cable	φ6 Vinyl : 2000mm Shield					
Protection Category	IP 65					
Isolation Resistance	100MΩ or more / 500V DC					

Dielectric Strength	500V AC 1 minute	
Vibration Resistance	100~500Hz Two hours XYZ directions	
Shock Resistance	100G X 3 times	
Net Weight	140 g	
Accessory	Joint "FG3R3" and "FG3R3-DSM5" from G3/8 to R3/8 (SUS316)	

■ Cable wiring

	FHSI	FHSV
Red	+	+
White	-	Output
Black		Common

■ O-ring port example of processing

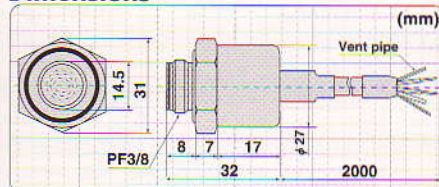


FHX series Flat type for low pressure

- Flat diaphragm, ideal for condensed liquid.
- Gauge pressure from Minus 100kPa to 1MPa.
- As small length as 32mm with amplifier built-in.
- 4-20mA output (FHXI series) and 1-5V output (FHXV series)
- Applicable both to Air and Liquid.
- Compound type is available.
(Recommended range : ①-100 to 100kPa, ②-100 to 300kPa, ③-100 to 500kPa)



Dimensions



Specifications/■ FHXI(Current)/FHXV (Voltage)

Product Type	FHXI / FHXV Series				
	FHXIC/ FHXVC = Compound type on custom (Max 500KPa)				
	N-100KP	-100KP	-300KP	-500KP	-001MP
Pressure Range	0~100kPa	0~100kPa	0~300kPa	0~500kPa	0~1MPa
Pressure Reference	Gauge				
Max Pressure	Voltage : Max 200% of Rated Pressure Range Current : Max 150%, at 60 Celsius of ambient temp				
Sensor Material	SUS 316 except Diaphragm of SUS316L, Fluoro Rubber (O-ring)				
Sealed Liquid	Silicon Oil				
Applicable Media	Air & Liquid (not harmful to the sensor material)				
Power Supply	10.8~26.4VDC				
Output	FHXI : 4~20mA DC / FHXV : 1~5 V DC				
Load Resistance	FHXI : 600Ω Max (DC24 V) / FHXV : 1KΩ or more				
Response Time	5msec Max				
Absolute Accuracy	±0.5% FS Max				
(Linearity)	(±0.3%FS Max)				
Operating Temp Range	-20~80°C (no condensation)				
Pressure Port	G3/8 (PF3/8)				
Cable	φ6 Vinyl 2000mm cable, Shield + Vent pipe				
Protection Category	IP 65				
Net Weight	140 g				
Gravitational Effect	±0.1%FS	±0.1%FS	±0.03%FS	±0.02%FS	±0.01%FS

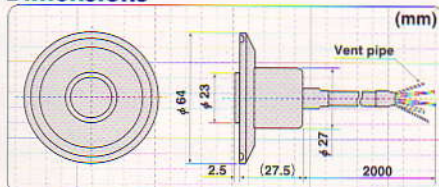
Remark : Specs are guaranteed, for vacuum use, under 10kPa abs or more. Ambient Temp is to be 0-60°C

FHJ series Sanitary use

- Easy- to-wash sanitary type, gauge pressure of Minus 20kPa to 1MPa.
- Current Output only (4-20mA)
- IDF Clamp 2S structure
- Applicable both to Air and Liquid.
- Compound type is available.
(Recommended range : ①-50 to 50kPa, ②-100 to 100kPa, ③-100 to 300kPa, ④-100 to 500kPa)



Dimensions



Specifications/■ FHJI (Current)

Product Type	FHJI Series						
	FHJIC = Compound type on custom (Max 500KPa)						
	N-100KP	-020KP	-050KP	-100KP	-300KP	-500KP	-001KP
Pressure Range	0~100kPa	0~20kPa	0~50kPa	0~100kPa	0~300kPa	0~500kPa	0~1MPa
Pressure Reference	Gauge						
Max Pressure	Voltage : Max 200% of Rated Pressure Range Current : Max 150%, at 60 Celsius of ambient temp						
Sensor Material	SUS 316 except Diaphragm of SUS316L						
Sealed Liquid	Silicon Oil						
Applicable Media	Air & Liquid (not harmful to the sensor material)						
Power Supply	10.8~26.4VDC						
Output	FHJI : 4~20mA DC						
Load Resistance	FHJI : 600Ω Max (DC24 V)						
Response Time	5msec Max						
Absolute Accuracy	±0.5% FS Max						
(Linearity)	(±0.2%FS Max)						
Operating Temp Range	-20~80°C (no condensation)						
Pressure Port	IDF Clamp 2S						
Cable	φ6 Vinyl : 2000mm cable, Shield + Vent Pipe						
Protection Category	IP 65						
Net Weight	250g						
Gravitational Effect	±0.1%FS	±0.5%FS	±0.3%FS	±0.1%FS	±0.03%FS	±0.02%FS	±0.01%FS

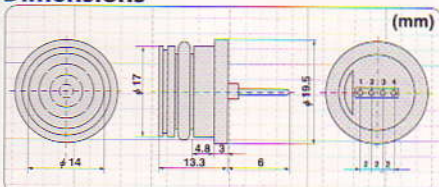
Remark : Specs are guaranteed, for vacuum use, under 10kPa abs or more. Ambient Temp is to be 0-60°C

FHFE series Element only OEM use

- 17mm small element. FHFE Series (Stainless) and FHFET Series (Titanium)
- Gauge pressure from Minus 100KPa to 1MPa.
- Semiconductor type for accurate and stable sensing.
- 0.05%FS/°C of Temperature Drift is secured.



Dimensions



Specifications/■ FHFE (Stainless) / FHFET(Titanium) Series

	FHFE Series			
Product Type	FHFEC = Compound type on custom (Max 500MPa)			
	N-100KP	-100KP	-500KP	-001MP
Pressure Range	0~100kPa	0~100kPa	0~500kPa	0~1MPa
Pressure Reference	Gauge			
Max Pressure	Voltage : Max 200% of Rated Pressure Range			
Sensor Material	FHFE : Diaphragm & Housing SUS316L FHFET : Diaphragm & Housing Titanium		O-ring : Fluoro Rubber O-ring : Fluoro Rubber	
Sealed Liquid	Silicon Oil			
Applicable Media	Air & Liquid (not harmful to the sensor material)			
Offset	±1mV			
Power Supply	1mA fixed			
Span voltage	60~140mV DC			
Bridge Resistance	5±1KΩ			
Response Time	5msec Max			
Absolute Accuracy	±0.5% FS Max			
(Linearity)	(±0.3%FS Max)			
Temp Drift	±0.05% FS/°C Max (0~60°C)			
Compensated Temp Range	0~60°C			
Operating Temp Range	-20~100°C (no condensation)			
Ambient Humidity	35~85%RH (no dew)			
Isolation Resistance	100MΩ more /500 V DC			
Net Weight	FHFE : Apprx 20g / FHFET: Apprx 15g			
Gravitational Effect	±0.1%FS	±0.1%FS	±0.02%FS	±0.01%FS

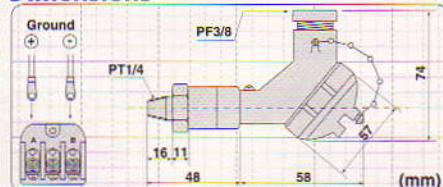
Remark : Specs are guaranteed, for vacuum use, under 10kPa abs or more. Ambient Temp is to be 0-60°C

FTT series Box type of FHT1.FHG1 series

- Gauge pressure from Minus 100kPa to 2MPa.
- Box type with stainless diaphragm
- Applicable both to Air and Liquid.
- IP66 protection



Dimensions



Specifications/■FTTI (Current)

Product Type	FTTI Series					
	FTTIC = Compound type on custom (Max 500kPa)					
	N-100KP	-100KP	-300KP	-500KP	-001MP	-002MP
Pressure Range	0~100kPa	0~100kPa	0~300kPa	0~500kPa	0~1MPa	0~2MPa
Pressure Reference	Gauge					
Max Pressure	Max 150% at 60 Celsius of ambient temp					
Sensor Material	SUS 316 except Diaphragm of SUS316L, Fluoro Rubber (O-ring)					
Sealed Liquid	Silicon Oil					
Applicable Media	Air & Liquid (not harmful to the sensor material)					
Power Supply	10.8~26.4VDC					
Output	4~20mA DC					
Load Resistance	600Ω MAX (24V DC)					
Response Time	5msec Max					
Absolute Accuracy (Linearity)	±0.5% FS Max (±0.2%FS Max)					
Operating Temp Range	-20~80°C (no condensation)					
Pressure Port	R1/4(PT1/4)					
Box Material	Aluminium diecast, cable φ 5.5~7.0					
Protection Category	IP 66					
Net Weight	250 g					
Gravitational Effect	±0.1%FS	±0.1%FS	±0.03%FS	±0.02%FS	±0.01%FS	±0.01%FS

Remark1:Vent Compensatio through cable wiring

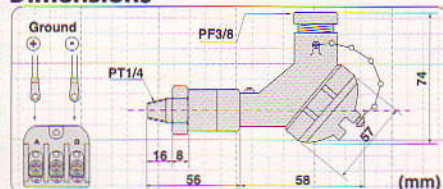
Remark2:Specs are guaranteed, for vacuum use, under 10kPa abs or more. Ambient Temp is to be 0-60°C

FTL series Box type of FHL1 series

- Gauge pressure from Minus 100kPa to 1MPa.
- Box type with stainless diaphragm
- Junction molded, so applicable both to gas and chemical liquid.
- IP66 protection



Dimensions



Specifications/■FTLI (Current)

Product Type	FTLI Series				
	FTLIC = Compound type on custom (Max 500kPa)				
	N-100KP	-100KP	-300KP	-500KP	-001KP
Pressure Range(normal type)	0~100kPa	0~100kPa	0~300kPa	0~500kPa	0~1MPa
Pressure Reference	Gauge				
Max Pressure	Current : Max 150% , at 60 Celsius of ambient temp				
Sensor Material	SUS316 except Diaphragm of SUS316L				
Sealed Liquid	Silicon Oil				
Applicable Media	Air & Liquid (not harmful to the sensor material)				
Power Supply	10.8~26.4VDC				
Output	4~20mA DC				
Load Resistance	600Ω Max (DC24 V)				
Response Time	5msec Max				
Absolute Accuracy (Linearity)	±0.5% FS Max (±0.2% FS Max)				
Operating Temp Range	-20~80°C (no condensation)				
Pressure Port	R1/4(PT 1/4)				
Box Material	Aluminium diecast, cable φ 5.5 - 7.0				
Protection Category	IP 66				
Net Weight	260 g				
Gravitational Effect	±0.1%FS	±0.1%FS	±0.03%FS	±0.02%FS	±0.01%FS

Remark1:Vent Compensatio through cable wiring

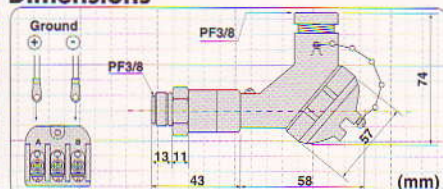
Remark2:Specs are guaranteed, for vacuum use, under 10kPa abs or more. Ambient Temp is to be 0-60°C

FTS series Box type of FHS series

- Shield Gauge pressure type from 0 to 35MPa.
- Applicable both to Air and Liquid.
- Applicable up to 100°C of ambient temperature.
- Flat diaphragm, ideal for condensed liquid.
- Damper junction (FG3R3-DSM5) is available for avoiding surge pressure.



Dimensions



Specifications/■FTSI(Current)

Product Type	FTSI Series					
	-002MP	-003MP	-005MP	-010MP	-020MP	-035MP
Pressure Range	0~2MPa	0~3MPa	0~5MPa	0~10MPa	0~20MPa	0~35MPa
Pressure Reference	Shield Gauge					
Max Pressure	Max 150% at 60 Celsius of ambient temp., Max 140% at 35MPa					
Sensor Material	SUS 316 except Diaphragm of SUS316L, Fluoro Rubber (O-ring)					
Sealed Liquid	Silicon Oil					
Applicable Media	Air & Liquid (not harmful to the sensor material)					
Power Supply	10.8~26.4VDC					
Output	4~20mA DC					
Load Resistance	600Ω Max (DC24 V)					
Response Time	5msec Max					
Absolute Accuracy (Linearity)	±0.5% FS (±0.3%FS Max)					
Operating Temp Range	-20~100°C (no condensation)					
Pressure Port	G3/8(PF3/8)					
Box Material	Aluminium diecast, cable φ 5.5~7.0					
Protection Category	IP 66					
Net Weight	230g					
Optional Accessory	Joint "G3R3", Damper Joint "G3R3-DSM5". From G3/8 to R 3/8 (SUS316)					

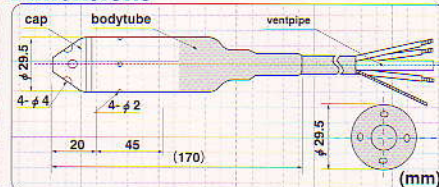
FHM-300/200

Water level sensor
stainless diaphragm

- Water-level meter for river, channel, pond, etc for long-term continuous measurement.
- Applicable as deep as 30M in the water. mm-scale accuracy.
- Stainless diaphragm
- FHM-300:4-20mA output
FHM-200:1-5V output



Dimensions



Specifications/■FHM-300(Current)/FHM-200 (Voltage)

Product Type	FHM-300 Series				FHM-200 Series			
	-02	-05	-10	-30	-02	-05	-10	-30
Pressure Range	2m H ₂ O	5m H ₂ O	10m H ₂ O	30m H ₂ O	2m H ₂ O	5m H ₂ O	10m H ₂ O	30m H ₂ O
Max Pressure	Max 150% of rated Pressure Range				Max 200% of rated Pressure Range			
Power Supply	10.8~26.4VDC							
Output	4~20mADC				1~5VDC			
Load Resistance	Max 600 Ω (DC24V)				1KΩ or more			
Absolute Accuracy	±0.3% FS							
(Linearity)	(±0.2% FS)							
Temperature Drift	±0.01% FS/°C (-2~30°C)							
Compensated Temp Range	-2~30°C							
Operating Temp. range	-10~50°C (no condensation)							
Sensor Material	Diaphragm SUS 316L, Housing SUS316, O-ring NBR							
	Cap : Resin , Tube : Polyolefin							
Sealed Liquid	Silicon Oil							
Cable	φ8 Polyurethane 30 meter, Shield + Vent Pipe							
Tension	30kgf Max (Housing - Cable)							
Isolation Resistance	100 Ω or more/500VDC							
Dielectric Strength	500VAC 1minute							
Net Weight	Apprx 320g (excl.cable)							
Optional Accessory	Anchor accessory for fixture (FAH-20)							

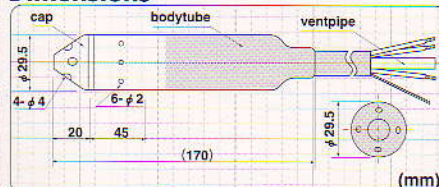
FHM-700/600

Water level sensor
titanium diaohragm

- Double diaphragm of Titanium, ideal for sea water.
- Applicable as deep as 30M in the water.
- mm-scale accuracy.
- Current output (FHM-700) or Voltage output (FHM-600)



Dimensions



Specifications/■FHM-700(Current)/FHM-600 (Voltage)

Product Type	FHM-700 Series				FHM-600 Series			
	-02	-05	-10	-30	-02	-05	-10	-30
Pressure Range	2m H ₂ O	5m H ₂ O	10m H ₂ O	30m H ₂ O	2m H ₂ O	5m H ₂ O	10m H ₂ O	30m H ₂ O
Max Pressure	Max 150% of rated Pressure Range				Max 200% of rated Pressure Range			
Power Supply	10.8~26.4VDC							
Output	4~20mADC				1~5VDC			
Load Resistance	Max 600 Ω (DC24V)				1KΩ or more			
Absolute Accuracy	±0.3% FS							
(Linearity)	(±0.2% FS)							
Temperature Drift	±0.01% FS/°C (-2~30°C)							
Compensated Temp Range	-2~30°C							
Operating Temp. range	-10~50°C (no condensation)							
Sensor Material	Diaphragm & Housing, Titanium O-ring NBR							
	Cap : Resin , Tube : Polyolefin							
Sealed Liquid	Silicon Oil							
Cable	φ 8 Polyurethane 30 meter, Shield + Vent Pipe							
Tension	30kgf Max (Housing - Cable)							
Isolation Resistance	100Ω or more/500VDC							
Dielectric Strength	500VAC 1minute							
Net Weight	Apprx 200g (excl.cable)							

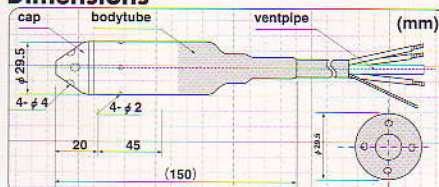
HM-920/900

Water level sensor
for indoor use

- Low cost for conventional industrial use.
- Applicable down to 10M depth for tanks in the factories.
- mm-scale accuracy.



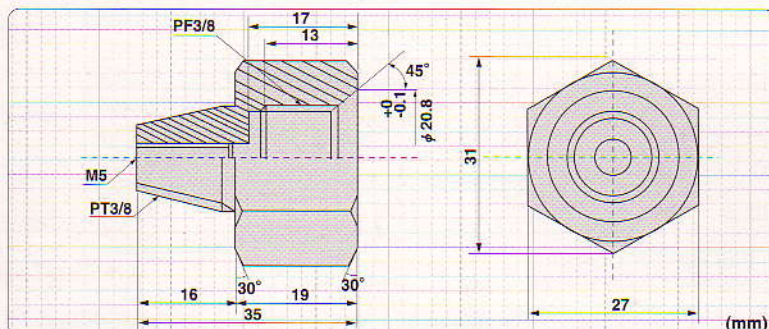
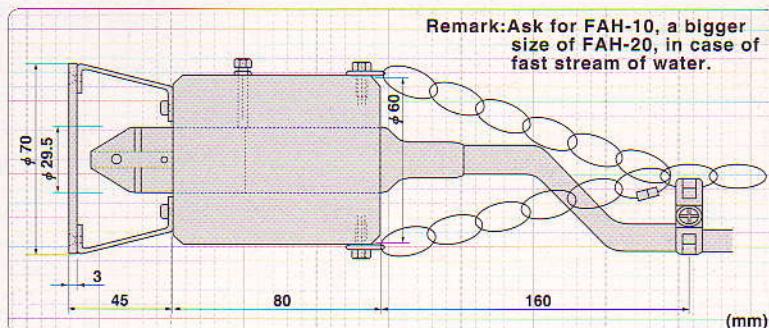
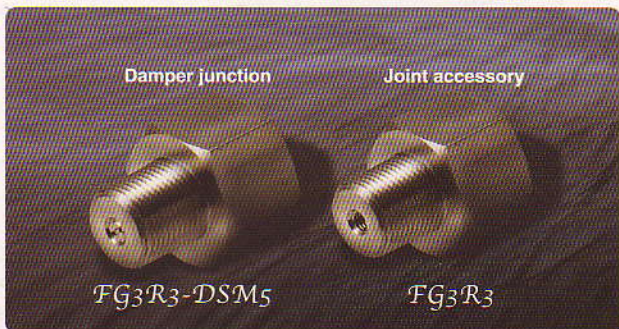
Dimensions



Specifications/■FHM-920(Current)/FHM-900 (Voltage)

Product Type	FHM-920 Series			FHM-900 Series		
	-02	-05	-10	-02	-05	-10
Pressure Range	2m H ₂ O	5m H ₂ O	10m H ₂ O	2m H ₂ O	5m H ₂ O	10m H ₂ O
Max Pressure	Max 150% of rated Pressure Range			Max 200% of rated Pressure Range		
Power Supply	110.8~26.4VDC					
Output	4~20mADC			1~5VDC		
Load Resistance	Max 600Ω (DC24V)			1KΩ or more		
Absolute Accuracy	±0.3% FS					
(Linearity)	(±0.2% FS)					
Temperature Drift	±0.015% FS/°C (-2~30°C)					
Compensated Temp Range	-2~30°C					
Operating Temp. range	-10~50°C (no condensation)					
Sensor Material	SVS316L & SVS316 O-ring NBR					
	Cap : Resin , Tube : Polyolefin					
Sealed Liquid	Silicon Oil					
Cable	φ 7 Vinyl 10 meter, Shield + Vent Pipe					
Tension	10kgf Max (Housing - Cable)					
Isolation Resistance	100Ω or more/500VDC					
Dielectric Strength	500VAC 1minute					
Net Weight	Apprx 220g (excl.cable)					
Optional Accessory	Anchor accessory for fixture (FAH-20)					

Accessories



Application

