

Profound IS – Geotechnical Monitoring System

BAT[®]-sensor 2nd generation

Groundwater Monitoring and Testing System



ISB.0020* - BAT[®]-sensor

The BAT[®]-sensor in combination with the BAT[®]-filter tip measures accurately and against low costs the pore pressure in the ground.

This unique, re-usable sensor is equipped with a 24-bit AD converter, microprocessor, clock, network controller and memory chip. Without difficult conversion factors, this Intelligent Sensor immediately measures in engineering units. After finishing the pore pressure measurement you can easily retrieve the sensor and use it again at another project.

The BAT[®]-sensor has also been equipped with a temperature gauge, which measures the temperature at the end of the sensor.

In combination with the battery holder the sensor can be used as stand-alone sensor or inter-connected with other sensors in a fully digital network.

With an extra accessory it is possible to measure the permeability of the soil or to take liquid and gas samples.

Technical specifications

Pressure range	0...5 bar (absolute)
Burst pressure	16 bar
Pressure hysteresis (0→Pmax →0)	≤ 0.1%
Linearity error	≤ 0.15 % (tested)
Operating temperature	-20 °C to 80 °C
Temperature accuracy	± 0.5 °C
Electrostatic discharge	2500 V
Memory	≈ 6,500 measurements
Power consumption	≤ 30 mA with 15 V (operating)
Protection	IP 68
Material	Stainless steel 316
Weight sensor	224 gram
Dimensions sensor	Ø 22 mm, length 170 mm
Dimensions sensor incl. transducer assembly	Ø 22 mm, max. length 248 mm
Weight set	988 gram
Dimensions of weight set	Ø 23 mm, length 415 mm
Standard cable length	10 m or 20 m
Extra	Standpipe sensor protection cap

Accessories

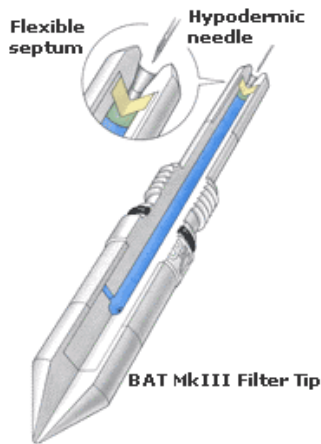
ISB.00010 BAT [®] -filter tip Mk III	POM with porous HDPE filter
ISB.00020 BAT [®] -filter tip Mk III STS (stainless steel)	Stainless steel SS2343 with porous HDPE filter.
ISB.00025 BAT [®] -filter tip MkIII Vadose	POM with fine porous ceramic filter
Battery holder	1 D-size Alkaline battery (operating time ≈ 4 months) 1 D-size Lithium battery (operating time ≈ 8 months)
Preparation set	Single-ended needle (blue), syringe
ISB.00080 Permeability kit and sample kit	
ISB.00330 IS-field unit (programming, read-out unit incl. internal air pressure sensor)	



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BAT[®]-filter tip Mk III

ISB.00010 BAT[®]-filter tip

The BAT[®]-filter tip in combination with the BAT[®]-sensor allows you to measure easily and accurately the pore pressure in the soil.

In the filter tip a flexible disc is fitted which allows the sensor to be coupled hundreds of times to the filter tip by a hypodermic needle. The disc is also a leakage and gasproof seal of the filter tip.

The filter tip is attached to an extension pipe supplied by Profound. It is normally installed by pushing it down to the desired depth using ordinary gas pipes.

The standard BAT-filter tip is suitable for use in clay, silt and sand. For harder soils a stainless steel filter tip can be used.

Additionally, using the BAT-sensor and the additional permeability set you can measure the permeability of the soil or take liquid and gas samples.

Technical specifications

Pressure range	0...16 bar (absolute) 0...160 m H ₂ O (absolute)
Flow factor	F = 0,23 meter ¹
Penetration resistance	Max. ≈ 25 Mpa
No. of couplings	» 500
Max. load	» 20 kN
Correction height (BAT [®] -sensor)	215 mm
Material filter	Porous HDPE
Material tip	Thermoplastic material (POM)
Weight filter tip	122 gram
Dimensions filter	Ø 31 mm, length 36 mm
Dimensions filter tip	Ø 31 mm, length 209 mm
Weight extension pipe	565 gram
Dimensions extension pipe	Ø 1 inch, length 250 mm

Accessories

ISB.002** BAT [®] -sensor with integrated datalogger	
Gas pipe per meter with couplings	Thread: 1 inch gas BSP (Ø 33.2 mm, 11 per inch) Pipe: 1 inch (33.9 mm exterior, 27.2 interior)
Preparation set	Single-ended needle (yellow) and syringe, centralisation adapter (white)

¹ Hvorslev, M.J. "Time lag and soil permeability in ground water observations". 1951. Bulletin No. 36, Corps of Engineers. Waterways Experiment Station, U.S. Army .

Profound reserves the right to revise this documentation or to make improvements or changes in the product(s) at any time.



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BAT Filter tips Mark III

The BAT Mk III Filter tip are the new generation of BAT Filter tips. It contains no mechanical or electrical components. It is easier to assemble and install than older versions of BAT Filter tips. The standard filter tip is made of polyacetal plastic with a filter of porous polyethylene.

The BAT Mk III filter tip is permanently installed in the soil at desired depth. To the filter tip a variety of equipments may be coupled which will interact directly with the soil fluids.

Connection with the filter tip is made with a system of hypodermic needles based on the unique quick-connect coupling. Connections can be performed hundreds of times without losing the sealing function in the unique quick-connect coupling.

After proper installation the desired equipment is connected to the filter tip simply by lowering it down the extension pipe. Upon disconnection the equipment is simply pulled up again. The connection/ disconnection of measuring equipment will only have minimal affect on the surrounding soil system.



BAT-pore pressure measurement

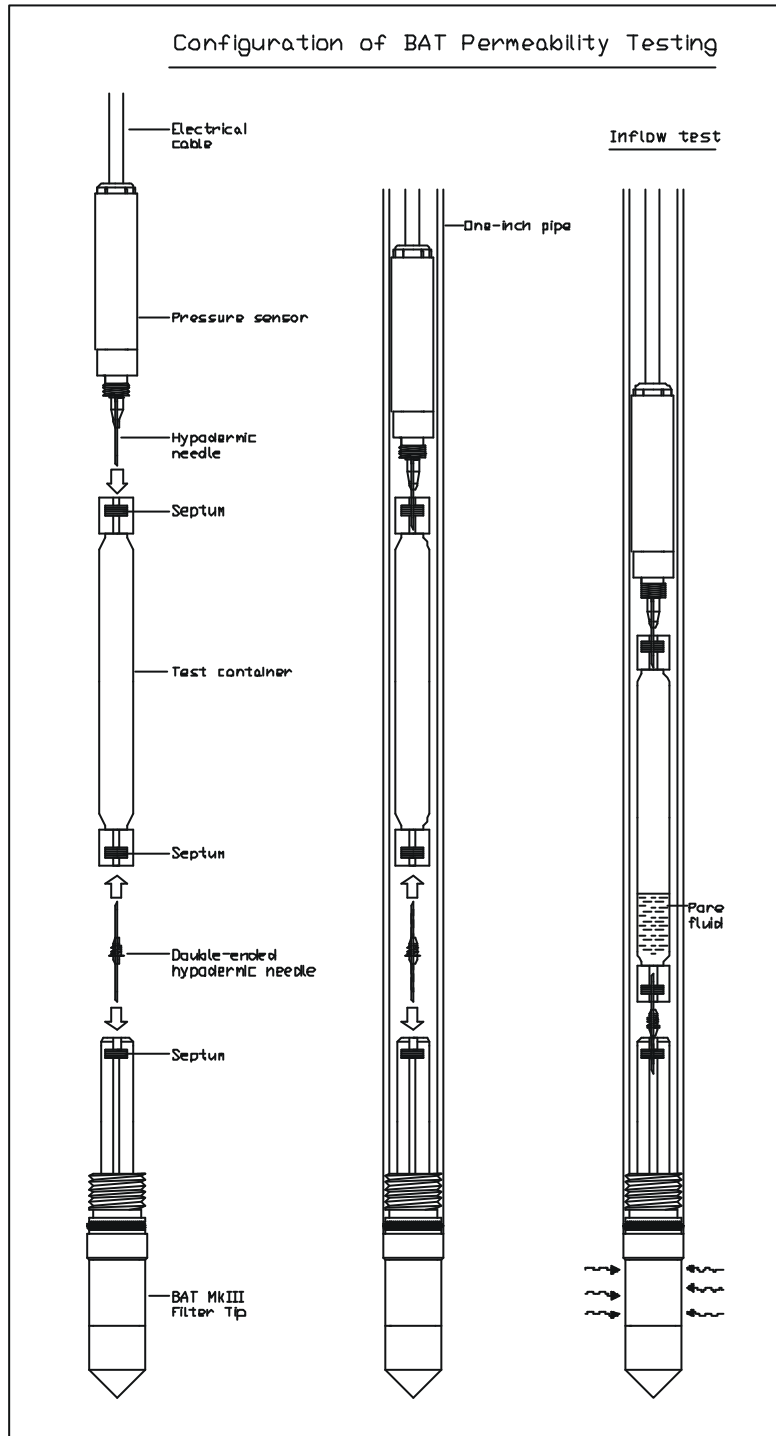


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Intelligent Sensor system

BAT[®]-system II



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