

### AST Series Module

Fully Integrated Embedment Sensor with Force, Acceleration, Tilt and Temperature

#### GENERAL DESCRIPTION

The AST structural monitoring module is designed for embedment in concrete providing a complete measurement solution in a single robust housing. Each AST module includes a temperature compensated full bridge electrical resistance strain sensor, one single axis high-g accelerometer, one 3-axis low-g accelerometer, and one high resolution temperature sensor. Our unique combination of sensors in one integrated measurement system provides the perfect solution for dynamic and static structural monitoring applications like rapid pile load testing, impact monitoring, and long term health monitoring. The AST modules employ a unique high-low g sensor arrangement providing the ability to measure high bandwidth dynamic events up to 30 kHz as well as low-g seismic events below 500 Hz. The low-g sensor also provides 3-axis tilt measurements allowing complete sensor orientation in-situ. The intelligent 3D sensor orientation feature allows off-axis corrections for unintentional misalignment or rotation of the sensor module in piles and other structural elements.

#### Analog and Digital Models:

AST100 - Strain only measurement with analog output

AST200 - Strain, Acceleration, Temperature with analog output

AST300 - Strain, Acceleration, Temperature with AD and digital CAN output

The AST100 and AST200 are well suited for connection to our GST5 modules or other high-speed data acquisition systems. The AST300 is digital for direct connection to our GCM3 controller modules using a single cable.



#### Technical Features

- ✓ Fully Integrated Structural Measurement System
- ✓ Embedded Full Bridge Strain Sensor
- ✓ Single Axis MEMS High-g Accelerometer (<30 kHz)
- ✓ 3-Axis MEMS Low-g Accelerometer (0 to 500 Hz)
- ✓ High Resolution Temperature Sensor
- ✓ Simple 9 to 12 V DC Supply

Parameter	Typical Values
Strain Gauge Range	3000 $\mu\epsilon$
Strain Gauge Resolution	1 $\mu\epsilon$
High-G 1-Axis Accelerometer	+/- 50g, 250g, or 500g (0 to 30kHz)
High-G Accelerometer Linearity	+/- 0.2% Full Scale
Low-G 3-Axis Accelerometer	+/- 2g (0 to 500 Hz)
Low-G Accelerometer Linearity	+/- 0.2% Full Scale
Temperature Sensor Accuracy	+/- 3 degrees Fahrenheit
Power Supply	9 to 12 Volts DC Unregulated
Module Length	12 inches
Module End Cap Diameter	1.25 inches