

D422

**MULTIPOINT  
SETTLEMENT SYSTEMS**

SETTLEMENT  
GAUGES





## MULTIPOINT SETTLEMENT SYSTEMS

The multipoint settlement systems consist of a number of hydraulic settlement gauge connected by tubing to a reference tank located on higher, stable ground.

The settlement gauge is a pressure transducer with vibrating wire or capacitive technology, mounted on a plate with a protective cover. Depending on the requirement, the settlement system can be installed with just a single gauge or with multiple gauges.

The typical application for the multipoint settlement systems is monitoring settlement in embankments, tunnels or other civil structures.

### APPLICATIONS

- Settlement monitoring in rockfill or earthfill dams
- Vertical displacement in tunnels
- Settlement control under railway or road embankment

### FEATURES

- Suitable for long term monitoring (vibrating wire gauges)
- Fieldstat software available for enhanced data analysis

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

## OPERATING PRINCIPLE

The system consists of one or more settlement gauges connected via fluid-filled tubing to a reference tank that is located at a stable location.

Each settlement gauge monitors the head of liquid resulting from the difference in elevation of the gauge and the reference tank. The gauge reports a higher head of fluid (higher pressure) if settlement occurs and a lower head of fluid (lower pressure) if heave occurs.

Using vibrating wire absolute transducers, barometric pressure should be recorder along with the gauges readings for liquid levels' compensations.

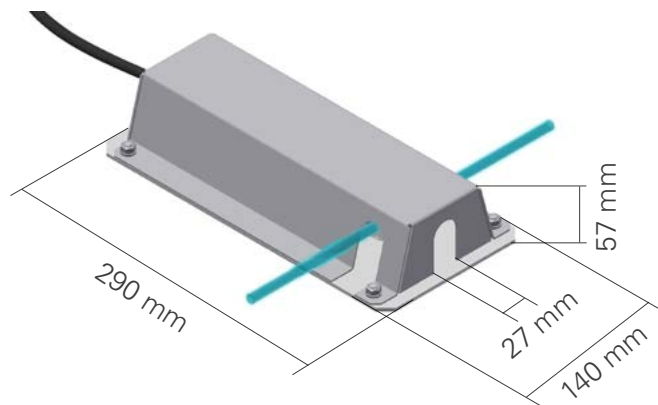
Using capacitive relative pressure transducer, internal temperature gauge is not available. If thermal compensation is be needed, a separate sensor should be ordered (e.g. Sisgeo OT3800GKA00)

## SETTLEMENT GAUGES

MODEL	0D422R000MA	0D422R000VW
Technology	capacitive relative pressure transducer	vibrating wire absolute pressure transducer with built-in thermistor
Ranges	20 kPa, 50 kPa, 100 kPa (2.90 psi, 7.25 psi, 14.5 psi)	170 kPa, 350 kPa, 700 kPa (25 psi, 50 psi, 100 psi)
	2.01 m, 5.02 m, 10.05 m with Sisgeo liquid	17.08 m, 35.17 m, 70.34 m with Sisgeo liquid
Output signal	4-20 mA (pressure)	frequency (pressure), Ohm (thermistor)
Sensitivity	<0.006% FS	0.025% FS
Accuracy (Pol. MPE <sup>(1)</sup> )	<±0.1% FS	< ±0.25% FS
Sensor power supply	15 – 24 V DC	-
Typical frequency range <sup>(2)</sup>	-	2250 - 3000 Hz
Max difference in elevation between gauge and reference tank	depends on range of gauge	depends on range of gauge
Materials	stainless steel pressure gauge, galvanized settlement plate, stainless steel protective cover	stainless steel pressure gauge, galvanized settlement plate, stainless steel protective cover
Dimension (WxHxD)	290 x 140 x 57 mm (11.5" x 5.5" x 2")	290 x 140 x 53 mm (11.5" x 5.5" x 2")
Hydraulic tubing	0TUPE060800 (6mm ID, 8mm OD)	0TUPE060800 (6mm ID, 8mm OD)
Signal cable	0WE203KEOZH (vented cable)	0WE104X20PV or 0WE104K00PV
Max. distance to datalogger <sup>(3)</sup>	1000 m (for more information see <a href="#">FAQ#77</a> )	1000 m (for more information see <a href="#">FAQ#77</a> )

(1) MPE is the Maximum Permitted Error on the measuring range (FSR). In the Calibration Report, the accuracies of the gauge are calculated using both linear regression (≤ Lin. MPE) and polynomial correction (≤ Pol. MPE) (2) The expressed frequency range could has a ±10% variation (3) refer to FAQ section of Sisgeo website: [www.sisgeo.com/faq](http://www.sisgeo.com/faq)

## PHYSICAL FEATURES



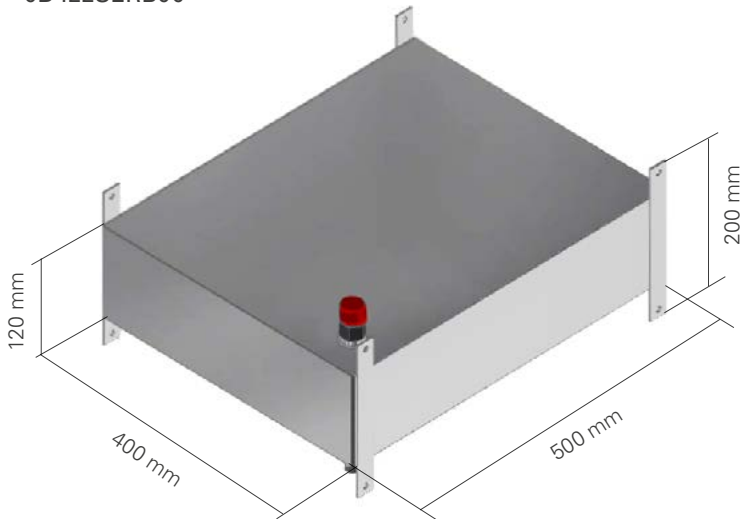
## REFERENCE TANKS

The gauge measures the head of liquid between its elevation and the elevation of the liquid in the reference tank. The level of the liquid in the reference tank must be maintained regularly.

<b>PRODUCT CODE</b>	<b>0D422SERB00</b>
Description	simple reference vessel
Sensor	none
Material	stainless steel vessel
Overall dimensions (WxHxD)	500 x 400 x 200 mm (20" x16" x 8")
Liquid capacity	24 liters (25 qt)

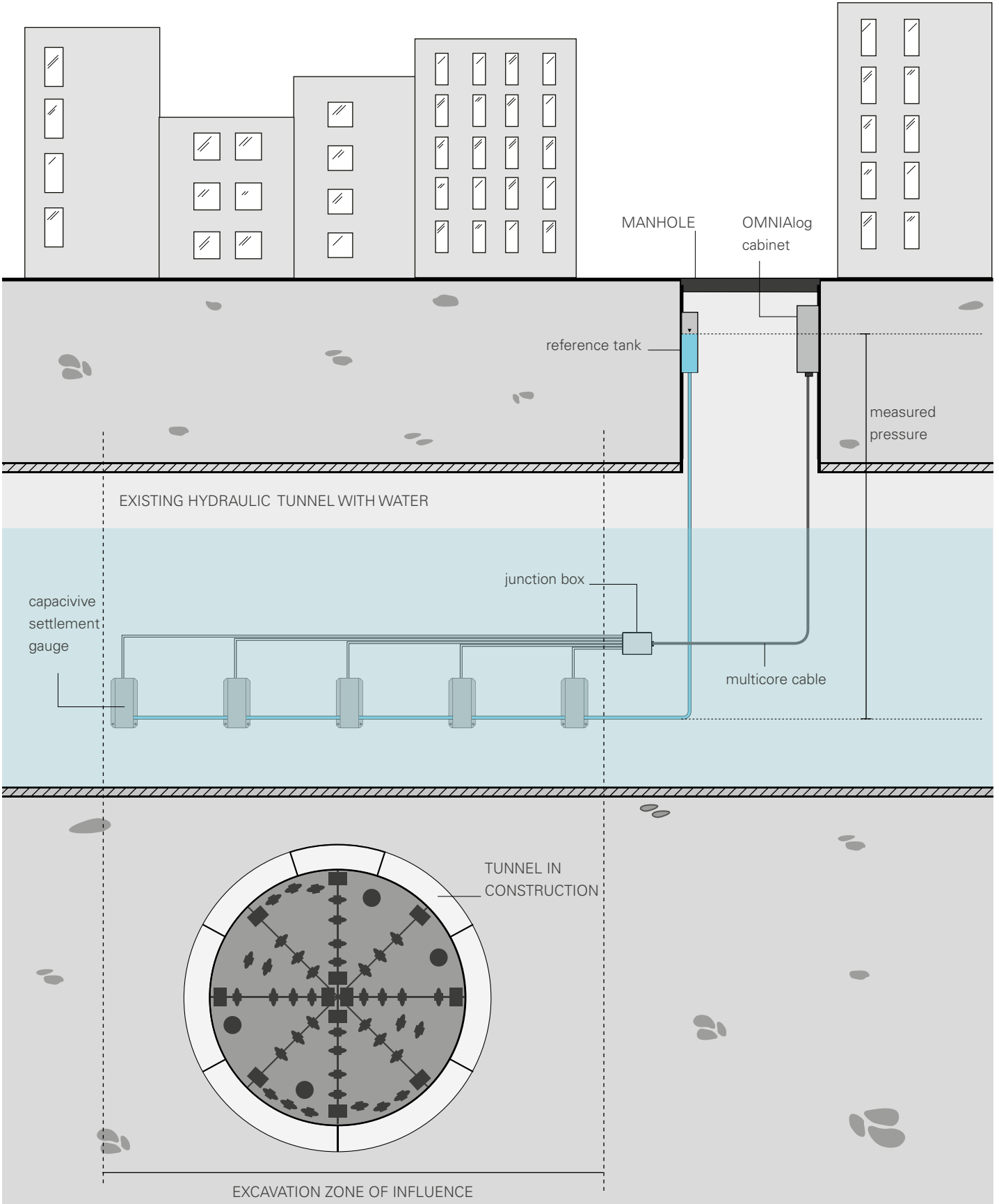
## PHYSICAL FEATURES

0D422SERB00

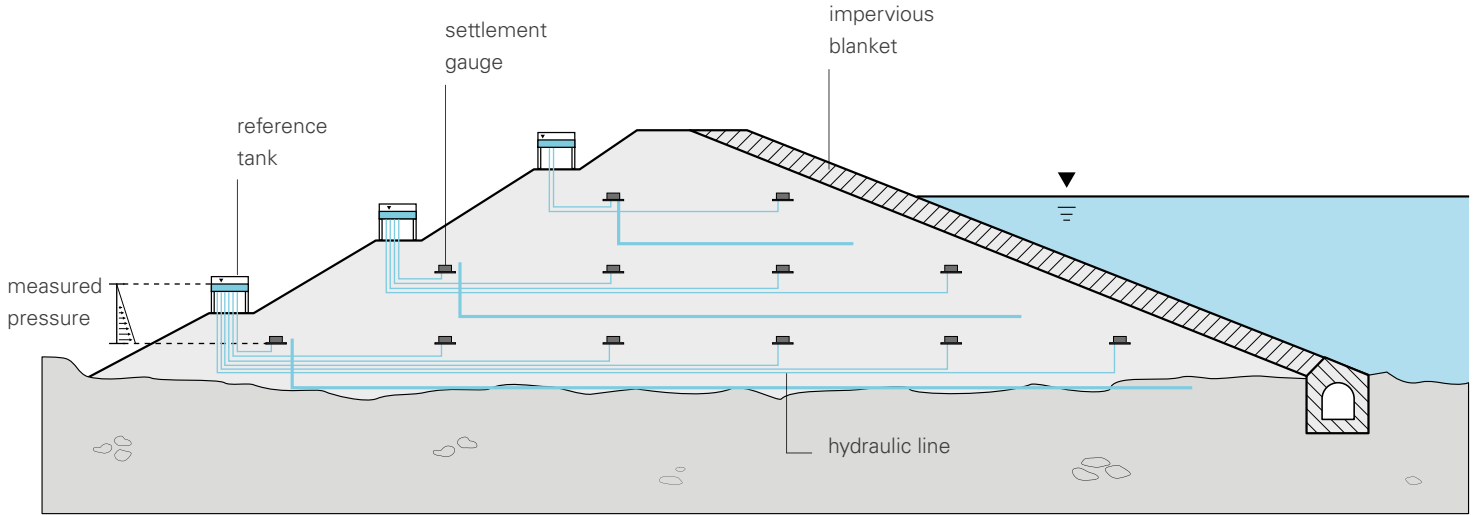


Reference vessels in Sogamoso HPP project, Colombia

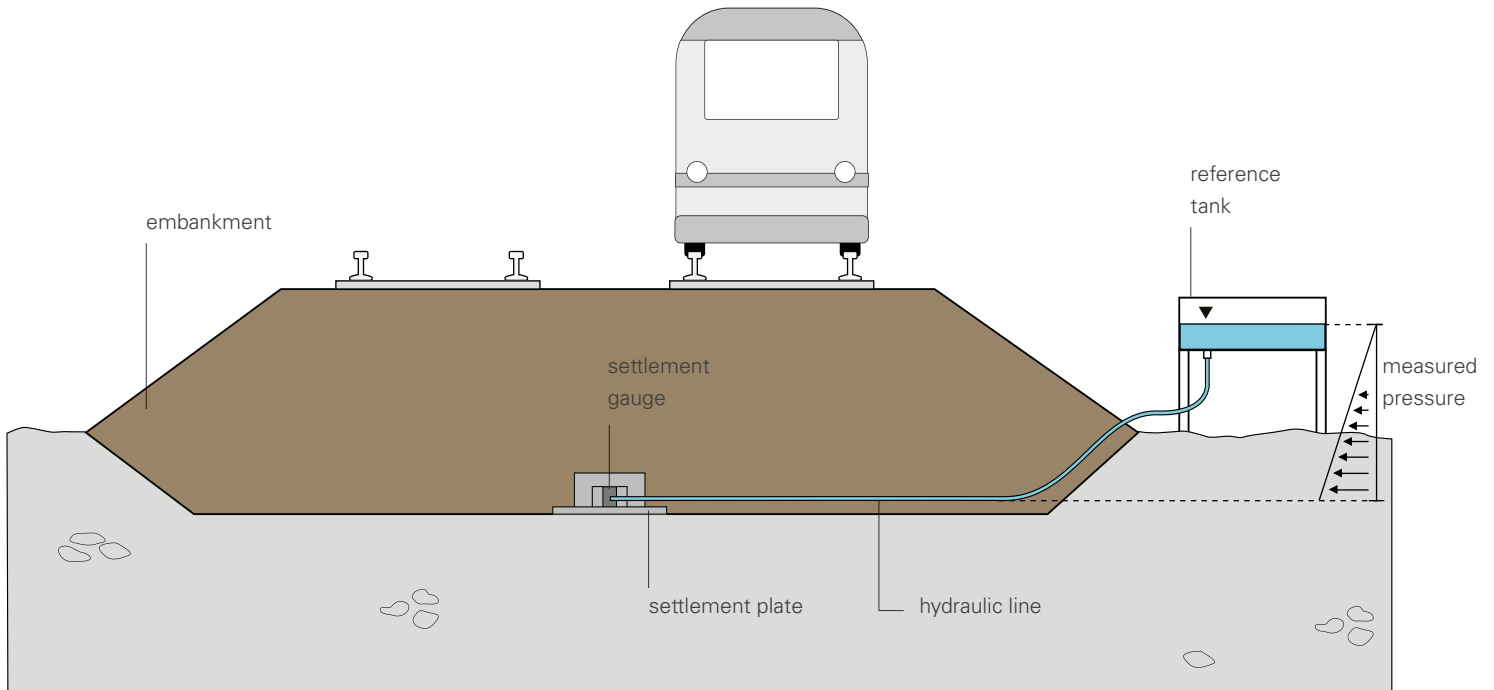
APPLICATION IN HYDRAULIC TUNNEL



## TYPICAL EMBANKMENT DAM APPLICATION



## SINGLE POINT APPLICATION



## ACCESSORIES AND SPARE PARTS

### BAROMETER OMEPRO106000

Atmospheric pressure gauge, housed in plastic box. Range 800 - 1200 mbar, output 4-20mA current loop. Useful for barometric compensation of VW absolute transducers.

### HYDRAULIC TUBING OTUNY060800

Polyamide tube for hydraulic connection of the settlement gauges. 8 mm OD, 6 mm ID.

### WATER-GLYCOL MIX 1000GL30000

Recommended fluid for hydraulic settlement system's circuit. It is a mixture of 30% glycol and 70% water, chemically inert, allowing operation up to -15°C. Available in 12 liters and 25 liters tanks

### HYDRAULIC CIRCUIT INSULATION 1000COPE300

Insulated protective tube for hydraulic tubing. Recommended for the lengths exposed to temperature variations. 3m length.

### SATURATION DEVICE OD422SAT200

Saturation device for hydraulic circuit, capacity 20 liters, max pressure 5 bars. Strongly recommended for better results in hydraulic circuit saturation.

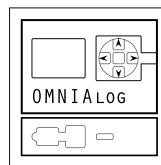
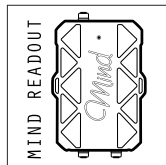
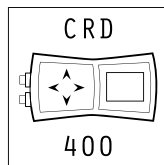
### TEMPERATURE THERMISTOR GAUGE OT3800GKA00

External temperature gauge to be used in conjunction with 4-20mA relative transducers when data temperature compensation is needed.



Settlement gauge

## READABLE BY



Refer to separate datasheets for further information.

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### ADDITIONAL SUPPORT

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

For more information, please refer to the FAQ pages on our website or email us: [assistance@sisgeo.com](mailto:assistance@sisgeo.com)