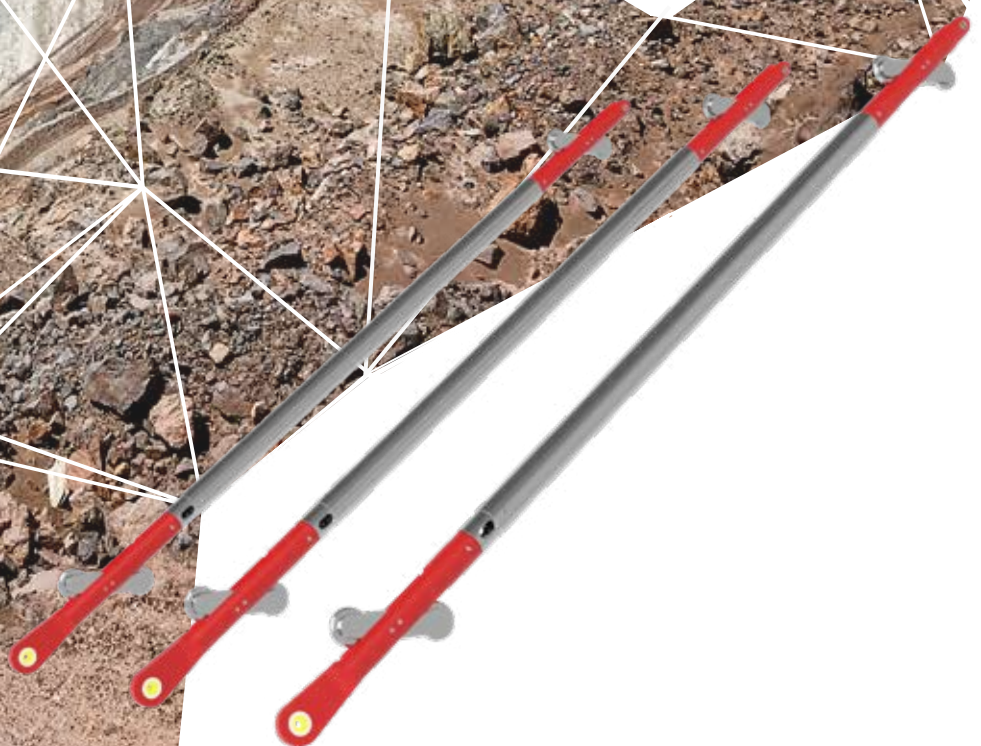


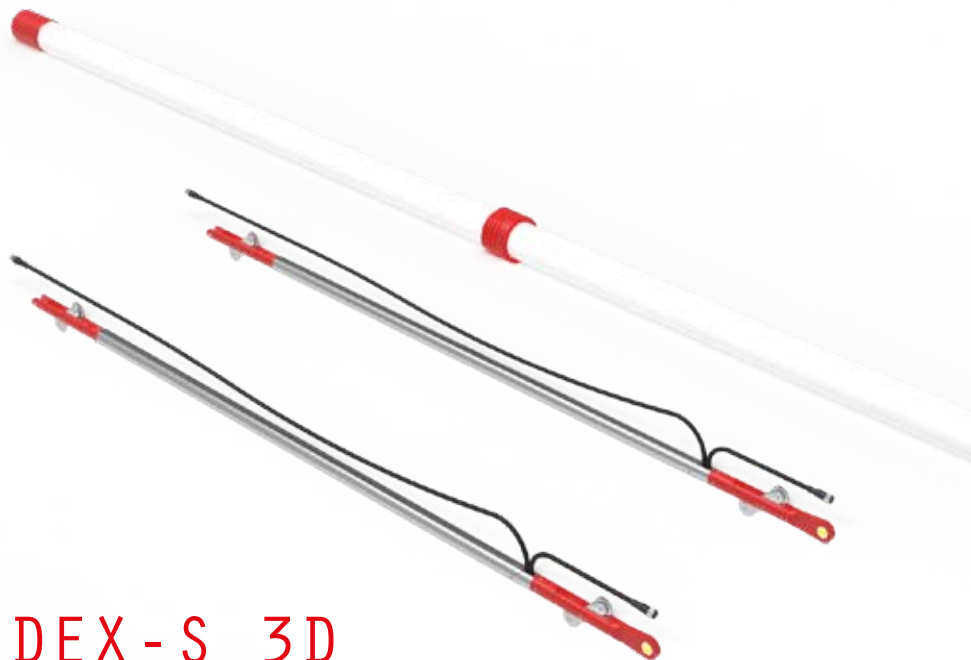
DEX-S

— DEX-S

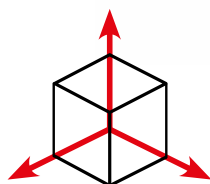
3D EXTENSO-INCLINOMETERS

EXTENSOMETERS





DEX-S 3D EXTENSO-INCLINOMETERS



DEX-S 3D PROBE

The DEX-S extenso-inclinometer is a 3D probe with an exclusive merge of two sensors: a high accuracy MEMS biaxial inclinometer to read displacements on horizontal plane, and a contactless magnetic sensor to monitor the vertical displacements.

A chain of probes installed in a borehole offers the unique advantage to return a 3-D profile of both the casing and surrounding ground in which the chain is installed.

DEX-S probes are installed in ABS inclinometer casings with special red magnetic rings. The magnetic rings are the reference points for the probes to monitor vertical displacements.

APPLICATIONS

- Monitoring 3D deformation in tunneling and diaphragm walls
- Monitoring settlement in dam foundations
- Monitoring lateral displacements in dams and rockfall areas
- Monitoring settlements at depths up to 200 m

FEATURES

- 3-D borehole profile
- Cost savings by use of single borehole
- DEX-S strings can be removed and installed in other projects



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

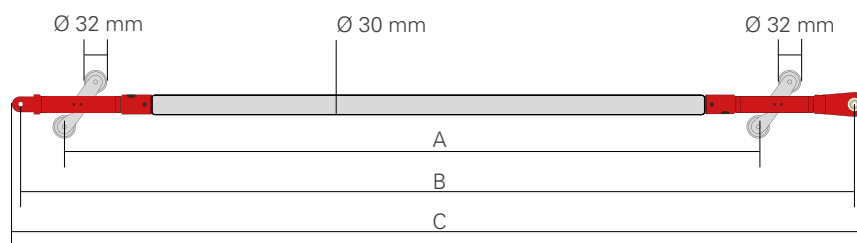
DEX-S 3D DIGITAL EXTENSO-INCLINOMETERS

PRODUCT CODES	0DEXS01030D	0DEXS05030D	0DEXS10030D
SETTLEMENT SENSOR			
Sensor type	high performance contactless displacement transducer		
FS and Measuring range	100 mm (± 50 mm)	500 mm (± 250 mm)	1000 mm (± 500 mm)
Sensor resolution	0.03mm	0.1 mm	0.1 mm
Sensor repeatability	0.003 mm	0.02 mm	0.1 mm
Sensor 24 hours stability ⁽¹⁾	± 0.01 mm	± 0.05 mm	± 0.1 mm
Sensor accuracy (MPE ⁽³⁾)	$\pm 0.3\%$ FS (± 0.3 mm)	$\pm 0.08\%$ FS (± 0.4 mm)	$\pm 0.08\%$ FS (± 0.8 mm)
Offset temperature dependancy	0.015 mm/°C	0.025 mm/°C	0.050 mm/°C
Sensitivity ⁽²⁾	See Calibration Report		
TILT SENSOR			
Sensor type	biaxial MEMS inclinometer		
Measuring range	$\pm 30^\circ$		
Sensor resolution	0.0001°		
Sensor mechanical bandwidth	1 Hz		
Sensor repeatability	0.001°		
Sensitivity ⁽²⁾	See Calibration Report		
Sensor accuracy: MPE ⁽³⁾	$< \pm 0.01\%$ FSR		
Sensor 24 hours stability ⁽¹⁾	$< \pm 0.004^\circ$		
Offset temperature dependancy	$\pm 0.002^\circ / ^\circ\text{C}$		
TEMPERATURE SENSOR ⁽⁴⁾	Embedded on electronic board		
Measuring range	- 40°C to +125°C		
Accuracy	$\pm 1^\circ\text{C}$ with temperature range -10°C to +85°C		
HUMIDITY SENSOR ⁽⁴⁾	Embedded on electronic board		
Measuring range	0 to 100% RH		
Accuracy	$\pm 5\%$ RH with humidity range 0 to 95% RH		
SUPPLY VOLTAGE MONITOR ⁽⁴⁾	Embedded on electronic board		
Measuring range	0 to 36 V		
Accuracy	$\pm 5\%$ FS		
ELECTRICAL INFORMATION			
Signal output	RS-485 with Modbus RTU protocol ⁽⁵⁾		
Power supply	from 12 to 24 V dc - default powering set up is TIMED ⁽⁶⁾		
Average consumption	55 mA @ 24 Vdc, 115 mA @ 12 Vdc		
Max cable length to logger	1000 m (for more information see F.A.Q.#077 on Sisgeo web site)		

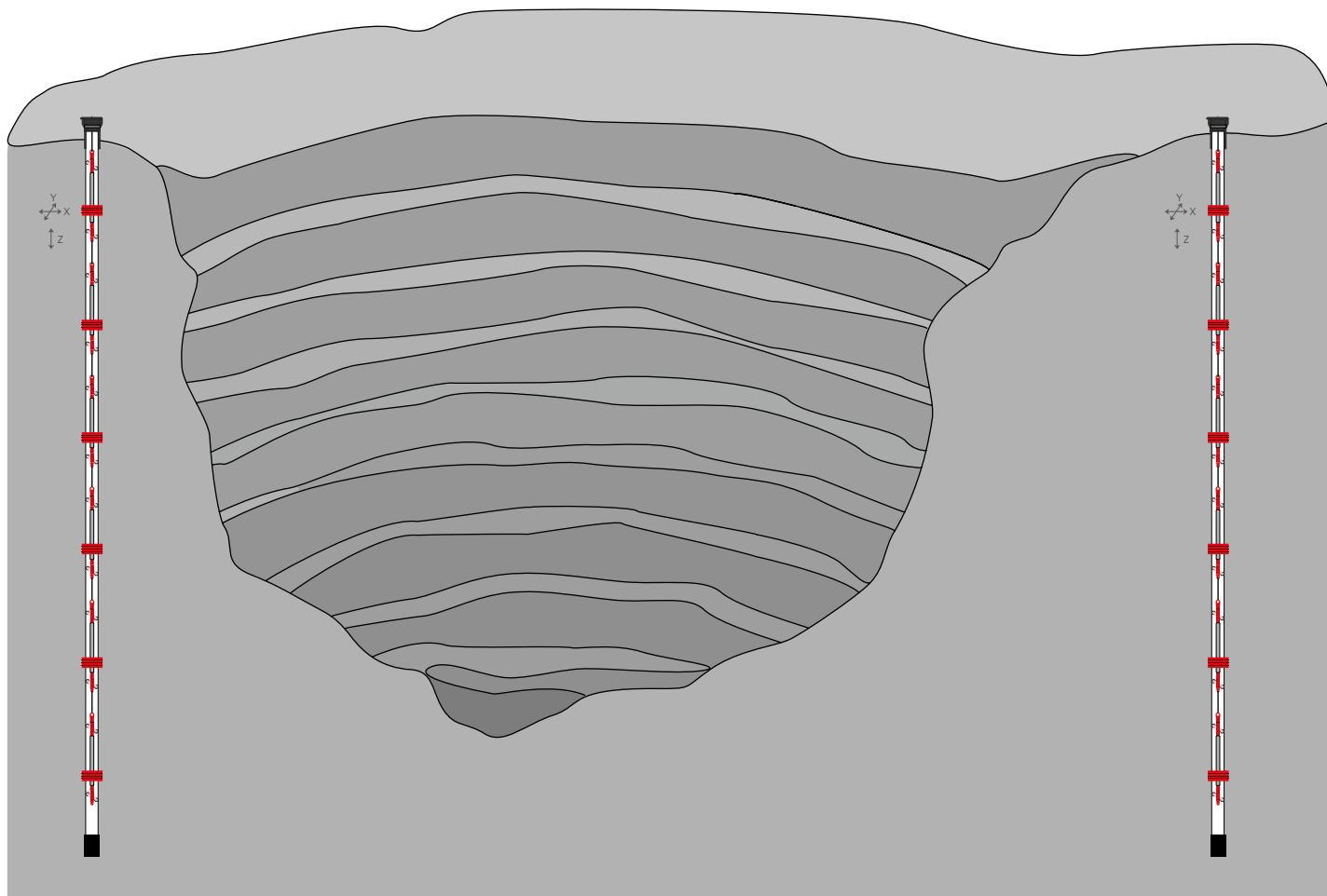
(1) Stability calculated as difference after a 24 h period under repeatability conditions. (2) Sensitivity is a specific parameter different for every gauge. The sensitivity is calculated during gauge calibration test and inserted into the Calibration Report. (3) MPE is the Maximum Permitted Error on 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) These sensors are installed on the internal electronic board for sensor diagnostics. (5) RS485 not-optoisolated Modbus communication with RTU Protocol. Default output is [mm] for settlement sensor and [sin α], for tilt sensor. Other units are available and to be requested at order. Sisgeo Modbus protocol manual is available for download on www.sisgeo.com (6) For more information regarding powering mode, please visit F.A.Q.#094 on www.sisgeo.com.

DEX-S PHYSICAL FEATURES

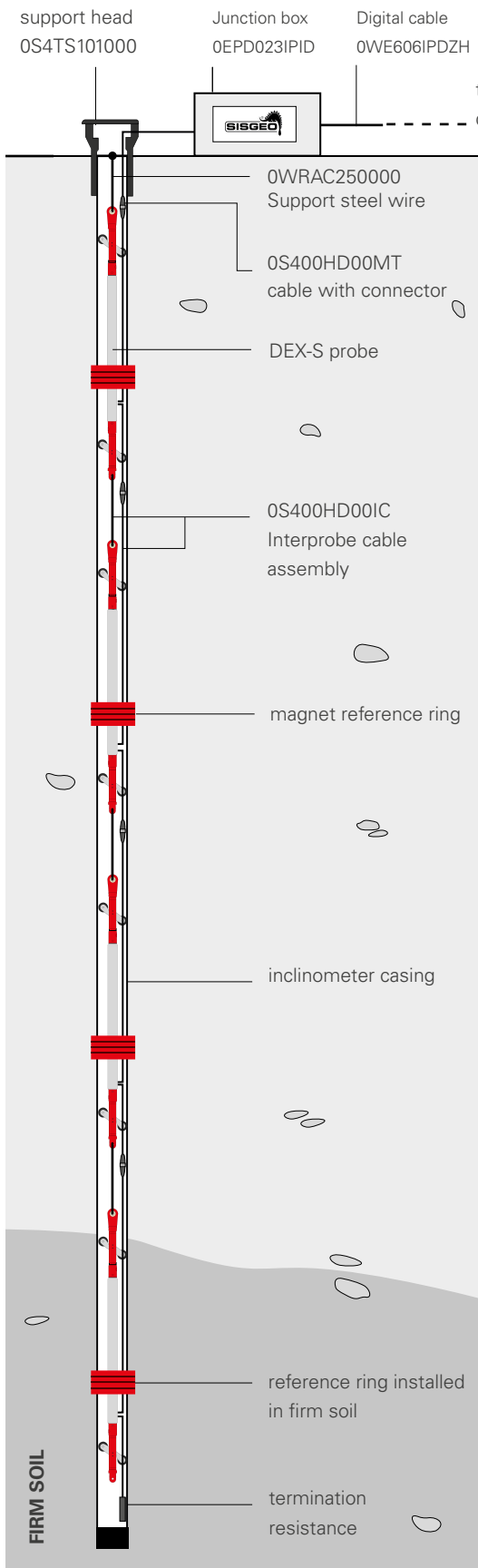
PROBE FEATURES	PROBES WITH ±50 mm range	PROBES WITH ±250 mm range	PROBES WITH ±500 mm range
Measuring base (A)	850 mm	1250 mm	1750 mm
Distance between suspending holes (B)	1050 mm	1450 mm	1950 mm
Total length (C)	1080 mm	1480 mm	1980 mm
Temperature operating range	-30°C to +70°C		
Pressure rating	IP68 up to 1.0 MPa (higher pressure rating available on request)		
Material	stainless steel and thermoplastic resin		
Casing compatibility	S143 Easy Lock or S151 Quick-Joint casings, equipped with magnet rings		



EXAMPLE OF DIGITAL DEX-S EXTENSO-INCLINOMETERS APPLICATION IN OPEN-PIT MINE



DEX-S STRING LAYOUT



After verifying the position of the magnetic rings (e.g., using the C121 BRS magnetic detector probe), the DEX-S probes are suspended from the support head at the desired elevations. Optically surveying the position of the support head and installing the lower magnet ring into firm soil, provides an absolute reference for vertical displacements.

INTERPROBE CABLE ASSEMBLY OS400HD00IC

Available in different lengths (2m, 5m, 10m, 15m), it is composed by digital signal cable with female/male connectors and stainless steel support wire for the connection of a lower probe to the upper one.

UPPER CABLE WITH CONNECTOR OS400HD00MT

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

SUPPORT STEEL WIRE 0WRAC250000

Steel wire for hanging the DEX-S string from the upper probe to the support head. Diameter 2.5 mm.

SUPPORT HEAD OS4TS101000

It is installed at the top of inclinometer casings for hanging the DEX-S string.

DIGITAL CABLE 0WE606IPDZH

LSZH cable for connecting digital gauge' 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.

MAGNETIC DETECTOR PROBE 0C121000000

Simple, portable device to verify position of magnet rings after casing grouting. Flat cable with millimeter graduations, mounted on reel. Available in different lengths.

INSTALLATION KIT OS4IPIT00LO

Kit composed by one plier for copper sleeves and 20 copper sleeves

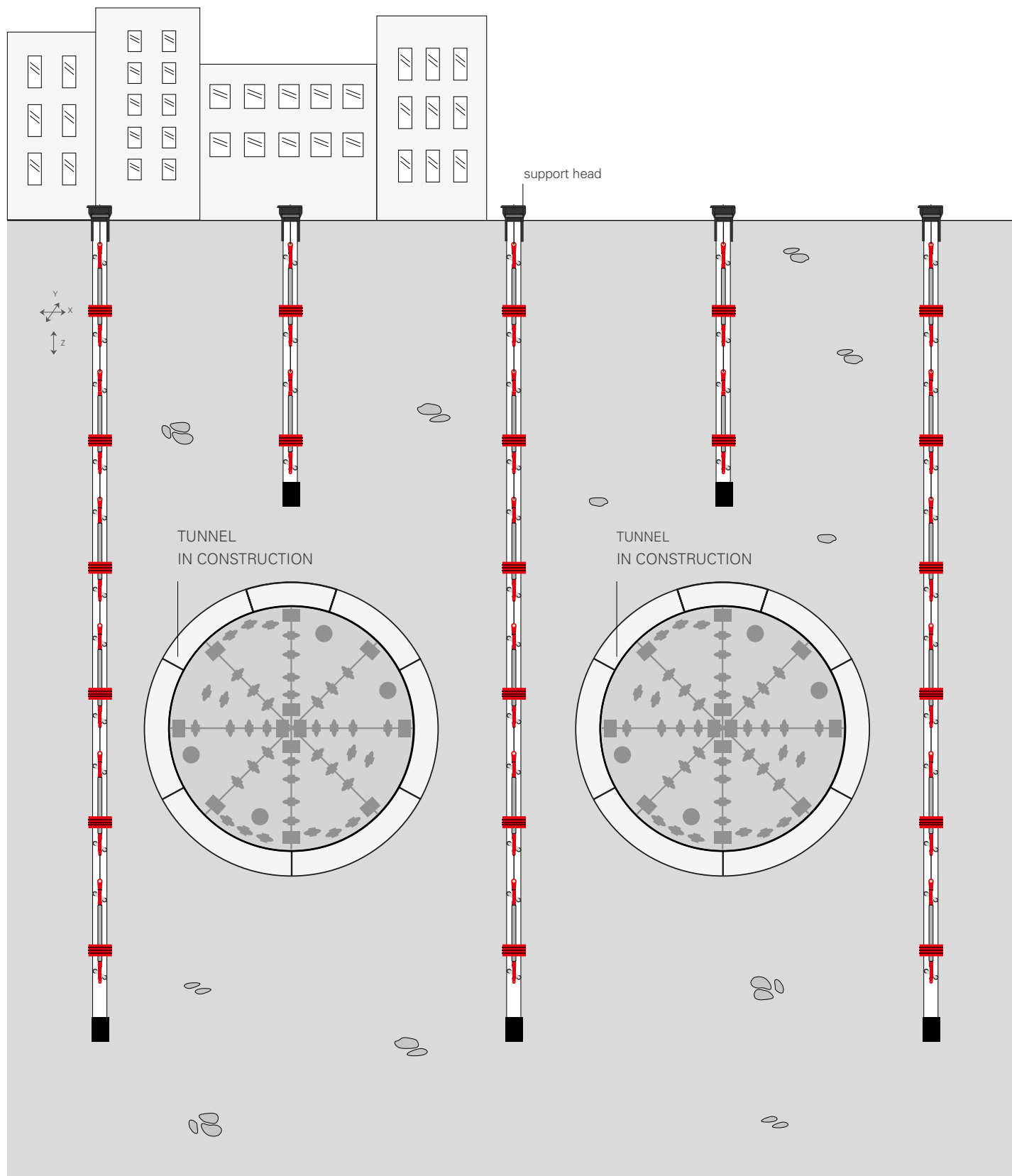
RESISTANCES KIT (SPARE) 0ERESIKIT00

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.

RESISTANCE ENDING DEVICE 0ETERMRESIO

Termination resistance with connector, needed to close every digital instrument' chain. The value of resistor depends on the layout of each DEX system. For more detail see the [FAQ#076](#).

EXAMPLE OF DEX-S APPLICATION IN TUNNELING



POWERING ACCESSORIES

SOLAR PANEL KIT 0AX10W003AH

It consists of a 10W solar panel (supplied without pole mount) with 10m cable and IP65 plastic box that houses a 2.3 Ah battery and charge controller. The box is ready for the digital sensor kit 00MX24V030W (supplied separately)

MAINS POWER SUPPLY KIT 0AXBC022015

It consists of an AC/DC charger (Vin 85-265 Vac, 50-60 Hz, Vout 13.4 Vdc/0.9 A), and an IP65 plastic box that houses a 2.3 Ah battery. The box is ready for the digital sensor kit 00MX24V030W (supplied separately)

DIGITAL SENSOR KIT 00MX24V030W

Consisting of a wiring board and a 30W 12V to 24V DC/DC converter. The digital instrument kit must be installed inside the box of either the 0AX10W003AH kit or the 0AXBC022015 kit.

CASINGS AND ACCESSORIES

S143 ABS INCLIN. CASING 0S143107000

Easy lock ABS inclinometer casing model S143, 3 m length, OD 70 mm, ID 58 mm.

S143 BOTTOM CAP 0S143TF7000

Top/bottom cap for S143 casings, made of ABS. Suitable for inclinometer column or extenso-inclinometer column.

ASSEMBLING KIT FOR 100M 0S143KIT000

Assembling set composed by 5 O-rings, locking wire and Sisgeo adhesive tape. (Mandatory)

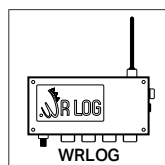
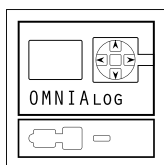
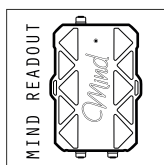
MAGNET REFERENCE RING OREXORINGR0

Magnet ring for T-REX, DEX and DEX-S extensometers.
OD 93 mm, ID 71 mm.
Material: PVC with permanent magnet.

SPIDER REFERENCE RING OREX0AF71R0

Spider magnet ring for T-REX, DEX and DEX-S extensometers.
OD 93 mm, ID 71 mm.
Max spring span 300 mm.
Material: PVC with permanent magnet.

READABLE BY



Refer to separate datasheets for further information.

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