SMART ADJUSTABLE OPTICAL ATTENUATOR

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Abstract – Adjustable optical attenuator (AOA) based on magnetoreological fluid (MRF) , which possesses SMART properties, can be used to adjust the power level of the optical signal when adjusting and measuring the parameters of various optoelectronic devices, optical communication networks, optical information storage and processing systems and as well as for decoupling the laser diode from the next device which it interacts. MRF consists of carbonyl iron powder and polyethylsiloxane oil.

In the initial state, the electromagnet is disconnected and the iron carbonyl powders are separated by means of permanent magnets at the extreme points of the hole AOA, thus releasing the gap between the front surfaces of the optical fibers. When the intensity of the magnetic field created by the electromagnet changes from 0 to 50 A/m, the attenuation AOA based on FMR changes from minus 2 to minus 60 dB with the resolution of 0.5 dB and works within the temperature limits -60 …+90 ℃ [1].

Keywords: Adjustable optical attenuator, magnetoreological fluid.

Referances:

[1] Nistiriuc A. Investigation of the Optical Attenuator in the Base of the Magnetoreological Fluid. Materials of the Conference of Collaborators, Phd Students and Students Technical University of Moldova, Chisinau, March , 2019. – p. 17-20.