

ShapeArray SAAX

Description

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

SAAX 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. SAAX is rolled off a reel and set into user-installed conduit.

SAAX's segment length is 1000 mm. SAAX can be manufactured to a maximum length of 150 m. All ShapeArrays are manufactured in an ISO 9001 certified facility.

PHYSICAL PROPERTIES

ITEM	SPECIFICATION
SEGMENT LENGTH	1000 mm (Joint centre to joint centre)
STANDARD LENGTH OF SAAX	Up to 200 m
CUSTOM LENGTH OF SAAX	Over standard length, contact Measurand for details
MAXIMUM DIAMETER	24 mm
LENGTH OF UNSENSORIZED NEAR CABLE END SEGMENT	205 mm
LENGTH OF COMMUNICATION CABLE	15 m standard
LENGTH OF FAR TIP EYEBOLT	80 mm
WEIGHT	1 kg/m
MAXIMUM TENSILE RESISTANCE	225 kgf
MAXIMUM JOINT BEND ANGLES	90°
STORAGE TEMPERATURE	-40°C to 60°C
INSTALLATION TEMPERATURE	-20°C to 60°C
OPERATING TEMPERATURE	-35°C to 60°C polynomial temperature algorithm corrected
WATERPROOF TO	2000 kPa (200 m Water)
POWER REQUIREMENTS	12 VDC (12–16.5) at 1.8 mA/segment 12 VDC (12–16.5) at 0.4 mA/segment (low power mode)

STATIC SHAPE MEASUREMENTS

ITEM	SPECIFICATION
RANGE OF 2D MODE (HORIZONTAL)	± 30° with respect to horizontal
ACCURACY OF TILT/SEGMENT WITHIN 20° OF HORIZONTAL ^{1,2,3}	± 0.0005 rad = 0.029°

RESOLUTION ^{1,2,3}	0.00067° (0.012 mm/m)
SYSTEM PRECISION ^{1,2,3}	± 0.5 mm for 30 m SAAX
	± 0.0005° (0.01 mm/m) (68% confidence interval) ±
SEGMENT PRECISION ³	0.0050° (0.09 mm/m) (99.7% confidence interval)
	± 0.01 mm/m (68% confidence interval) ± 0.03 mm/m
SENSOR 24H STABILITY ⁴	(99% confidence interval)

¹ One-sigma value, based on a six-month horizontal installation. Accuracy value is a function of the square root of length. ² Value based on Average in Array (AIA) setting of 1000 samples. ³ Sample size for segment precision is 540,000 readings. Data was collected for 3 different positions within +/- 10° of the X, Y, and Z axes. Figures provided fall within 99.7% confidence interval (3-sigma value). ⁴ 24 h stability is the maximum change in the sensor readings in a 24 h period for an instrument installed in repeatability conditions. Sample size is 7,200 samples for each 24 h period reviewed.

SPECIFICATIONS