

PK45M

# — MULTIPOINT PIEZOMETERS

PIEZOMETERS



# MULTIPOINT PIEZOMETERS

Multipoint vibrating wire piezometers, also called multilevel piezometers, provide measurements of pore-water pressure at different elevations in the same borehole.


Isolation of the pore-water pressure at each elevation is achieved by the fully-grouted installation method.

### APPLICATIONS

- Measurement of ground water pressure at different elevations
- Monitoring soil consolidation activities
- Dams and fill embankments
- Landslides monitoring
- Natural or cut slope sites
- Deep excavation

### FEATURES

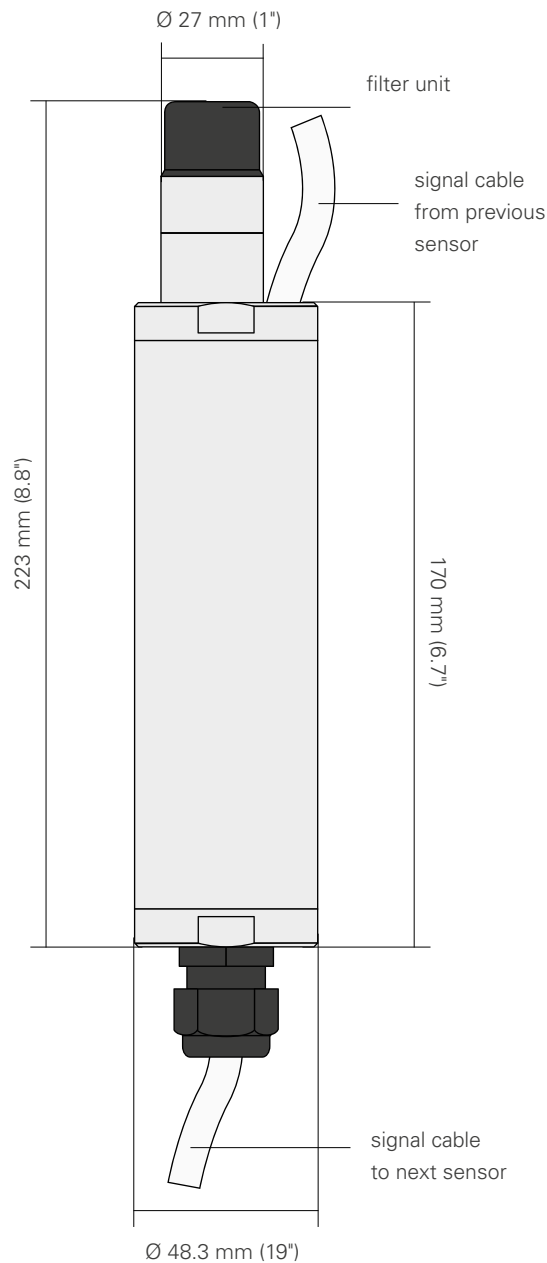
- Simple installation
- Long-term stability
- Cable length does not affect reading
- Long working life and reliability
- Built-in surge protection (overvoltage)
- Built-in temperature sensor
- Hermetically sealed

 *Meet the essential requirements of the EMC Directive 2014/30/UE*

# TECHNICAL SPECIFICATIONS

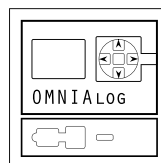
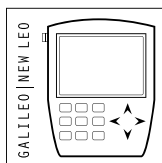
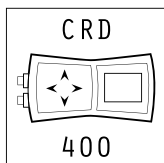
## MULTIPOINT PIEZOMETER

MODEL	PK45M
Description	Vibrating wire piezometer for multilevel installation with fully grouted method
Full scales (FS)	0-350 kPa up to 0-3.5 MPa 0-51 psi up to 0-510 psi
Overpressure	2 x Full Scale
Sensitivity	0.025% FS
Linearity <sup>(1)</sup>	< ±0.4% FS
Total Accuracy <sup>(2)</sup>	< ±0.25% FS (< ±0.1% FS on request)
Typical frequency range <sup>(3)</sup>	2250 - 3000 Hz
Thermal zero shift	0.01 ÷ 0.03 % FS /°C
Electric insulation	> 50 MΩ
Temp. operating range	-20 to +80 °C
Temperature sensor	built-in thermistor
Material	stainless steel
Diameter and weight	Ø 48.3 mm (1.9"), 2 kg (4.4 lbs)
<b>FILTER UNIT</b>	
Type	LAE filter
Material	stainless steel or Vyon®
Pore size	40-50 µm
<b>CABLE</b>	
Signal cables for up to 4 piezometer string	0WE1160LSZH 8-pair, LSZH jacket cable 0WE11600PVC 8-pair, PVC jacket cable
Signal cables for up to 8 piezometer string	0WE1320LSZH 16-pair, LSZH jacket cable 0WE13200PVC 16-pair, PVC jacket cable
Max cable length to logger <sup>(4)</sup>	1000 m (for more information see <a href="#">FAQ#77</a> )



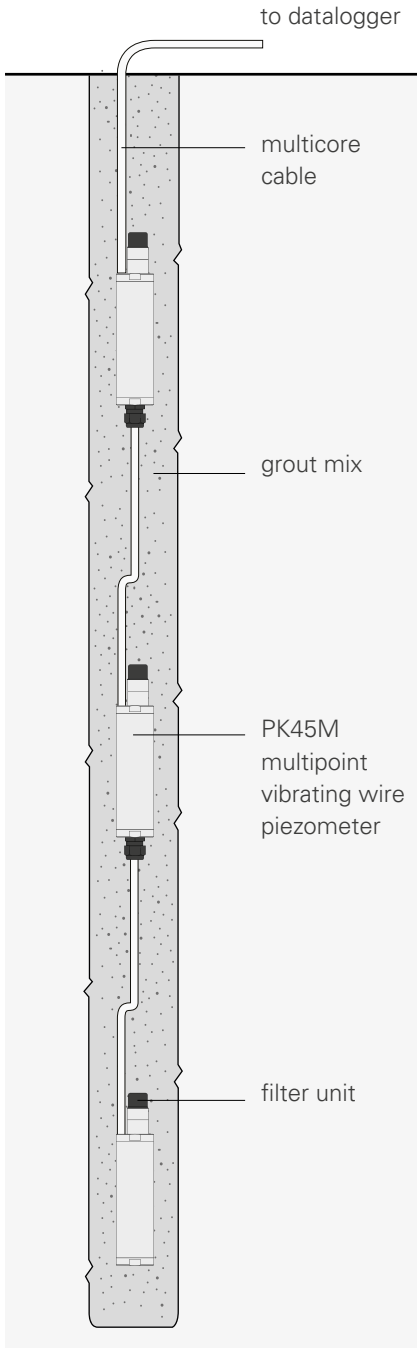
(1) including hysteresis (2) including linearity, hysteresis and repeatability, calculated with 3rd degree polynomial  
 (3) The expressed frequency range may vary +/- 10% (4) refer to FAQ section of Sisgeo website: [www.sisgeo.com/assistance/faq.html](http://www.sisgeo.com/assistance/faq.html)

## READABLE BY



Refer to separate datasheets for further information.

## INSTALLATION METHOD AND ACCESSORIES



The fully-grouted installation method provides a reliable way to install piezometers in the same borehole, each measuring pore-water pressure at a different elevation. It eliminates problems with placing sand intake zones, bentonite seals, and channeling of water along signal cables.

The working principle is based on the idea that in a low permeability grout, radial pressure gradient around the piezometer tip is magnitudes higher than the vertical pressure gradient along the borehole, and that the response of the piezometer is controlled by the higher pressure gradient. Grout mixes (water-cement-bentonite) should be controlled by weight and proportioned to give the desired strength of the set grout. (See Mikkelsen - Piezometers in Fully Grouted Boreholes - FMGM 2003).

The fully-grouted method can also be used for Casagrande piezometers installation or for multiple-instrument columns (i.e. inclinometer tube + piezometers. See Field Performance of Fully Grouted Piezometers - Simeoni, De Polo, Caloni, Pezzetti - FMGM 2011).

### LSZH CABLE, UP TO 4 PIEZO OWE1160LSZH

Multicore cable for up to 4 multipoint piezometers, with 8 twisted-pair conductors and LSZH flame retardant jacket. External diameter 9.2 mm.

### LSZH CABLE, UP TO 8 PIEZO OWE1320LSZH

Multicore cable for up to 8 multipoint piezometers, with 16 twisted-pair conductors and a LSZH flame retardant jacket. External diameter 12.2 mm.

### PVC CABLE, UP TO 4 PIEZO OWE116000PV

Multicore cable for up to 4 multipoint piezometers, with 8 twisted-pair conductors and a standard PVC jacket. External diameter 8.2 mm.

### PVC CABLE, UP TO 8 PIEZO OWE132000PV

Multicore cable for up to 8 multipoint piezometers, with 16 twisted-pair conductors and a standard PVC jacket. External diameter 11.2 mm.

### LAE STEEL FILTER OPF40D20000

Spare LAE sintered steel filter for PK45M piezometers, pore size 40/50µm.

### LAE VYON FILTER OPF40D2000P

Spare LAE Vyon® (polyetyilene) filter for PK45 piezometers, pore size 40/50µm.

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### TECHNICAL ASSISTANCE

SISGEO offers customers e-mail and phone assistance to ensure proper use of instruments and readout and to maximize performance of the system.

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