ShapeArray SAAV Extend

Description

Inspired by direct feedback from clients in the tailings and mine waste sectors, SAAV Extend provides a continual deformation profile throughout multiple dam raises with unparalleled ease of installation and data interpretation.

SAAV Extend is a modular ShapeArrayâ?¢ system that scales along with your projectâ??s scope. SAAV Extend includes a top assembly that connects to a base assemblyÂ that creates a continuous deformation profile of a borehole. When it is time to raise the tailings dam, SAAV Extend Lift Extension segments can be added between the top and base assemblies to increase the total sensorized length. SAAV Extendâ??s connectors are keyed to ensure azimuth is maintained as Lift Extension segments are added in the field.

SAAV Extend is designed for the field. Our toolless connectors ensure that SAAV Extend produces continuous and reliable, long-term data while submerged in water-logged environments.

SAAV Extend can be installed into existing casings, even those that are too distorted for conventional use, which eliminates the need to drill new boreholes when converting from manual to automated monitoring. SAAVâ??s patented cyclical installation method means it can be directly inserted into a range of casing sizes and widths, including both standard grooved inclinometer casings and smooth casing types, without assembly in the field. Measurandâ??s software tracks the medial axis in the centre of the casing in 3D to produce traditional inclinometer plots.

All ShapeArray instruments are manufactured in a high-capacity ISO 9001:2015 certified facility.

PHYSICAL PROPERTIES

ITEM	SPECIFICATION
SEGMENT LENGTH	500 mm (joint center to joint center)
MAXIMUM COMBINED LENGTH OF SAAV EXTEND	Up to 200 m (500 mm segments)
MINIMUM LENGTH OF SAAV LIFT EXTENSION SEGMENT	1 m
STANDARD LENGTH OF SAAV EXTEND	Up to 150 m (500 mm segments)
CUSTOM LENGTH OF SAAV EXTEND	Over 150 m (Contact Measurand for details)
CONDUIT & CASING OUTSIDE DIAMETERS	70 mm and 85 mm inclinometer casing
SAAV EXTEND OD DIAMETER[1]	49 mm
LENGTH OF UNSENSORIZED SAAV EXTEND TOP ASSEMBLY	500 mm
LENGTH OF FIBERGLASS EXTENSION	1 m
LENGTH OF COMMUNICATION CABLE	Standard 15 m

WEIGHT	0.5 kg/m
MINIMUM AXIAL COMPRESSION TO PROVIDE SNUG FIT IN CASING	30 kgf
TENSILE STRENGTH	113 kgf (SAAV joint weakest point) 320 kgf (Connector)
MAXIMUM JOINT BEND ANGLES	90Â°
STORAGE TEMPERATURE	-40Â°C to 60Â°C
INSTALLATION TEMPERATURE	-20Â°C to 60Â°C
OPERATING TEMPERATURE	-35Â°C to 60Â°C polynomial temperature algorithm corrected
WATERPROOF TO	2000 kPa (200 m Water)
CONNECTOR RATINGS FOR WATER PRESSURE	Mated: 7000 kPa (700 m water) Open face: 1400 kPa (140 m water)
POWER REQUIREMENTS	12 VDC (12â??16.5) at 1.8 mA/segment 12 VDC (12â??16.5) at 0.4 mA/segment (low power mode)

STATIC SHAPE MEASUREMENTS

ITEM	SPECIFICATION
ANGULAR RANGE OF MEMS SENSORS	Â± 360Â° (software selection required for 2D/3D modes)
RANGE OF 3D MODE (VERTICAL)	Â± 60Â° with respect to vertical
RESOLUTION	0.00067Â° (0.012 mm/m)
SYSTEM PRECISION[2][3][4]	Â± 0.5 mm for 30 m SAAV
SEGMENT PRECISION[5]	Â± 0.0005Â° (0.01 mm/m) (68% confidence interval) Â± 0.0050Â° (0.09 mm/m) (99.7% confidence interval)
SENSOR 24H STABILITY[6]	Â± 0.01 mm/m (68% confidence interval) Â± 0.03 mm/m (99% confidence interval)
AZIMUTH ERROR IN JOINTS	< Â±0.01Â°

[1] Measurand recommends SAAV model ShapeArray for installations that require 27 mm ID casing. SAAV Extend can be installed into 70 mm or 85 mm inclinometer casing. [2] One-sigma value, based on a six-month cyclical installation. Accuracy value is a function of the square root of length. [3] Value based on AIA (Average in Array) setting of 1000 samples. [4] Specification is for 3D mode within Â± 20Â° of vertical. Vertical accuracy degrades with angular deviation from the vertical. [5] Sample size for segment precision is 540,000 readings. Data was collected for 3 different positions within +/- 10Â° of the X, Y, and Z axes. Figures provided fall within 99.7% confidence interval (3-sigma value). [6] 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