MEASURAND

SAAX

Model 002

ShapeArray is patented technology.

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 triaxial 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	Up to 150 m
CUSTOM LENGTH OF SAAX	Over standard length, contact Measurand for details
MAXIMUM DIAMETER	23 mm
LENGTH OF UNSENSORIZED NEAR CABLE END SEGMENT	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
MAXIMUM TENSILE RESISTANCE	550 kgf
MAXIMUM JOINT BEND ANGLES	70°
STORAGE TEMPERATURE	-40°C to 60°C
OPERATING TEMPERATURE	-40°C to 60°C
WATERPROOF TO	2000 kPa (200 m Water)
POWER REQUIREMENTS	12 VDC at 1.8 mA/segment

ELASTIC TWIST TOLERANCE

MAXIMUM TORQUE FOR ELASTIC RETURN[3]	2.0 N-m per joint
TWIST TOLERANCE	0.5° per joint
ACCURACY OF RETURN FOR ELASTIC TWIST[3]	±0.01° per joint

STATIC SHAPE MEASUREMENTS

RANGE OF 2D MODE (HORIZONTAL)	± 30° with respect to horizontal
ACCURACY OF DEFORMATION RELATIVE TO STARTING SHAPE[1,2,3]	± 1.5 mm for 32 m SAAX
RESOLUTION[1,2,3]	± 0.5 mm for 32 m SAAX
RESOLUTION OF SINGLE SEGMENT	± 1 arcsecond
ACCURACY OF TILT/SEGMENT WITHIN 20° OF HORIZONTAL[1,2,3]	± 0.0005 rad = 0.029°

NOTES

[1] 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.

[2] Value based on AIA (Average in Array) setting of 1000 samples.

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

PATENT INFORMATION

ShapeArray is patented technology.

Measurand's patents include, but are not limited to:

Shape-Acceleration Measurement Device and Method, Canadian Patent 2,472,421& 2,747,236

Shape-Acceleration Measurement Device and Apparatus, US Patent 7,296,363

Cyclical Sensor Array, Canadian Application 2,815,199 & 2,911,178

Bipartite Sensor Array, Canadian Application 2,815,195 & 2,911,175

ShapeArray patents include coverage in: United States, Canada, France, United Kingdom, Italy, Japan and Germany.

Installation patents include coverage in United States, Canada, France, Untied Kingdom, Italy, Germany, China, Hong Kong, and Korea.

Patent families are sufficiently broad to capture most or all usage of ShapeArray in longer lists of countries.

NOTES

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

Standard Unsensorized Length = 500 mm

Sensorized Length = “Near (Cable) End” Sensorized Segment through “Far (Tip) End” Sensorized Segment

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

Sensorized length tolerance within 1% of total length.