



## SAAX

Model 001

Purpose-built for heavy duty horizontal measurement: soil settlement, rail-line deformation, and pipeline monitoring. SAAX1000's watertight construction combines twist-resistant joints and thick-walled stainless steel segment tubes. The construction contains a compact array of MEMS accelerometers.

SAAX1000 delivers superior cost-benefit returns to project budgets. All ShapeArray installations are fast and low-cost, requiring far fewer people than traditional in-place inclinometers. SAAX1000 is rolled off a reel and set into user-installed conduit.

SAAX1000's segment length is 1000 mm.

# SPECIFICATIONS



## PHYSICAL PROPERTIES

SEGMENT LENGTH	1000 mm (Joint centre to joint centre)
STANDARD LENGTH OF SAAX	1 m to 150 m
CUSTOM SENSORIZED LENGTH	Over standard length, contact Measurand for details
MAXIMUM DIAMETER	23 mm
LENGTH OF UNSENSORIZED NEAR CABLE END (SEE DIAGRAM BELOW)	500 mm standard (includes: 260 mm Cable Terminator Segment and 300 mm PEX, less 60 mm overlap)
LENGTH OF COMMUNICATION CABLE	15 m standard, (14.7 m extending past the PEX tubing)
LENGTH OF FAR TIP EYEBOLT	32 mm
WEIGHT	1.0 kg/m
OPERATING TEMPERATURE	-40°C to 60°C
WATERPROOF TO	2000 kPa (200 m Water)
MAXIMUM TENSILE RESISTANCE	550 kgf
MAXIMUM JOINT BEND ANGLES	70°
POWER REQUIREMENTS	12 VDC at 4.2 mA/segment

## ELASTIC TWIST TOLERANCE

MAXIMUM TORQUE FOR ELASTIC RETURN <sup>3</sup>	2.0 N-m per joint
TWIST TOLERANCE	0.5° per joint
ACCURACY OF RETURN FOR ELASTIC TWIST <sup>3</sup>	±0.01° per joint

## STATIC SHAPE MEASUREMENTS

RANGE OF 2D MODE (HORIZONTAL)	± 30° with respect to horizontal
ACCURACY OF DEFORMATION RELATIVE TO STARTING SHAPE <sup>1,2,3</sup>	± 1.5 mm for 32 m SAAX
RESOLUTION <sup>1,2,3</sup>	± 0.5 mm for 32 m SAAX
RESOLUTION OF SINGLE SEGMENT	± 2 arcseconds
ACCURACY OF TILT/SEGMENT WITHIN 20° OF HORIZONTAL <sup>1,2,3</sup>	± 0.0005 rad = 0.029°
LONG-TERM RELIABILITY MTBF	38 years for 32 m SAAX

# NOTES



<sup>1</sup> One-sigma value, based on field measurements of horizontal arrays > 1 year of operation. Accuracy value is a function of the square root of length.

<sup>2</sup> Value based on AIA (Average in Array) setting of 1000 samples.

<sup>3</sup> RMS calculated from published noise figure of sensor (verified by Measurand) and bandwidth of system using highest AIA setting of 25,600 samples.

# NOTES



Minimum Capped ShapeArray Length (A to B) = Min Cable Bend Radius + Unsensorized Length + Sensorized Length + Eyebolt

Standard Unsensitized Length = 500 mm

Sensitized Length = "Near (Cable) End" Sensorized Segment through "Far (Tip) End" Sensorized Segment

PVC conduit End Cap and Install Kit Top Stack require additional depth

Standard tolerance on measurements +/- 2 mm unless stated

