S430

_ BH PROFILE

IPI INCLINOMETERS

INCLINOMETERS
& PENDULUMS

SISGEO®

S430_EN_10_09/2024

BH PROFILE

INCLINOMETERS

BH profile gauges are designed for automatic monitoring of critical locations where displacement request a nearly-real time monitoring.

The gauge consists of a stainless steel body with on one side the connection for carbon fibre extension rod and on the other side a stainless steel carriage with spring-loaded wheels. Each BH profile chain is composed by a string of gauges with carbon fiber extension rods and an upper terminal wheels assembly.

The gauges are electrically linked one to each other with waterproof male/female connectors, and the string is connected to readout or datalogger with single digital bus cable.

MAIN APPLICATIONS

- Landslides
- Dams
- Tunneling
- Deep excavations
- Unstable slopes

FEATURES

- Carbon fiber rods grants light strings and simpler installation
- Digital bus simplify and speed-up the the installation procedures
- Internal humidity and power supply sensors permit to have more information in the event of gauge malfunction

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

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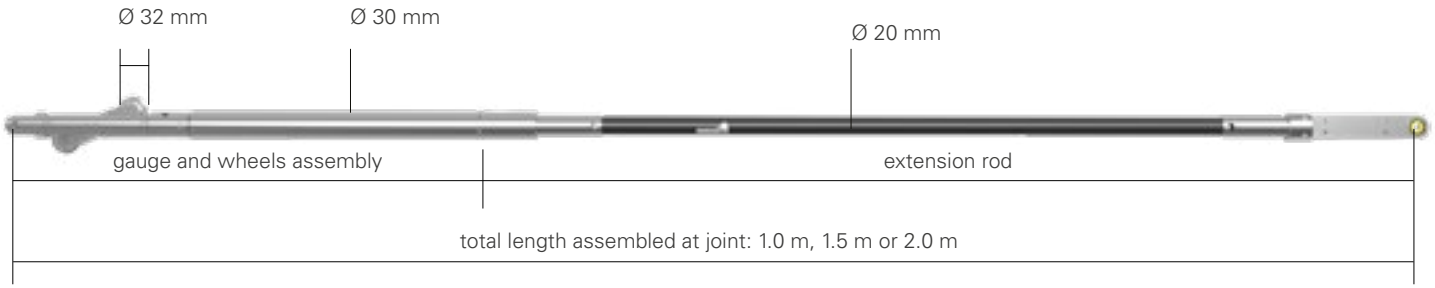
TECHNICAL SPECIFICATIONS(1)

	0S432HD15S0	0S432HD30S0
Measurement principle	BIAXIAL MEMS inclinometer	
Measuring range	±10°, ±15°	±20°, ±30°
Sensor resolution	0.0001°	
Sensor repeatability	±0.001°	
Sensor mechanical bandwidth	1 Hz	
Sensitivity (2)	see Calibration Report	
Sensor accuracy MPE (3)	< ±0.01 % FSR	
Sensor 24h stability (4)	< ±0.004° @24h	
Repeatability (precision) of a string of BH profile elements(5)	< ±2.00 mm / 30 m (A-axis)	
Offset temperature dependancy	±0.002° / °C	
Power supply	from 8 to 28 Vdc	
Signal output and protocol	RS-485 with Modbus RTU protocol (6)	
A/D converter	sigma-delta 32 bit, 38-KSPS	
Average consumption	4,3 mA @ 24 Vdc, 8 mA @ 12 Vdc	
Temperature operating range	from -30°C to +70°C	
Built-in temperature sensor range / accuracy	Temperature sensor (embedded in electronic board) from -40°C to +125°C / ±1 °C (-10°C + 85°C)	

PHYSICAL FEATURES

	GAUGE AND WHEELS ASSEMBLY	EXTENSION ROD
Material	stainless steel	stainless steel joint tips and carbon fiber rod
IP class	IP68 up to 1.0 MPa (2.0 MPa on request)	--
Casing compatibility (7)	Min. casing ID 58 mm - Max casing ID 83 mm	--
Gauge length / Total weight (8)	1.0 m length / 2.30 kg - 1.5 m length / 2.40 kg - 2.0 m length / 2.50 kg	



(1) Performance are granted for instruments installed in vertical casing installations where borehole inclination should be kept within ±2° of vertical, at any point along the borehole (ISO 18674-3).
(2) Sensitivity is a specific paramenter different for every gauge. The sensitivity is calculated during gauge calibration test and inserted into the Calibration Report.
(3) MPE is the Maximum Permitted Error on the measuring range (FSR). In the Calibration Report, the accuracies of the gauge are calculated using the linear regression; the error reported is the maximum residual error on the FSR.
(4) Stability calculated as difference after a 24 h period under repeatability conditions (ISO 18674-3).
(5) 60 days test, reference reading taken 96 hours after installation, system composed by 15 BH-Profile gauges with 2m elongation rod. Test performed in nearly-repeatability conditions.
(6) RS485 not-optoisolated Modbus communication with RTU Protocol. Default output is sen α, other units available are degree, mm/m and inch/feet (to be requested at order). Sisgeo Modbus protocol manual is available for download at this page.
(7) We strongly suggest to use Sisgeo ABS casing
(8) As for ISO 18674-3 standard, total length should not exceed 2 m. Gauges with longer extension rods available on request. Performances of gauges with extension rods longer than 2m could be worst than what reported in this datasheet.

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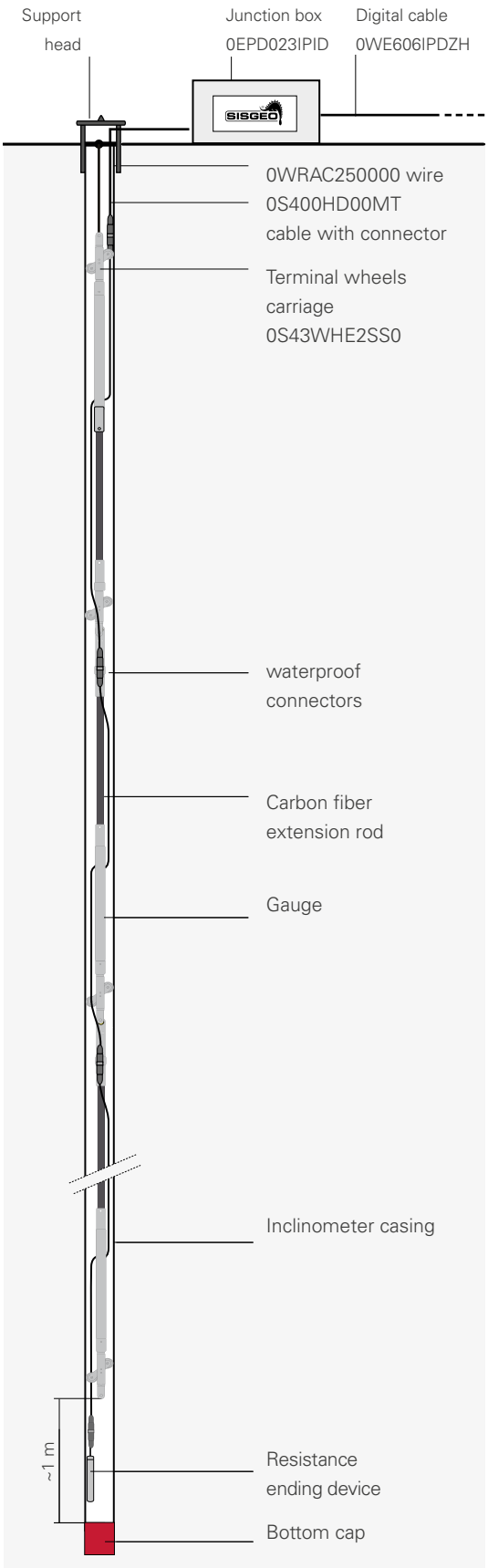
ACCESSORIES AND SPARE PARTS



CARBON FIBRE EXTENSION ROD 0S430EX00RD

Extension rod connected to the BH profile gauge at factory. Available in different dimensions to reach a total length of 1.0 m, 1.5 m and 2.0 m (length to be specified at order).

TERMINAL WHEELS CARRIAGE 0S43WHE2SS0

Composed by stainless steel spring loaded carriage with two wheels. Permits to end the BH profile chain at the top.

UPPER CABLE WITH CONNECTOR 0S400HD00MT

Available in different lengths (2m, 5m, 10m, 15m), it is composed by a signal cable with IP68 connector to link the upper inclinometer probe to the junction box or local logger.

INCLINOMETER SUPPORT HEAD 0S4TS101000

It is installed at the top of inclinometer casings for hanging the in-place inclinometer string.

DIGITAL INCLINOMETER CABLE 0WE606IPDZH

LSZH cable for connecting digital BH profile chain to OMNIAlog datalogger.

DIGITAL JUNCTION BOX 0EPD023IPID

Junction box for chains of digital instruments, composed by IP67 plastic box, internal electronic board for wiring and three cable glands.

SUPPORT STEEL WIRE 0WRAC250000

It is used to suspend the BH profile within the inclinometer casing. Diameter 2.5 mm.

RESISTANCE ENDING DEVICE 0ETERMRESI0

Termination resistance with connector, needed to close every digital BH Profile chain. The value of resistor depends on the layout of each BH Profile system.
For more detail see the FAQ#076.

RESISTANCES KIT (SPARE) 0ERESIKIT00

Kit composed by one 120 Ohm, two 240 Ohm, three 360 Ohm and four 480 Ohm resistance ending devices. Each one has an M12 5-pin connector for linking to SISGEO digital gauges. Check compatibility with old digital gauges with your Sales Representative.

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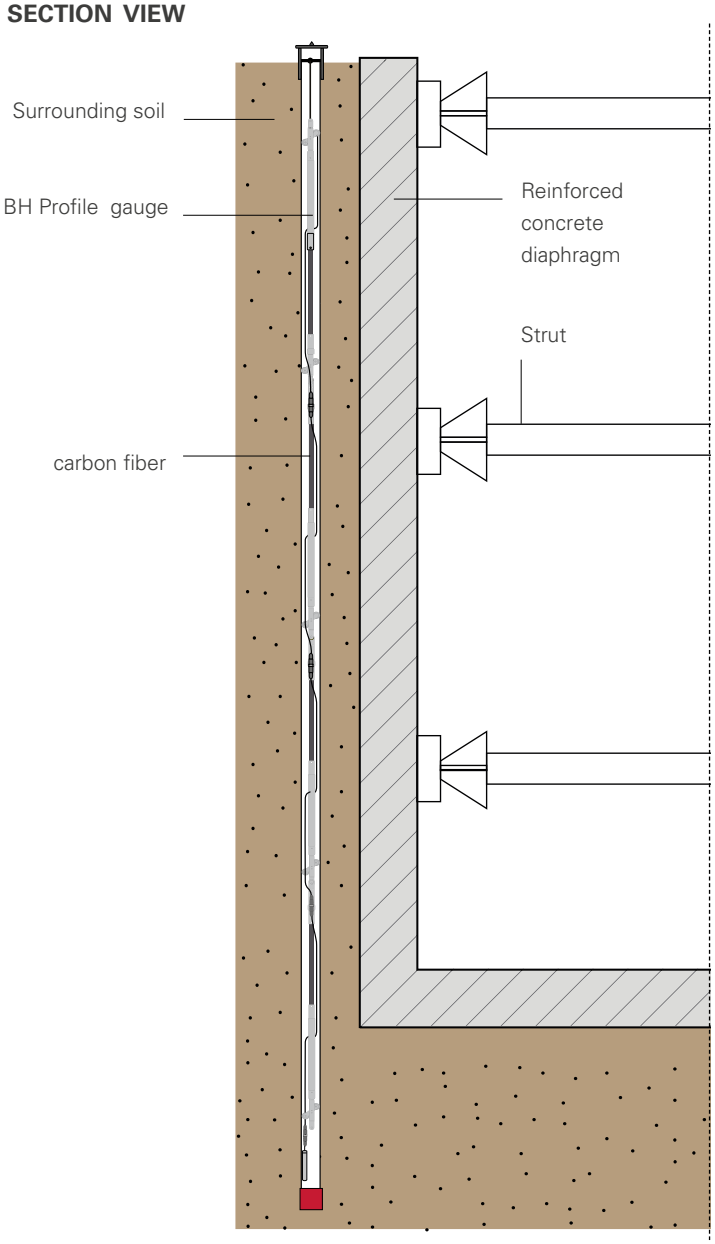
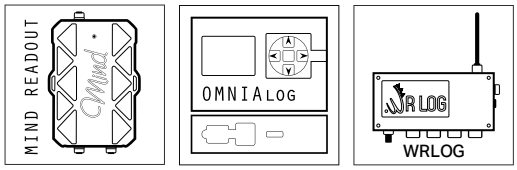
TYPICAL TRENCH INSTALLATION

SECTION VIEW



READABLE BY



For further information refer to their own datasheets

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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**