



Strains and Accelerometers

Strain Sensors and Accelerometers

For high strain dynamic foundation testing and other applications

Reliable. Convenient. Durable.

Strain Sensors and Accelerometers manufactured by Pile Dynamics are reliable, convenient to install and remove, and highly durable. The Pile Driving Analyzer® (PDA) system reads and processes electronic signals collected by Accelerometers and Strain Sensors (also known as Strain Transducers).

PDI's CAPWAP Signal Matching software helps estimate the force and resistance (capacity) along the length of the pile/shaft, proportionally. Embedding gages into the pile provides more accurate measurements of resistances and CAPWAP/capacity estimation along the pile length. CAPWAP also estimates the capacity along the length when strain/force measurements are taken at the pile top with standard strain sensors.

- Accuracy: PDI sensors collect high acceleration signals at high micro strain (strain sensors) and "g" (accelerometers) levels
- Traceability: PDI sensors are traceable to National Institute of Standards and Technology (NIST) specifications. Calibration sheets are furnished with each sensor. Pile Dynamics recommends that sensors be recalibrated at least every two years, in accordance with ASTM D-4945
- Versatility: In addition to collecting data for high strain dynamic foundation testing with the Pile Driving Analyzer® (PDA) system, PR accelerometers are also used for SPT hammer energy calibration with either the PDA or the SPT Analyzer. SPT hammer calibration also requires a specially instrumented SPT rod

PDI strain sensors are compatible with other applications requiring strain measurements, such as static load monitoring and structural monitoring of bridges and other structures.



- Available in wireless or traditional (cabled) versions
- Collects electronic signals processed by the Pile Driving Analyzer® (PDA)
- Accelerometers may be Piezoelectric (PE) or Piezoresistive (PR)
- PR accelerometers are recommended for SPT applications

Smart Sensor Technology

All accelerometers and strain transducers include Smart Sensor Technology which automatically provides the sensor serial number and calibration information to the PDA. The PDA recognizes the sensors, knows to which channel of data acquisition each sensor is connected, and reads their serial number, calibration, and date of last calibration.

Traditional (Cabled) and Wireless Versions

The same sensor is used in either traditional or wireless applications. A main cable connected to the PDA may be better suited for SPT calibration and/or offshore pile driving monitoring.

Installation

When used for Dynamic Foundation Testing or Pile Driving Monitoring, accelerometers and strain sensors are bolted to the foundation, usually at a length of approximately two to three diameters below the top. Strain sensors are attached symmetrically around the neutral axis of the foundation to account for bending effects, and accelerometers are attached near the strain sensors. Typically, two or four pairs of sensors are used for routine foundation testing. Attachment procedure varies depending on the type of foundation, but is generally quick.

- Steel Pipe Piles: drill and tap holes; magnetic drilling guide available
- Steel H Piles: drill clearance holes and install bolts / nuts
- Timber Piles: attach with lag bolts
- Concrete Piles and Shafts: drill holes and embed anchors; metal drilling guide available

For drilled shafts, augered cast in place, spiral welded piles and other non-uniform foundation applications, four strain sensors are connected using anchors to assess bending stresses along two axis.



Pile Dynamics, Inc. (PDI) is the world leader in developing, manufacturing and supplying state of the art QA/QC products and systems for the deep foundations industry. The company is headquartered in Cleveland, Ohio, USA, with offices and representatives worldwide. For additional information visit us at www.pile.com or contact info@pile.com.