

Total Earth Pressure Cells



TPC 4000 series Total Earth Pressure cells are designed to measure total pressure (effective stress and pore water pressure) in soils and at the interface between structures and the wall of excavation.

They are constructed from two stainless steel plates, welded around their periphery with the narrow gap between the plates filled with hydraulic fluid.

External pressure on the outside surfaces of the cell squeezes the two plates together creating an internal fluid pressure. A length of stainless steel tube connects the cell to a pressure transducer (VWT3000 or SGT3000) which converts the fluid pressure into an electrical signal which can be directly readout or transmitted to a data logging system.

Models 4010 and 4020 are designed to measure soil pressures on structures. It is fitted with an extra thick backplate on one side which is placed against the structure so as to avoid any warping of the cell. The other side has a thin plate welded to the backplate which provides sensitive measurement of soil pressures.

Applications

Measurement of total pressure in or on:

- Concrete dams
- Diaphragm walls
- Retaining wall surfaces
- Slurry walls
- Sheet piles
- Tunnel lining
- Fills & embankments
- Mine backfilling
- Rail track

Features

- High accuracy
- Long-term stability
- Stainless steel construction
- High height to diameter ratio
- Dynamic measurement possible
- VW or strain gauge readout
- Suitable for remote reading and data logging



TPC-4000 series

Specifications

Model	VWTPC 4000	VWTPC 4010	SGTPC 4020	SGTPC 4030
Range	70, 170, 350, 700 1, 2, 3, 5, 7.5, 20 MPa	kPa350, 700 kPa 1, 2, 3, 5, MPa	70, 170, 350, 700 kPa 1, 2, 3, 5, 7.5, 20 MPa	350, 700 kPa 1, 2, 3, 5,MPa
Over range	150% FS (maximum)	150% FS (maximum)	200-500%	200-500%
Signal output	2000 - 3500 Hz	2000 - 3500 Hz	4-20mA	4-20mA
Resolution	± 0.025% FS	± 0.025% FS	Infinite	Infinite
Accuracy ¹	± 0.1% FS	± 0.1% FS	± 0.1% FS	± 0.1% FS
Linearity	<0.5% FS	<0.5% FS	- -	
Diameter	120, 230, 300mm	120, 230, 300mm	120, 230, 300mm	120, 230, 300mm
Thickness	6mm	12mm	6mm	12mm
Operating temp	-20°C to +80°C	-20°C to +80°C	-20°C to +80°C	-20°C to +80°C

¹ Calibrated accuracy of pressure sensor

VWT-3000 vibrating wire pressure transducers may be read by the VW2106 or any vibrating wire readout device and may be readily data logged using Campbell Scientific or any other data loggers with vibrating wire interface modules.

Vibrating wire sensors output a frequency signal and are therefore insensitive to resistance changes in connecting cables caused by contact resistance or leakage to ground.

Cable may be readily and simply extended on site without special precautions. Gauges may be read up to 1000 metres away from their installed location without change in calibration.

Strain gauge pressure transducers can be read with a direct readout in MPa or 4-20mA output which can be data logged.



Specifications may change without prior notice

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