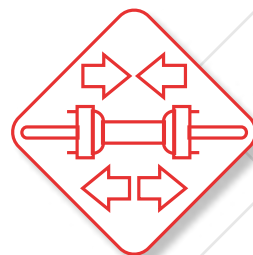


Vibrating Wire Strain Gauges



www.pizzi-instruments.it

Instruments and Systems for Geotechnical and Structural

Vibrating Wire Strain Gauges



Description

The vibrating wire strain gauges are instruments of enormous strength which, together with the other functional characteristics, make these sensors among the most appreciated and used by our customers. Particularly suitable for applications embedded in concrete or welded on metal reinforcements, they are used for long-term applications on metal reinforcements or structures or directly embedded in concrete. Typical is their application to weld on the reinforcement rods of poles or coatings in tunnels where speed of intervention and reliability in measurement are required.

The possibility of having bars with fixed circular heads or removable heads to be welded make the sensor versatile and easy to install.

The excellent characteristics of the sensor, high resolution and excellent accuracy and repeatability, make the sensor reliable for many applications. Completely in stainless steel, it offers excellent resistance to all corrosive actions that may develop in the installation environment. Equipped with a suitable integrated thermistor, they allow the measurement of the instrument operating temperature.

Applications

Vibrating wire strain gauges are used for the monitoring of deformations in concrete and are either spot welded to metal structures or embedded in concrete.

Particularly used for the control of:

- Load tests on pile
- Piles
- Bridges
- Viaducts
- Tunnel Entrances
- Precast concrete blocks for TBM tunnels
- Tunnel linings
- Dams in conventional concrete or RCC
- Metal structure

Features and benefits

Our vibrating wire strain gauges are particularly robust and therefore suitable for applications in places not reachable after installation.

They have:

- Long duration
- High resistance to corrosive agents
- Negligible thermal drift
- No need for protection against overvoltage
- Easy connection and metering
- Are available in larger sizes for concrete specific applications
- IP68 protection
- Built-in temperature sensor

Measuring principle

Like all vibrating wire sensors, our strain gauge also bases its operation on the principle of the proportionality between the elongation of a wire and the square root of the value of its vibration frequency.

The wire is simply fixed to the two circular heads of the strain gauge and equipped with an electromagnetic unit for excitation of the wire and measurement of frequency. Appropriate manual or automatic reading units allow interrogation of the instrument and the sampling and storage of data.

Type

The instrument is supplied complete with:

-Tubular sensor body containing the fitted wire, 2 plates to solder

OR

-Tubular sensor body, containing the wire, 2 fixed circular plates to embed in concrete

BOTH ARE SUPPLIED WITH :

- Excitation coil unit to be fixed to the sensor body
- 1 metal clamp for fixing the coil
- 1.5m cable with 3 or 4 conductors

These strain gauges, particularly versatile in their application possibilities, are generally classified into two different basic groups:

Strain gauges for concrete, to be drowned or for metal structures to be welded

These strain gauges are characterized by having a small space-saving and a reduced length.

All strain gauges are equipped with an internal sensor for measuring the temperature.

Upon request, we will be able to examine and manufacture strain gauges or specific application devices.



**Concrete strain gauges,
to drown**



**Strain gauges for metal structures,
to be welded**

Technical specifications

| INSTRUMENT | Base 150 mm to be welded | Base 150 mm to be embedded | Base 250 mm - 300 mm to be embedded |
|--|-----------------------------|-------------------------------|--|
| Measuring Base (Lenght instrument) | Base 150 mm | 150 mm (156 mm) | 250 mm (260 mm) |
| Range | Base 250 mm - 300 mm | 3.000 μ strain | 3.000 μ strain |
| Sensitivity | 1,0 μ strain | 1,0 μ strain | 1,0 μ strain |
| Linearity | $\pm 0,2\%$ F.S. | $\pm 0,2\%$ F.S. | $\pm 0,2\%$ F.S. |
| Temperature range | -30 +80 °C | -30 +80 °C | -30 +80 °C |
| Typical Frequency | 850-1150 Hz | 850-1150 Hz | 1500-3500 Hz |
| Thermistor | NTC 3 KOhm | NTC 3 KOhm | NTC 3 KOhm |
| Operating Temperature | -20 ÷ +80 | -20 ÷ +80 | -20 ÷ +80 |

Accessories and related products

Plates for vibrating wire strain gauge to be welded

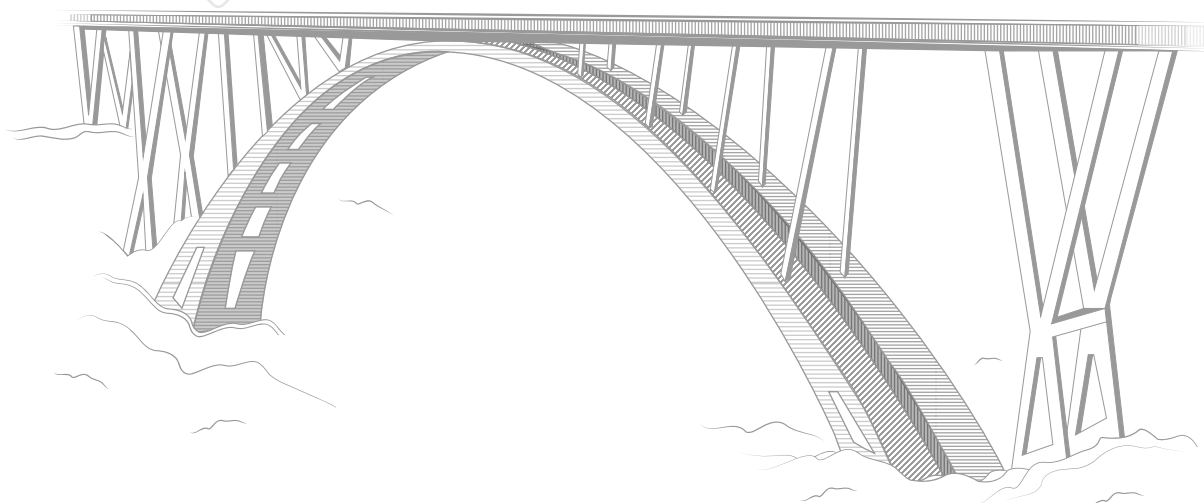
Coil Group to apply

| | |
|--|---|
| DEC 5 | Portable readout unit for the reading of the vibrating wire instruments and themis |
| DEC3000 | Portable datalogger for the manual measurement of sensors with data memorization |
| CUM3000 | Automatic multichannel datalogger for the data measure and memorization |
| Special cable 4 x 0,22 mm ² | Cable for the connection of the strain gauges |
| Junction box | For the junction of the different sensor cables |
| Junction and measure box | For the junction of the different sensor cables, provided with bushings for taking measurement with portable readout unit |

The Company

For over 40 years we have been producing precision and large facility monitoring instruments sold throughout the world.

Accuracy in design, efficiency in construction, reliability in management; these are the prerogatives that every major work must have and that Structural Monitoring Systems must guarantee.



Technical assistance

If you have any requests or questions about our instruments or if you have special needs that require different solutions from the standard, please contact us. Our team will provide all the necessary information and will be very happy to work with you to study, develop and customize instruments and solutions suitable for your specific needs.

All data present in the sheets could change without notice.

Please check the release carefully and for more details contact Pizzi Instruments.

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