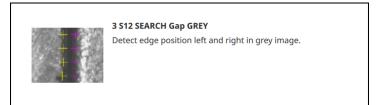# 3 - S12 SEARCH Gap GREY

■ **Description**

Searches the left and right gap border out of the grey intensity image. The gap is normally visible as a dark vertical band with more or less sharp edges.

The rectangle of the ROI (**R**egion **O**f **I**nterest) is cut in small horizontal stripes. In each stripe a left and right gap border position is searched. The average over all positions gives the final position for the left and for the right border position.
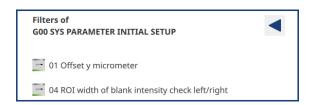
■ **Icon**

3 S12 SEARCH Gap GREY
Detect edge position left and right in grey image.

■ **Parameters**

Filter Groups of 3 S12 SEARCH Gap GREY ◀

G00 SYS PARAMETER INITIAL SETUP

G04 SYS PLAUSIBILITY INITIAL SETUP

G10 Gap Detection

G00 SYS PARAMETER INITIAL SETUP

Filters of
G00 SYS PARAMETER INITIAL SETUP ◀

▦ 01 Offset y micrometer

▦ 04 ROI width of blank intensity check left/right

Attributes of
01 Offset y micrometer

Number

0.000
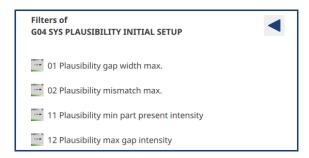
Parameter	Comment
Number	Offset of gap position. [μm]

Attributes of
04 ROI width of blank intensity check left/right

Number

30.000

Parameter	Comment
Number	The number of pixels in direction to the gap, starting at the left/right border of the grey scale ROI, serving for calculating the left/right side reference brightness in the corresponding stripe. [Pixel]

G04 SYS PLAUSIBILITY INITIAL SETUP

Filters of
G04 SYS PLAUSIBILITY INITIAL SETUP

01 Plausibility gap width max.

02 Plausibility mismatch max.

11 Plausibility min part present intensity

12 Plausibility max gap intensity

Attributes of
01 Plausibility gap width max.

Number

20.000 (10.000)

Parameter	Comment
Number	Maximum allowed value of gap width. [mm]

Attributes of
02 Plausibility mismatch max.

Number

15.000 (10.000)

Parameter	Comment
Number	Maximum allowed value of mismatch. [mm]

Attributes of
11 Plausibility min part present intensity

Number

65.000
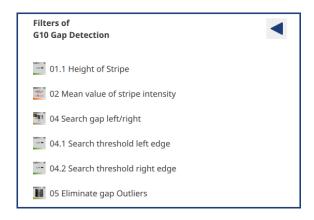
Parameter	Comment
Number	Minimum mean intensity value for 'part present' check left and right. [Greylevel]

Attributes of
12 Plausibility max gap intensity

Number

90.000
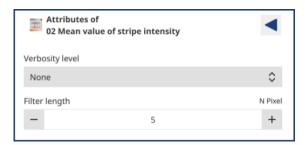
Parameter	Comment
Number	Maximum allowed intensity value in the gap. [Greylevel]

G10 Gap detection

Filters of G10 Gap Detection

- 01.1 Height of Stripe
- 02 Mean value of stripe intensity
- 04 Search gap left/right
- 04.1 Search threshold left edge
- 04.2 Search threshold right edge
- 05 Eliminate gap Outliers

Attributes of 01.1 Height of Stripe

Number
30.000

Parameter	Comment
Number	Height of horizontal stripes over the grey image ROI. [Pixel]

Attributes of 02 Mean value of stripe intensity

Verbosity level
None

Filter length   N Pixel
—   5   +

Parameter	Comment
Verbosity level	Selection of verbosity level. Larger verbosity levels offer more overlay information.
Filter length	The brightness values of every stripe are filtered for calculating the gradient. [Pixel]
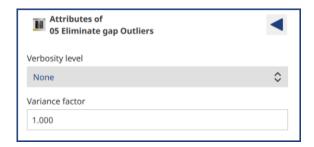
Parameter	Comment
Verbosity level	Selection of verbosity level. Larger verbosity levels offer more overlay information.

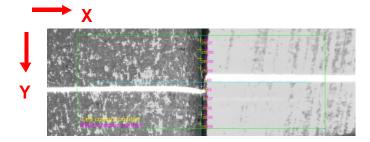| Parameter	Comment
Number	Checking the filtered brightness in a stripe to the left side, starting at the minimum, the search algorithm stops as soon as the value is reached and sets the "Found edge position". The measured value depends on the "Filter length". The higher the filter value the smaller the brightness changes. [Greylevel]

Parameter	Comment
Number	Checking the filtered brightness in a stripe to the right side, starting at the minimum, the search algorithm stops as soon as the value is reached and sets the "Found edge position". The measured value depends on the "Filter length". The higher the filter value the smaller the brightness changes. [Greylevel]

Parameter	Comment
Verbosity level	Selection of verbosity level. Larger verbosity levels offer more overlay information.
Variance factor	Eliminates outliers in the found contour points by comparison with the mean position of all contour points. [Pixel]

Verbosity example:
The defined features are searched in every stripe. At the position where the feature best fits (yellow and magenta crosses/numbers), the gap position is set as average over all found points.

■ **Measured values for plotter**

558	0 / 1	Plausibility Intensity error
575	0 … 255	Intensity Part left
576	0 … 255	Intensity Part right
577	0 … 255	Intensity Gap
581	0 … 255	TCP_x
582	0 … 255	TCP_y
583	0 … 255	HWROI_x
584	0 … 255	HWROI_y
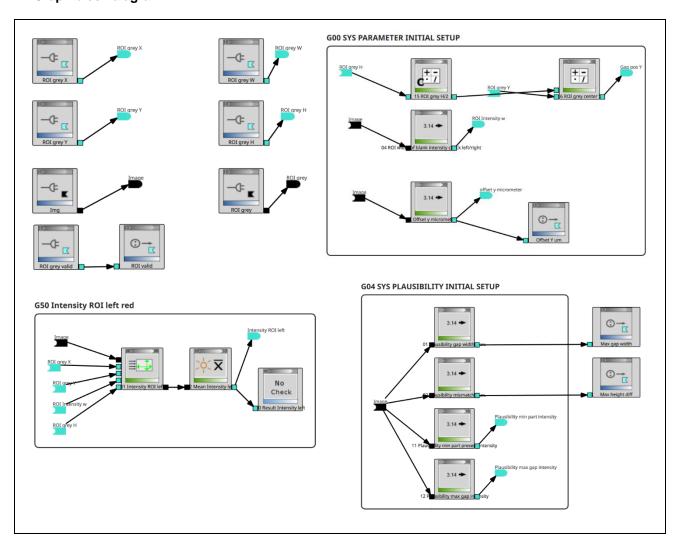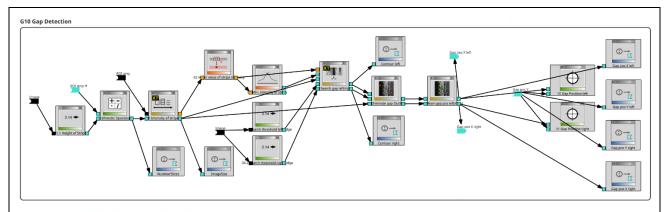
- **Subgraphs interface**

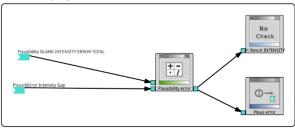| IN bridges		OUT bridges	
image	Img	**value**	Gap pos X left / right
	ROI grey		Gap pos Y left / right
			Contour left / right
value	ROI grey X		Plaus error
	ROI grey Y		ImageSize
	ROI grey W		NumberSlices
	ROI grey H		Offset Y um
			Max gap width
			Max height diff
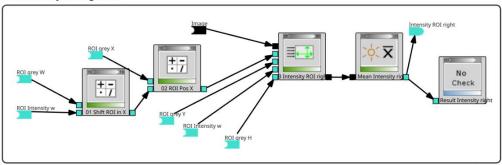
- **Graph block diagram**

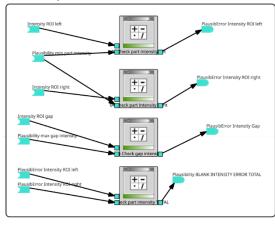**G10 Gap Detection**
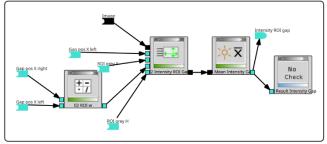
G51 Intensity ROI right red

G52 Intensity ROI Gap

G61 Plausibility Logic

G60 Plausibility Check

G70 TCP Position