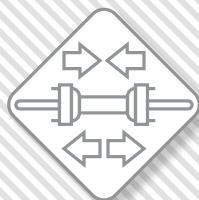




LEA\_EN\_STG2001001



# Vibrating Wire Strain Gauges

[www.pizzi-instruments.it](http://www.pizzi-instruments.it)

Instruments and Systems for Geotechnical and Structural Monitoring

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## 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.

## Technical specifications

Instrument	Base 150 mm to be welded	Base 150 mm to be embedded
<b>Measuring Base (Lenght instrument )</b>	150mm (156mm)	150mm (156mm)
<b>Range</b>	3.000 µstrain	3.000 µstrain
<b>Sensitivity</b>	1,0 µstrain	1,0 µstrain
<b>Linearity</b>	±0,2% f.s.	±0,2% f.s.
<b>Temperature range</b>	-30+80 °C	-30+80 °C
<b>Typical Frequency</b>	850-1150Hz	850-1150Hz
<b>Thermistor</b>	NTC 3KOhm	NTC 3KOhm
<b>Operating Temperature</b>	-20 ÷ + 80	-20 ÷ + 80

## Accessories and related products

Plates for vibrating wire strain gauge to be welded  
 Coil Group to apply

DEC5	Portable readout unit for the reading of the vibrating wire instruments and themistors
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 <sup>2</sup>	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



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The product information may be subject to variations at any time.

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

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