

Deselection of overly noisy elements within channels of an infrared focal plane array with time delay integration to increase the signal-to-noise ratio

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Received 21.12.2022; accepted 18.01.2023

In this paper, the existing methodology for deselection of overly noisy elements within channels of an infrared (IR) focal plane array (FPA) with time delay integration (TDI), designed to increase the signal-to-noise ratio (SNR) in the channels of a photodetector, is considered. As a result of the analysis, a disadvantage of the methodology was revealed – it is applicable only for a TDI FPA with 6×576 elements. To eliminate this disadvantage, a modification of the methodology for deselection of overly noisy elements was performed. The modification made it available to use the methodology for deselection within channels of infrared focal plane array with time delay integration of any format. The modified methodology will be helpful to increase the SNR in the channels of a TDI FPA regardless of the photodetector format.

Keywords: photoelectronics, optoelectronic devices, infrared range, focal plane array, time delay integration, noise, deselection, signal-to-noise ratio.

DOI: 10.51368/2307-4469-2023-11-1-42-51

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