



LEA_IT_PND4001001



Optical Coordinometer

www.pizzi-instruments.it
Instruments and Systems for Geotechnical and Structural Monitoring

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Optical Coordinometer



Description

The optical coordinometer is used for measuring the position of the wire of straight or inverted pendulums, providing the two cartesian coordinates of the horizontal plane and ensuring highly accurate measurements with very high resolution. Together with EGS coordinometer, the optical coordinometer is one of the manual instruments produced by Pizzi Instruments. This model allows the optical-mechanical measurement of plumb line shifts, both direct and inverted.

Pendulums and other coordinometers are indispensable instruments for measurement and monitoring of displacements and rotations of large structures such as dams, towers, bell towers etc.

The optical coordinometer can be used effectively with automatic coordinometers, both as a comparison instrument and for periodic verification as well providing a back-up in the case of failure of the automatic monitoring service.

Applications

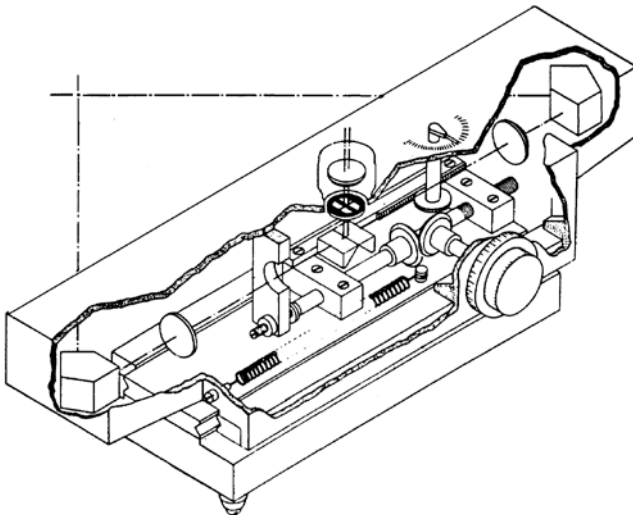
- Concrete and RCC dams
- Structures with direct or inverted pendulums or old "slittometers" from Officine Galileo of Florence

Features and benefits

The instrument meets the following essential requirements:

- **Measurement is taken without affecting the position of the point being observed**
- **Quickly provides the two coordinate values without the need to move the instrument to a different position or location**
- **It is removable, thus avoiding damage due to unfavorable environments**
- **High accuracy and sensitivity of measurement**
- **Already in use in many dams for over 60 years**

Measurement principle



The instrument consists of a rectangular support plate and an upper body carrying the optical groups, able to slide longitudinally along base platform operated by a moving device with a high quality micrometric screw.

The optical scheme of coordinometer realizes an isosceles right triangle, with the vertex of the right angle on the observed point and with the hypotenuse coinciding with the longitudinal axis of the instrument. The measuring base which coincides with the hypotenuse of the triangle has a length of 600 mm, and the distance of the base from the observed point is 300 mm.

Two prisms are mounted at the two ends of the measurement base and deviate the optical axis according to the two sides of the right-angled triangle. Two equal objectives arranged on the axis of the instrument report the respective images of the object to a central prism which houses the two separate images and reports them in single ocular. The field of the ocular is divided into two separate parts, each corresponding to the observation of the right and left objective.

The optical complex remains unchanged, moreover, during measurements no displacement related to the various fundamental elements are noted. Measurement is performed by imposing translational displacements according to the longitudinal axis of the instrument.

The platform is equipped with three spherical feet which rest on the bases, geometrically determined (cone, angle and plane), and fixed to the structure.

The upper part carries the optical system, specifically two prisms of extremity, two intermediate objectives, a manifold-central prism (prism manifold?), a reference micrometer and an eyepiece.

The upper part also carries the control button for displacements.

This button acts on a micrometer screw.

The button is graduated for reading the fractions of displacements. Each division corresponds to a displacement of 0.02 mm. On the mobile part is also mounted a dial indicator which displays movement in millimeters. The measuring range of the instrument is 30 mm for each axis.

Engraved on the micrometer is a scale for the measurements of vertical movements.

This measurement is made by observing the position of a colored portion of the wire with respect to the scale.

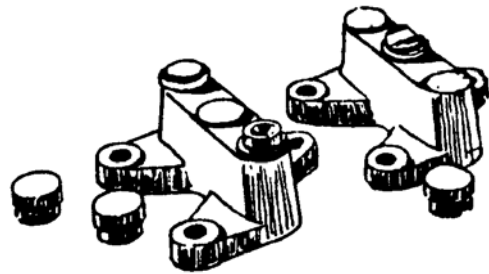
A special device allows the increase of the measurement range bringing it to $\pm 55\text{mm}$ in the X direction and $\pm 35\text{mm}$ in the Y direction.

The following accessories are also available:

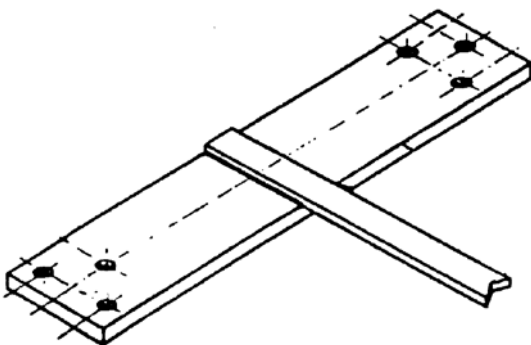
- Control desk for optical coordinometer
- Pair of bases for coordinometer
- Template for the installation of the coordinometer's bases
- Device to expand the coordinometer measuring range



Control Bench for optical coordinometer



Spherical Tablets for optical coordinometer

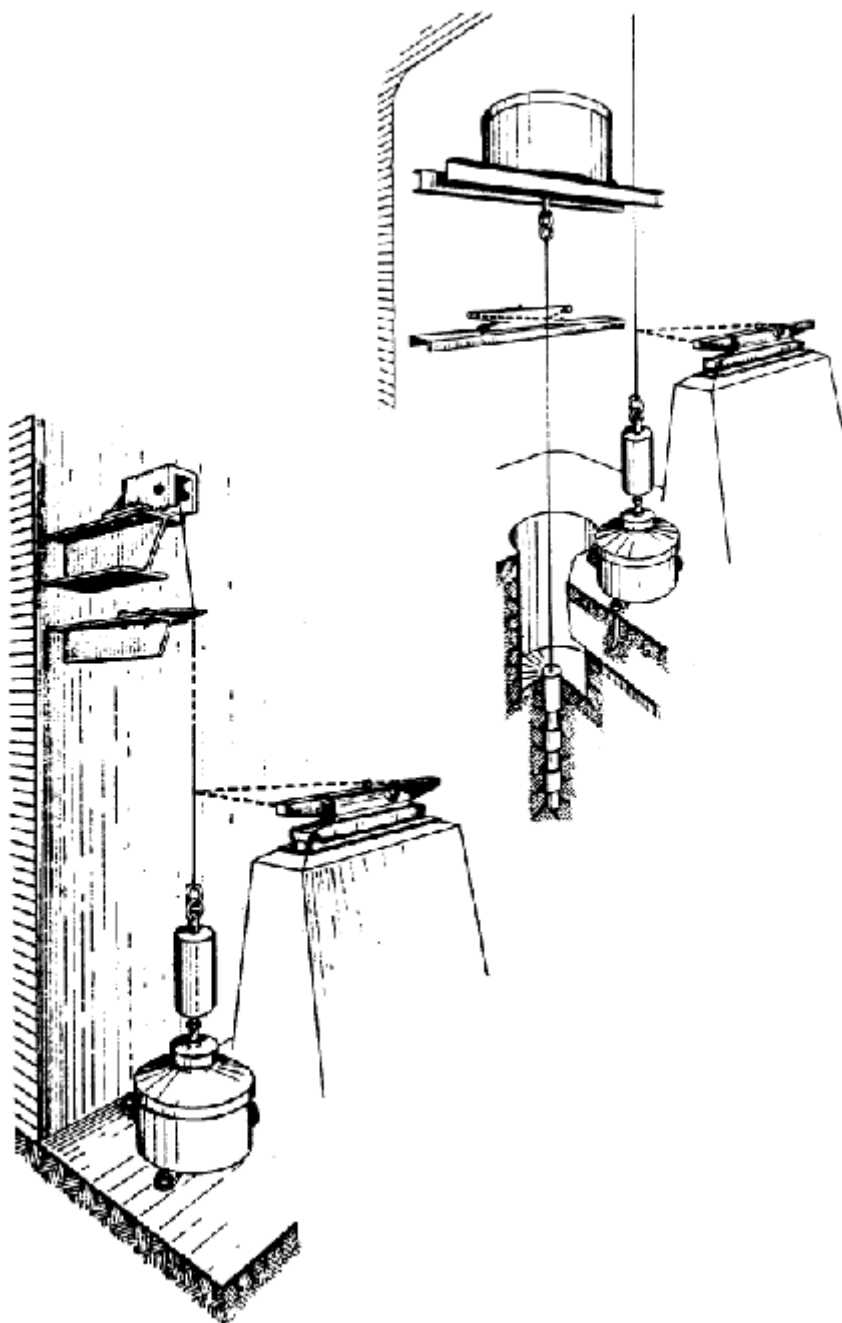


*Template for the installation
of coordinometer tablets*



*Device for the extension
of the optical coordinometer*

Application Scheme of the optical coordinometer



Technical specifications

Range	±15 mm
Precision	0,02mm
Distance of the instrument axis from the wire	300mm
Size of the instrument with casing	650mm x 160mm x 120mm
Weight of the instrument	8,5Kg
Weight of the instrument with casing	17Kg

Accessories and spare parts

Spherical tablets for optical coordinometer	To realize the support base of the optical coordinometer
Template for the installation of coordinometer tablets	For correct positioning of the tablets on the pillar or on the beam
Control Bench for optical coordinometer	Bench for the verification and calibration of the coordinometer
Device for the extension of the measuring range	To extend the range of the optical coordinometer Axis X: da ±15mm a ±55mm Axis Y: from ±15mm to ±35mm

Accessories and related products

Digital IP Telependulum -
Image Processing Technology

Digital Automatic Coordinometer with Image Processing Technology, web server integrated, for the automatic readings of direct and inverted pendulum, readings storage, data transmission, functions of local "alarming", no movable parts

Direct and Inverted Pendulum

Pendulum System for the control of horizontal movements

Electromagnetic Telependulum

Automatic Coordinometer with electro-magnetic technology for automatic readings of direct and inverted telependulum

Laser Telependulum

Laser Telependulum for the automatic readings fo direct and inverted telependulum, no movable parts

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.

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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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