

## FSG/semiconductor piezometers



### Description

**Model 4510 FSG piezometer** has foil strain gage in it, and it converts water pressure transmission in diaphragm into electric signal by interaction with foil strain gage.

The principle of FSG piezometer is that resistance factor of attached foil strain gage changes according to water pressure or air pressure transmission in diaphragm, and when the changed signal transmitted to output device, it displays in suitable mechanical unit.

So it can be calculated with easy in pressure unit by provided conversion factor.

**Model 4515 semiconductor piezometer** is manufactured by semiconductor pressure sensor using 4~20mA output method. Semiconductor piezometer is highly reliable product that is calibrated by the accredited pressure tester. Specially, it is useful at the low pressure measurement (1~2kg/cm<sup>2</sup>). It adopts 4~20mA output method, so user can easily calculate the measured pressure.

The FSG/semiconductor piezometer correct individually and record its result in adjustment inspects record. It is used with special stainless steel and waterproof, rustproof so that permanent measurement is possible.

### Features

- High precision and reliability
- Stability and reliability in extreme environment
- Possible to dynamic measurement

### The readout

It is connected to the system such as the voltage readout units, or data logger as it is the electrical sensor that output mV.

- ACE-1500 (MEMS readout)
- ACE-900 (MEMS mini logger)
- ACE-600A (FSG readout)
- ADL-200A (Smart logger)
- AL Module (Smart LoRa system)

### Applications

FSG/Semiconductor piezometer is designed to measure liquid pressure and pore water pressure within pressure container, pipeline and base part of filling, levee, or perforation.

- Measurement of the effects of drainage systems used for excavations.
- Measurement of pore water pressure to determine safety factor under excavation or banking.
- Measurement of water level to check the performance in rivers, reservoirs, standpipes.
- Measurement of pore water pressure to determine slope stability.
- Measurement of flows of underground water and water leakage in embankments, dams and artificial lakes.
- Favorable the model experiment

### [Model 4510]

Model 4510 is electric piezometer and widely used at under excavation or banking and pipeline.



### [Model4515]

Model 4515 is semiconductor piezometer and widely used at under excavation or banking and pipeline



### Ordering information

- Model number
- Application field
- Pressure range
- Keeping FSG readout unit
- Cable length
- Negative pressure exist or not in installation field

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### Specification

Model	4510	4515
Sensor Element	FSG sensor (foil strain gage)	Semi-conductor sensor
Range	2.0~35kg/cm <sup>2</sup>	1.0~20kg/cm <sup>2</sup>
Rating output	1 mV/V (1000 × 10 <sup>-6</sup> )	4~20mA
Accuracy	±0.5% FSR	
Non-linearity	±1.0% FSR	
Over range capacity	150% FSR	110% FSR
Resistance	350 Ω	-
Exciting voltage recommended	Less than 5 VDC	12~30 VDC
Insulation resistance	More than 100M Ω / 500V	
Operating temperature	-30~80°C	
Water proof	1000mH <sub>2</sub> O	
Material	Stainless steel, high grade epoxy potting	
Filter	Standard : 50 micron sintered stainless filter Optional : 1 micron ceramic filter	
Weight	0.4kg	0.6kg
Signal cable	∅10mm, 0.5mm <sup>2</sup> × 5C shielded PVC cable	

(Note) The accuracy depends on air entry in the filter, compensating thermal zero shift and difference in air pressure

### Recommendation

- FSG/semiconductor piezometer is sensitive in change of pressure. Please adjust the height of head using barometer in the region of dam, valley and reclaimed land, so as to get precise measurement.
- FSG/semiconductor piezometer is attached with low density of filter of 50 μm. Please, soak it into water over 12 hours before establishment and deflate air, and then you can get accurate measurement.
- In establishing FSG/semiconductor piezometer, please, put signal cable longer enough than depth of perforation by 10~20% so as to prevent from break-down of cable by settlement.
- When installing FSG piezometer in soft ground, you must protect a signal cable by garden hose. If not, the signal cable is cut down or is short circuit caused by rotation of drill core.