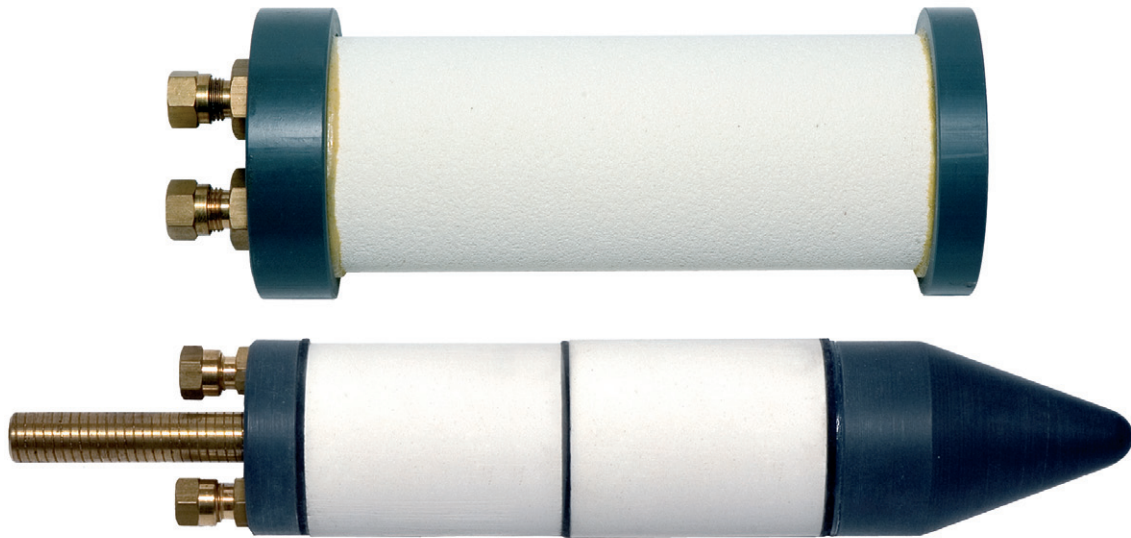


W2 - HYDRAULIC PIEZOMETER

Datasheet W2



**Description**

The Hydraulic Piezometer is used for accurately measuring pore water pressures in fully or partially saturated soil and rock.

The system comprises a porous ceramic piezometer tip sealed into the measuring horizon and connected to a remote measuring position via twin nylon hydraulically filled tubes.

The piezometer measures overall hydraulic pressure from which pore pressures can be calculated.

**Features**

- Simple and reliable device
- Accurate with excellent long-term stability
- Fast response to pressure changes
- Inaccuracies due to air entrapment and gas accumulation at the piezometer tip are avoided
- Capable of measuring pore pressures from 2000 kPa to -50 kPa

**Benefits**

- No electronic components in tip ensures long-term reliability
- Twin hydraulic tubing is strong, flexible and suitable for long-term use
- Comprises all non corroding materials
- Pressure measurement takes place at the terminal location and not within the piezometer tip



Comprehensive information about this product and our full range is available at [www.itmsoil.com](http://www.itmsoil.com)  
If you would like to speak with someone directly please call +44 (0)1825 765044 or email [sales@itmsoil.com](mailto:sales@itmsoil.com)

## Operation

The Hydraulic Piezometer is designed for the accurate measurement of pore water pressures in fully or partially saturated soil and rock.

The Piezometer tip comprises a porous ceramic filter vessel. Twin hydraulic tubes connect each filter tip to a remote reading terminal where the hydraulic pressure may be read by either a Bourdon gauge or an electrical pressure transducer.

The hydraulic system is flushable so that air or gas accumulation at the piezometer filter tip which can produce reading inaccuracies and time lag, can be fully removed to provide a 'hard' hydraulic circuit.

In addition, the hydraulic piezometer system may be used for constant head permeability testing of the ground in which the piezometer tips are installed.

## Applications

Piezometers are used in geotechnical, environmental, and hydrological applications. They can be installed in boreholes and placed in fill materials or open wells to measure water levels or pore water pressures to enable engineers to verify design assumptions and control placement of fill.

Typical applications include:

- For environmental management including landfill sites
- Monitoring of aquifers
- Monitor tidal effects on coastal soils
- Dams
- Embankments
- Potential landslide sites
- Dewatering excavations
- Tailings lagoons
- Pumping tests
- Monitor seepage
- Control placement of fill

## Associated products

For details on:

Catalogue code:

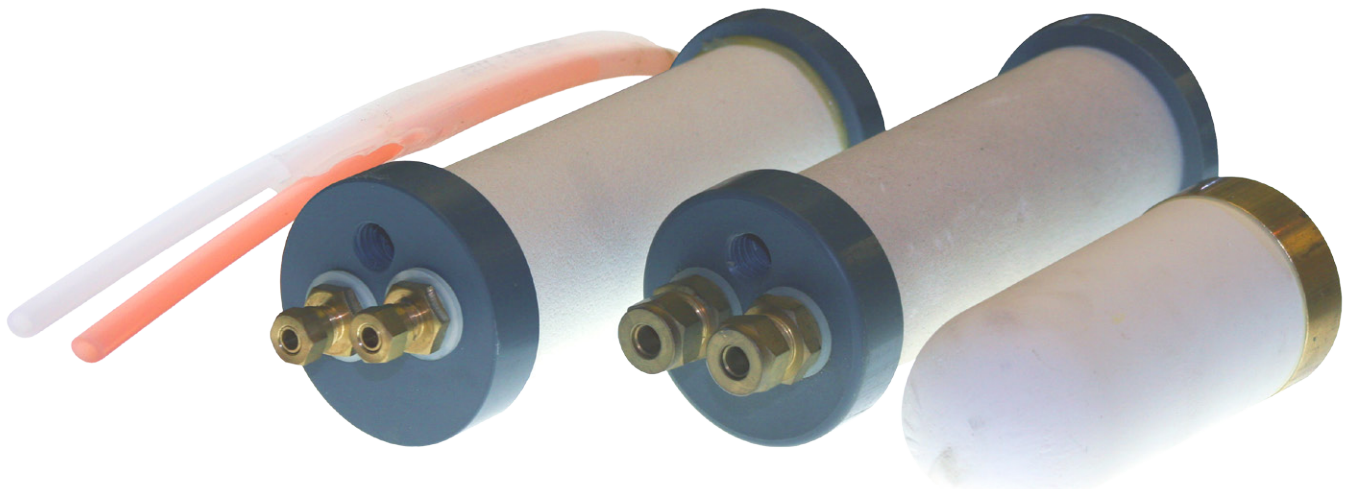
Datalogger

D1

Terminal and Junction Boxes

RO-TB

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### THE TECHNICAL RATING FOR THIS PRODUCT:

**INTERMEDIATE**



As the correct installation of any monitoring sensor or system is vital to maximise performance and accuracy, itmsoil makes the following recommendations, for the skill level of the installation contractor.

**ADVANCED**



The installer is trained and experienced in the installation of this type of instrument or systems, and is ideally a specialist Instrumentation and Monitoring contractor.

#### ADDITIONAL SUPPORT

itmsoil offer installation and monitoring services to support this system. For more information please email : [sales@itmsoil.com](mailto:sales@itmsoil.com) or call **+44 (0) 1825 765044**

**INTERMEDIATE**



The installer already has previous experience and/or training in the installation of this instrument or system.

**BASIC**



As a minimum the installer has read and fully comprehends the manual, and if possible has observed these instruments or systems being installed by others.

## Specifications

### Sensor

Range (kPa)	Bourdon gauge: -5kPa to 2000kPa	Bourdon master gauge panel: 0kPa to 1500kPa
Accuracy	±1.0% full scale	±0.25% full scale

### Filter Type

Material	Porous Ceramic
Porosity	HAE 1 Micron or LAE 60 Microns

### Hydraulic Tubing

Type	Twin Nylon tubes sheathed in Polythene, flat or round in section		
Minimum bend radius	0.3m		
Burst pressure	13.8MPa		
Nominal bores	4.76mm or 6.35mm		
External width Diameter	Flat: 18mm		Round: 16mm
Weight /m	36g		

## Ordering Information

### Hydraulic Piezometer Tips

W2-1.6	Bull Nosed HAE piezometer tip; high resistance to air entry (1 Micron), for ¼inch tubing
W2-1.10	Cylindrical LAE piezometer tip; low resistance to air entry (60 Micron), for ¼inch tubing
W2-1.9	Cylindrical LAE piezometer tip; low resistance to air entry (60 Micron), for ⅜ inch tubing
W2-1.13	Push-in LAE piezometer tip; low resistance to air entry (60 Micron), for ¼inch tubing
W2-1.15	Push-in HAE piezometer tip; high resistance to air entry (1 Micron), for ¼inch tubing
W2-1.11	Push-in LAE piezometer tip; low resistance to air entry (60 Micron), for ⅜ inch tubing
W2-2.12	Push-in HAE piezometer tip ; high resistance to air entry (1 Micron), for ⅜ inch tubing

### Piezometer ¼ Inch Tubing and Tube Fittings

W6-2.5	Twin ¼inch nylon tubing; flat Tube 18mm external width, priced per metre
W6-3.21	Quick release coupling set, ¼inch; for connection of tube to water circulation unit
W6-3.20 / W6-3.19	Male quick release coupling, ¼inch / Female quick release coupling, ¼inch
W6-3.5	Spare nut and olive, Enots ¼inch
W6-3.7	Straight coupling, Enots ¼inch; in-line tubing connections, 2No. required per twin tube connection
W6-3.18	Connection charge per piezometer tip to twin tube

### Piezometer ⅜ Inch Tubing and Tube Fittings

W6-2.2	Twin ⅜inch nylon tubing; round Tube 13mm external diameter, priced per metre
W6-3.12	Quick release coupling set, ⅜ inch; for connection of tube to water circulation unit
W6-3.11	Spare nut and olive, Enots ⅜ inch
W6-3.22	Straight coupling, ⅜ inch; in-line tubing connections, 2No. required per twin tube connection
W6-3.18	Connection charge per piezometer tip to twin tube

### Piezometer Tubing Accessories

W3-4.8	Tube cutter
CA-4.2	Coloured adhesive tapes; set of 10No.

### Installation Accessories

W6-8.3	Placing tool; for use with W2-1.6, W2-1.10, W2-1.9 piezometer tips
W2-4.8	Placing tool; for use with W2-1.13, W2-1.15, W2-1.11, W2-2.12 push-in piezometer tips
W6-8.1	Punner; to compact material in borehole, for use with W6-8.2 or W1-2.7
W2-4.5	Bishop hole forming tool; for shallow surface installation
W6-8.2	Placing tube, ¾ inch BSP, 3 metre length for use with the placing tool; galvanised mild steel tubing with ¾inch BSP coupling
W1-2.7	Placing tube, ¾ inch BSP, 1 metre length for use with the placing tool; galvanised mild steel tubing with ¾ inch BSP coupling
E2-2.13	Protective cover; 2inch BSP threaded cap, 50mm inner diameter, 500mm length
E2-2.14	Security cover; with bar and padlock, 50mm inner diameter, 500mm length
W2-4.11	Standard Tool Kit; tool box includes: knife, 3 metre measuring tape, 8 inch adjustable spanner, 2No. flat screwdrivers, combination pliers, ball hammer, 6No. English spanners ⅜ to 1 inch
W2-4.14	Installation Accessories Kit; includes installation spares: 2No ball valves, valve saddle, screws, plugs, spare tube fittings and 20 meters of single ¼ inch nylon tubing
W2-4.15	Installation Accessories Kit (includes installation spares); selection of self tapping screws, 10No. Enot olives, 10No. Enot nuts, 6No. Enot plugs, 2No. Enot straight adapter, 2No. ball valves, 2No. standpipe adapters and 20 meters of single ¼ inch nylon tubing

## Ordering Information

### Installation Accessories Continued

W6-2.8	¼ inch nylon tubing, LDP coated; single tube 8.6mm external diameter, priced per metre
E2-3.12	¾/16 inch nylon tubing; single tube ¾/16 inch external diameter, priced per metre
W6-1.1 / W6-1.3	Bentonite pellets; 25kg bag / Filter sand; 25kg bag

### Bourdon Master Gauge Unit

Single gauge to read from terminal panel. Wall mounted panel, for use with ¼inch nylon tubing

W2-6.3-50	0 to 500kPa pressure range
W2-6.3-100	0 to 1000kPa pressure range
W2-6.3-150	0 to 1500kPa pressure range

### Bourdon Gauge Unit

Each instrument has an individual gauge. Wall mounted panel, for use with ¼inch nylon tubing

W2-6.2-1-20 to W2-6.2-5-20	1 to 5 Channel, 0 to 200kPa pressure range
W2-6.2-1-50 to W2-6.2-5-50	1 to 5 Channel, 0 to 500kPa pressure range
W2-6.2-1-100 to W2-6.2-5-100	1 to 5 Channel, 0 to 1000kPa pressure range
W2-6.2-1-200 to W2-6.2-5-200	1 to 5 Channel, 0 to 2000kPa pressure range
W2-6.2-1-5-20 to W2-6.2-5-5-20	1 to 5 Channel -50 to 200kPa pressure range
W2-6.2-1-5-50 to W2-6.2-5-5-50	1 to 5 Channel -50 to 500kPa pressure range

### Terminal Panel

Connects to Master Bourdon Gauge. Wall mounted panel, for use with ¼inch nylon tubing

W2-7.2-2 to W2-7.2-20	For 2No. to 20No. piezometer tips
W6-5.1 / W6-5.2	Terminal cabinet; 600 x 600 x 250mm, for up to 8No. piezometer terminal panel / 800 x 600 x 250mm, for up to 12No. piezometer terminal panel

### De-Airing Equipment

For use with ¼inch nylon tubing

W6-7.1	Water circulating unit; single cylinder, send pressure only
W2-8.1-1	Portable/Wall Mount De-airing Unit 4.5 litres; 500kPa pressure range - manual pumps only
W2-8.1-2 / W2-8.1-3 / W2-8.1-4	Portable/Wall Mount De-airing Unit 4.5 litres; 500kPa / 1000kPa / 1700kPa pressure range - manual pumps supplied for up to 500kPa with connection for electric pumps
W2-8.3-1	Portable/Wall Mount De-airing Unit 9 litres; 500kPa pressure range - manual pumps only
W2-8.3-2 / W2-8.3-3 / W2-8.3-4	Portable/Wall Mount De-airing Unit 9 litres; 500kPa / 1000kPa / 1700kPa pressure range - manual pumps supplied for up to 500kPa with connection for electric pumps
W6-7.2 / W6-7.3	De-aired water boiler; 240Vac, 50Hz electrical supply / De-aired water boiler; 110Vac, 60Hz electrical supply
W2-8.10 / W2-8.11	Portable Electric Compressor; 240Vac, 50Hz electrical supply / Portable Electric Vacuum Pump; 240Vac, 50Hz electrical supply
W6-7.5 / W2-8.15	Pressure Pump / Vacuum Pump

### Manuals

MAN-46	Hydraulic Piezometer
MAN-47	Hydraulic Piezometer System with de-airing unit, electric pumps and digital readout
MAN-82	Hydraulic Piezometer Terminal Equipment with transducer and pressure logger
MAN-97	De-airing Unit with manual pumps
MAN-104	De-airing Unit with electric pumps
MAN-165	De-airing Unit, twin cylinder

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