DEVELOPMENT OF A TEST BENCH FOR DETERMINATION OF CHARACTERISTICS OF A CURTAIN SHUTTER

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The geometry of image of aerial photo survey in most of cases has deviations from the orthoscopy that cause camera shutter properties. This problem is especially common for digital mirrorless and SLR photocameras equipped with focal plane curtain shutter. The image distortions caused by shutter effects appear in motion only (when object and camera relatively move around each other) and cannot be found during laboratory calibration.

The goal of the article is to show the new method of focal plane curtain shutter parameters determination developed by the authors. The parameters accounting can further provide the orthoscopy deviations corrections for aerial survey images processing.

The main feature of the method being developed is the specialized measuring test bench which consists of several led strips according to the “flowing wave” principle. The shooting of the test bench allows determining the effective and total exposure time of the focal plane shutter and also its coefficient of efficiency. The test bench prototype was projected, made and proven with the Sony NEX-3 shutter parameters determination.

The experiment’s results showed the proposed method efficiency for focal plane curtain shutters parameters determination. The method can be applied in laboratory conditions in addition to traditional laboratory digital camera calibration methods.

Key words: digital nonmetric camera, curtain shutter, exposure gap, studding of shutter, total exposure time, effective exposure time, measuring test bench, orthoscopy of image.

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