



Sillenites Ltd.

December 2018

Optical Current Sensors on the basis of sillenite type crystals

Operation principle of the optical current sensor.

Operation principle of the optical current sensors (OCS) is based on Faraday magneto-optical effect for measurement of a magnetic field and, accordingly a current into conductor. Faraday magneto-optical effect consists in linear change of polarization of light which is passing through crystal $\text{Bi}_{12}\text{GO}_{20}$ (BGO) under the influence of a magnetic field, that similarly allows to spend the measurements of the current into conductor.

Technical characteristics of OCS-1.

Range of measured values of a current	10 kA – 100 kA
Operating speed	up to 10^{-7} s
Temperature range	- 30 – +50 C°
Temperature drift of current measurements	< 5% in a range - 30 – +50 C°
Accuracy of current measurements	< 5%
Dimensions of the OCS-1 without calibrating conductor core	< 140 X 60 X 70 MM

The basic advantages of optical current sensors (OCS) on basis of sillenite type (BGO, BSO).

- Operating speed
- Noise immunity
- Temperature stability
- Compactness
- Remote and contactless measurements of high-voltage lines parameters
- Possibility of measurements for intensity in various points of magnetic field

Optical current sensors of OCS-1 series in full assembling.

Applications of optical high current sensors.

Optical current sensors of high values of a current give themselves a wide spectrum of applications for monitoring systems, the control and management in power systems (high-voltage power transmission line), for the metallurgical, chemical, ship-building and defensive industry.

