

## Needing only single parts of an image? Use the multi AOI!

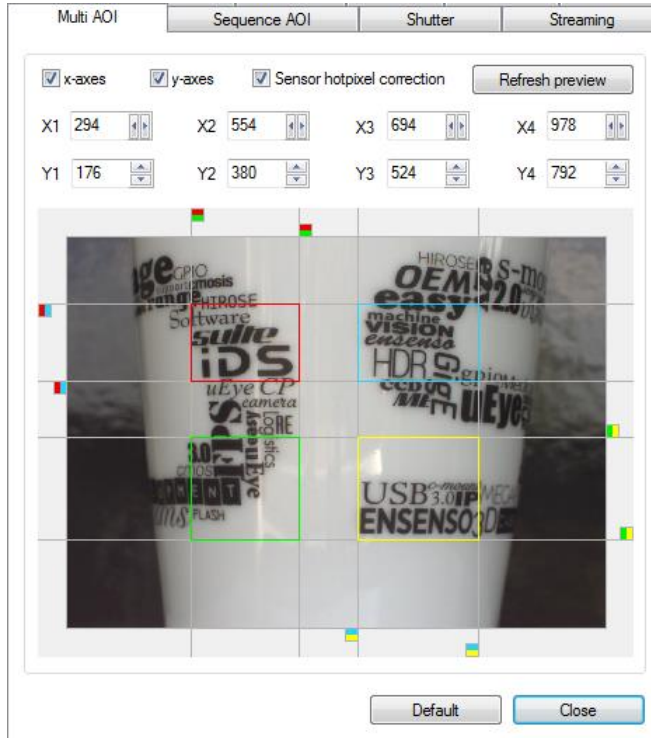
You need a larger field of view for your inspection, but you just need single parts of your image while processing at high speed? The multi AOI function allows defining more than one AOI in an image and transferring these AOIs all at the same time.

The multi AOI function is available with the following sensors: Sony IMX174 Pregius, CMOSIS CMV2000 and CMV4000 and with 1.3 MP and 2 MP sensors by e2v.

### Background

AOI is the abbreviation of “area of interest” (also: ROI “region of interest”) and refers to the most relevant parts of an image for image processing and analysis. Using an AOI, only data included in this AOI will be read out and transferred to the computer. Depending on the sensor model, the smaller partial image can increase the frame rate. In addition, the available step widths for the position and size of image AOIs depend on the sensor. The values defining the position and size of an AOI have to be integer multiples of the allowed step widths.

### Four times AOI with UI-124x/UI-324x/UI-524x and UI-125x/UI-325x/UI-525x



Multi AOI with e2v sensors

The e2v sensors in the camera models UI-124x/UI-324x/UI-524x with 1.3 MP and UI-125x/UI-325x/UI-525x with 2 MP support up to 4 AOIs in one capture. The AOIs are transferred together as one image.

## TechTip: Using multi AOI

With the multi AOI function you can define 2 or 4 AOIs, which have either the same X axis or the same Y axis. It is possible to switch the AOI in the horizontal direction.

When the multi AOI function is enabled, no changes can be made to the image size settings (e. g. binning, subsampling, scaling). If you want to change the image size, disable first the multi AOI function and change then the image size. Afterwards re-enable the multi AOI function.

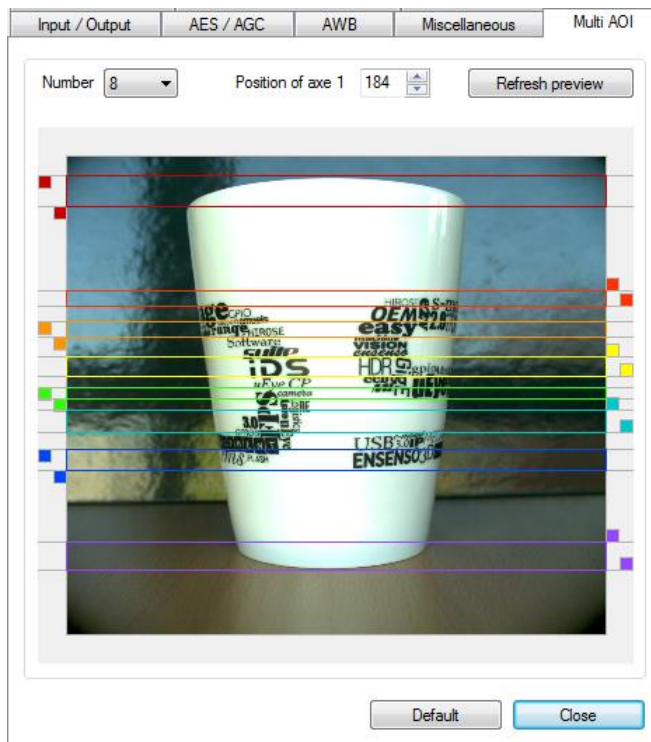
If sensor hot pixel correction and multi AOI are enabled, the sensor displays a four pixel wide black line between the AOIs.

Open the camera properties in uEye Cockpit via “uEye > Properties”. In the “Multi AOI” tab activate the multi AOI function by enabling the options “X-axes” and “Y-axes”. You can either activate only one option to get 2 AOIs or activate both options to get 4 AOIs.

With the “Sensor hot pixel correction” option you can enable or disable the sensor’s internal hot pixel correction. Click on the “Refresh preview” button to refresh the preview image in the tab.

In the preview window the AOIs are displayed graphically. You can change the position and size of an AOI by moving the colored boxes that are displayed at the end of each axis. Alternatively, you can set the AOIs by using the input fields X1...X4 and Y1...Y4.

### Eight times AOI with UI-336x/UI-536x and UI-337x/UI-537x



Multi AOI with CMOSIS sensors

The camera models UI-336x/UI-536x and UI-337x/UI-537x with CMOSIS sensors support a maximum of 8 vertical AOIs with up to 16 y-axis. The AOIs must not

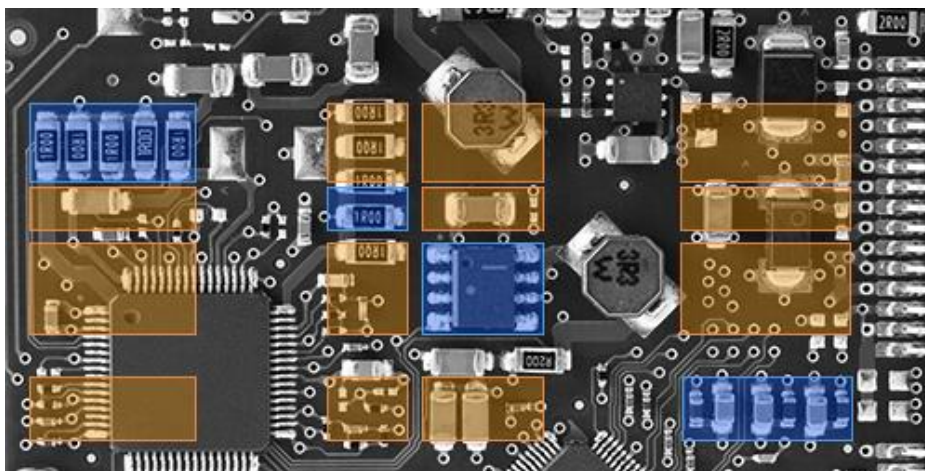
## TechTip: Using multi AOI

overlap and must have ascending positions. The vertical positions are set in a grid of 2 pixels.

Open the camera properties in uEye Cockpit via “uEye > Properties”. In the “Multi AOI” tab set the number of AOIs (2...8) via the “Number” drop-down list. The AOIs are displayed graphically in the preview window after enabling the multi AOI function. You can change the position and size of an AOI by moving the colored boxes that are displayed at the end of each axis. Alternatively, you can change the position of the axes via the “Value of axis” input field.

Click on the “Refresh preview” button to refresh the preview image in the tab.

### Sixteen times AOI with UI-306x



Multi AOI with Sony sensor

The Sony sensor of the camera model UI-306x supports up to 16 AOIs in one image capture (up to 4 AOIs horizontally and vertically). The sensor speed does not increase by the use of horizontal AOIs.

With driver 4.61 the multi AOI function of the UI-306x model can only be programmed via the API function “is\_AOI()”. There is no separate demo for this model.

### Application areas

Multiple AOIs can be captured simultaneously using the multiple AOI function. This feature is perfect to capture multiple features at high frames rates, e. g. in bottle or PCB inspection. Using the multi AOI function, several barcodes on one packaging can be captured and evaluated in one image.

### Summary

The multi AOI function allows defining multiple AOIs in an image and transferring these AOIs all at the same time. This allows various features to be checked at the same time. This minimizes the bandwidth and increases the frame rate.

With the uEye API function “is\_AOI” or the uEye .NET class “Multi” you can query and set the values for the multi AOI function.

## TechTip: Using multi AOI

For further information on the settings of the multi-AOI function, refer to the uEye manual at <http://de.ids-imaging.com/manuals-ueye.html>.

The table below lists all camera models and driver versions which support the multi AOI function.

Interface	Camera model	IDS Software Suite
USB 3.0	<a href="#">UI-306xCP</a>	4.60 or higher
	<a href="#">UI-3240CP</a>	4.00 or higher NIR: 4.01 or higher
	<a href="#">UI-3240LE</a>	4.40 or higher
	<a href="#">UI-3241LE</a>	4.40 or higher
	<a href="#">UI-3242LE</a>	4.40 or higher
	<a href="#">UI-3240ML</a>	4.40 or higher
	<a href="#">UI-3250CP</a>	4.21 or higher
	<a href="#">UI-3250LE</a>	4.40 or higher
	<a href="#">UI-3251LE</a>	4.40 or higher
	<a href="#">UI-3252LE</a>	4.40 or higher
	<a href="#">UI-3250ML</a>	4.40 or higher
	<a href="#">UI-336xCP</a>	4.31 or higher
	<a href="#">UI-337xCP</a>	4.21 or higher
USB 2.0	<a href="#">UI-1240LE</a>	3.80 or higher NIR: 4.01 or higher
	<a href="#">UI-1241LE</a>	3.80 or higher NIR: 4.01 or higher
	<a href="#">UI-1242LE</a>	3.80 or higher NIR: 4.01 or higher
	<a href="#">UI-1240ML</a>	4.03 or higher
	UI-1240RE	3.80 or higher NIR: 4.01 or higher
	<a href="#">UI-1240SE</a>	3.80 or higher NIR: 4.01 or higher
	<a href="#">UI-1250LE</a>	4.21 or higher
	<a href="#">UI-1251LE</a>	4.21 or higher
	<a href="#">UI-1252LE</a>	4.21 or higher
	<a href="#">UI-1250ML</a>	4.21 or higher
<a href="#">UI-1250SE</a>	4.21 or higher	
GigE	<a href="#">UI-5240CP</a>	3.80 or higher NIR: 4.01 or higher

Interface	Camera model	IDS Software Suite
	<a href="#">UI-5241LE</a>	4.01 or higher
	<a href="#">UI-5242LE</a>	4.01 or higher
	<a href="#">UI-5244LE</a>	4.01 or higher
	UI-5240RE	3.80 or higher NIR: 4.01 or higher
	<a href="#">UI-5240RE PoE</a>	4.21 or higher
	<a href="#">UI-5240SE</a>	3.80 or higher NIR: 4.01 or higher
	<a href="#">UI-5250CP</a>	4.21 or higher
	<a href="#">UI-5251LE</a>	4.21 or higher
	<a href="#">UI-5252LE</a>	4.21 or higher
	<a href="#">UI-5254LE</a>	4.21 or higher
	UI-5250RE	4.21 or higher
	<a href="#">UI-5250RE PoE</a>	4.21 or higher
	<a href="#">UI-5250SE</a>	4.21 or higher
	<a href="#">UI-5360CP</a>	4.40 or higher
	<a href="#">UI-5370CP</a>	4.40 or higher

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