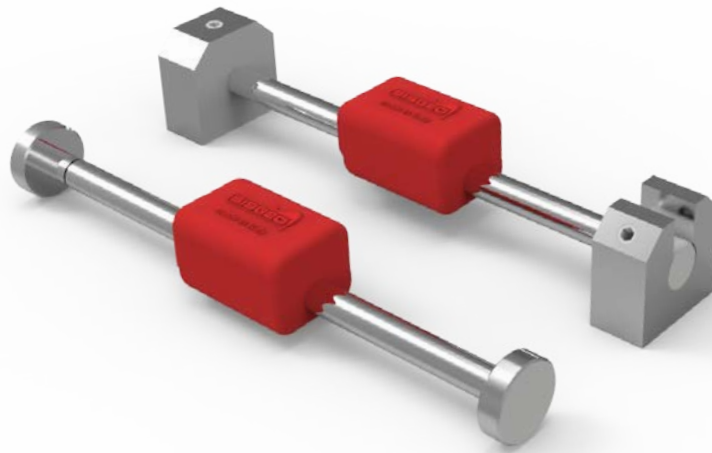


VK40

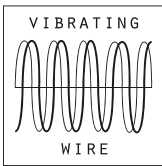
— VIBRATING WIRE
STRAIN GAUGES

STRAIN GAUGES
& THERMOMETERS





VIBRATING WIRE STRAIN-GAUGES



Vibrating wire strain-gauges are used to monitor variation in strain, which allows stress evaluation in steel or in massive concrete structures. A thermistor incorporated into the gauge supplies information on the effects of temperature.

Arc-weldable vibrating wire strain-gauges are designed for arc welding to steel structure such as tunnel linings, pipes, piles and bridges.

Embedment strain-gauges are directly embedded for strain measurements in concrete structures .

APPLICATIONS

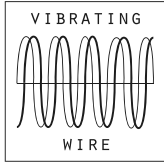
- Piles and mass concrete
- Concrete structures, beams and columns
- Concrete foundations and diaphragm walls
- Tunnel segments
- Steel structures, pipes and arch supports
- Gravity and arch dams
- RCC dams
- Bridges and viaducts

FEATURES

- Reliable long term performance monitoring
- Robust design, suitable for demanding environments
- Thermally aged to minimise long term drift
- Immunity to voltage surges
- Built-in temperature sensor
- Totally waterproof
- Accurate readings even with long cable lengths

CE Meet the essential requirements of the EMC Directive 2004/108/EC

OPERATING PRINCIPLE



The gauge comprises a sealed tube containing a wire held in tension between two end blocks, one at each end. Deformation of the structure is transferred to the gauge altering the tension of the wire and the resulting readings are used to measure strain. The changes in strain are measured by the coil assembly mounted on the gauge. The strain gauge operates on the principle that a tensioned wire, when plucked, vibrates at its resonant frequency. The square of this frequency is proportional to the strain in the wire.

Vibrating wire strain-gauge output is a frequency signal, and it is therefore insensitive to resistance changes in connecting cables caused by contact resistance or leakage to ground. Gauges may be read up to 1000 metres away from their location without change in calibration. The vibrating wire gauge has the same thermal coefficient of expansion of reinforcing bar (and similar to that of concrete) and there is no requirement to compensate for the thermal effects in normal use (thermal correction may be required, for example, in the calculation of stress changes of restrained structural members resulting from temperature changes). Temperature changes are measured by a NTC thermistor encapsulated in the pluck coil housing.

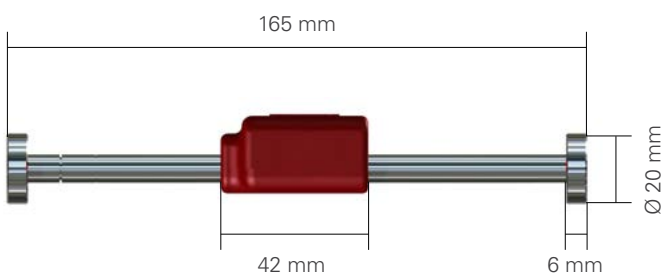
TECHNICAL SPECIFICATIONS

	0VK4000VS00	0VK4200VC00	0VK4000SM00
Description	surface mount strain-gauge with arc weldable end blocks	embedment strain-gauge with circular end blocks	embedment strain-gauge, specially designed for shotcrete applications
Method of installation	arc welded onto steel element	embedded in concrete	embedded in shotcrete
Active gauge length	150 mm	165 mm	200 mm
Excitation method	pluck and sweep	pluck and sweep	pluck and sweep
Range (nominal)	3000 $\mu\epsilon$	3000 $\mu\epsilon$	10000 $\mu\epsilon$
Sensitivity (1)	1.0 $\mu\epsilon$	1.0 $\mu\epsilon$	1.0 $\mu\epsilon$
Accuracy (2)	$\pm 0.5\%$ FS	$\pm 0.5\%$ FS	$\pm 0.5\%$ FS
Stability	0.1% FS/ yr	0.1% FS/ yr	0.1% FS/ yr
Typical frequency	500-1200 Hz	500-1200 Hz	1800-2500 Hz
Coil resistance	150 ohm	150 ohm	150 ohm
Thermistor type	NTC 3 k Ω	NTC 3 k Ω	NTC 3 k Ω
Thermal coeff. of expansion	12 ppm / $^{\circ}\text{C}$	12 ppm / $^{\circ}\text{C}$	12 ppm / $^{\circ}\text{C}$
Temperature range	-20 $^{\circ}\text{C}$ + 80 $^{\circ}\text{C}$	-20 $^{\circ}\text{C}$ + 80 $^{\circ}\text{C}$	-20 $^{\circ}\text{C}$ + 80 $^{\circ}\text{C}$

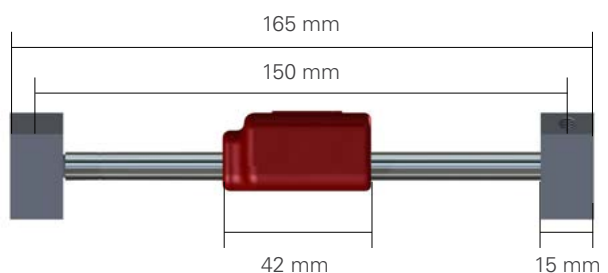
(1) Using a gauge factor, the measured frequency can be converted directly into units of strain. (2) with batch calibration.

PHYSICAL FEATURES

0VK4200VC00



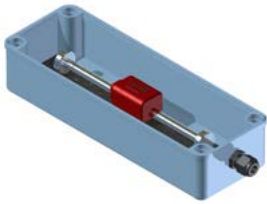
0VK4000VS00



ACCESSORIES AND SPARE PARTS

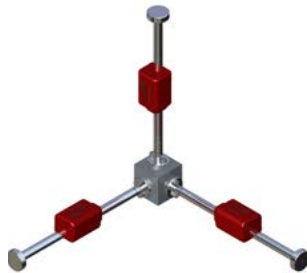
0VK4200VN00

"No-stress" embedment strain gauge with plastic container to isolate the section of concrete around the gauge



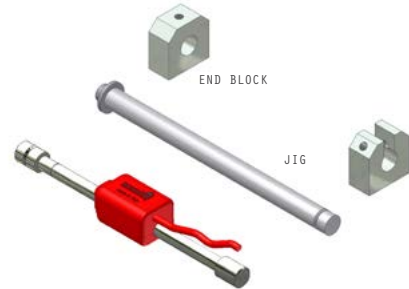
0VK42VC3D00

3D rosette mounting block for embedment strain gauges



0VK400JIG00

Spacing jig for mounting the arc-weldable strain gauges end blocks



0VK400MB200

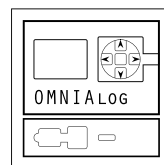
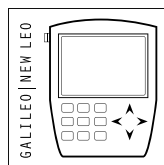
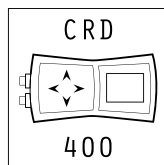
Pair of weldable end blocks

0VK400COVER

Stainless steel protective cover with lugs and pair of weldable blocks. Where thermal influence is expected the cover can be filled with expanding foam



READABLE BY



For further information refer to their own datasheets

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ADDITIONAL SUPPORT

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For more information contact mail: assistance@sisgeo.com