

DOI: <https://doi.org/10.15407/techned2016.06.069>

INVESTIGATION HIGH SENSITIVE PHOTO DETECTOR DEVICE BASED ON THE AVALANCHE PHOTODIODE FOR OPTOELECTRONIC MEASURING SYSTEMS

Journal	Tekhnichna elektrodynamika
Publisher	Institute of Electrodynamics National Academy of Science of Ukraine
ISSN	1607-7970 (print), 2218-1903 (online)
Issue	№ 6, 2016 (November/December)
Pages	69 – 75

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Abstract

The authors have considered requirements to photo receiving devices (PhRD) of optical systems on the laser range-finder basis for measurement of the linear displacements of the diffuse reflecting objects. They investigated the scheme of PhRD on the avalanche photo diode basis and carried out light and energetic calculation. They determined of a signal to noise relation at the exit of PhRD by analytical and the experimental way and also estimated potential measurement accuracy of the linear displacements. Application of the received results will give the chance to increase accuracy of non-contact measurement of movements and vibrations of the diffuse reflecting objects at small basic distances. References 8, figures 4, tables 2.

Key words: diffuse reflecting surface, avalanche photo diode, signal to noise relation, phase rangefinder, displacement, accuracy.

Received: 16.05.2016

Accepted: 21.06.2016

Published: 27.10.2016

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