Configuration of warping parameters

The configuration information passed to the warping library is used to check constraints and as basis for computations.

Overall configuration parameter structure

The following table details the overall configuration parameter structure and their limits.

Name	Range	Description	Example Value
NumBitsPerParam	1..16	Number of bits used for each parameter (bit length of each parameter, contains pixel fractions)	12
PixResolution	**0**: $^1/_{16}$ px **1**: $^1/_8$ px **2**: $^1/_4$ px **3**: $^1/_2$ px **4**: 1 px **5**: 2 px **6**: 4 px **7**: 8 px	Resolution of warping parameters.	0 ($^1/_{16}$ px)
DisplaySizeX	0..655535	Display size in horizontal direction (in pixel).	480
DisplaySizeY	0..655535	Display size in vertical direction (in pixel).	240
BitmapAreaX	0..655535	Number of Bitmap-pixels in horizontal direction. Reference points are equally distributed over this range in x-direction. **Condition:** BitmapAreaX ≤ DisplaySizeX	480
BitmapAreaY	0..655535	Number of Bitmap-pixels in vertical direction. Reference points are equally distributed over this range in y-direction. **Condition:** BitmapAreaY ≤ DisplaySizeY	240

BitmapAreaShiftX	0..65553 5	Shift of the bitmap area center point in horizontal direction. **Condition:** (BitmapAreaX/2+BitmapAreaShiftX≤DisplaySizeX) AND (BitmapAreaX/2– BitmapAreaShiftX ≥0)	240
BitmapAreaShiftY	0..65553 5	Shift of the bitmap area center point in vertical direction. **Condition:** (BitmapAreaY/2+BitmapAreaShiftY≤DisplaySizeY) AND (BitmapAreaY/2– BitmapAreaShiftY ≥0)	120
IlluminatedDisplayAreaX	0..65553 5	Number of illuminated pixels in horizontal direction **Condition:** IlluminatedDisplayAreaX ≤DisplaySizeY	480
IlluminatedDisplayAreaY	0..65553 5	Number of illuminated pixels in vertical direction **Condition:** IlluminatedDisplayAreaY ≤DisplaySizeY	220
IlluminatedDisplayAreaShiftX	0..65553 5	Shift of the illuminated display area center point in horizontal direction. **Condition:** (IllDisplayAreaX/2+IllDisplayAreaShiftX≤DisplaySizeX) AND (IllDisplayAreaX/2– IllDisplayAreaShiftX ≥0)	480
IlluminatedDisplayAreaShiftY	0..65553 5	Shift of the illuminated display area center point in vertical direction. **Condition:** (IllDisplayAreaY/2+IllDisplayAreaShiftY≤DisplaySizeY) AND (IllDisplayAreaY/2– IllDisplayAreaShiftY ≥0)	220
WarpingAreaX	0..65553 5	Number of pixels used for warping in horizontal direction. **Condition:** WarpingAreaX≤IlluminatedDisplayAreaX > This parameter is present for historical reasons and is not used during computation/adjustment. Its validity is still checked, though.	470

WarpingAreaY	0..65553 5	Number of pixels used for warping in vertical direction. **Condition:** WarpingAreaY≤IlluminatedDisplayAreaY > This parameter is present for historical reasons and is not used during computation/adjustment. Its validity is still checked, though.	120
WarpedAreaShiftX	0..65553 5	Shift of the warped area center point in horizontal direction. > This parameter is present for historical reasons and is not used during computation/adjustment. Its validity is still checked, though.	220
WarpedAreaShiftY	0..65553 5	Shift of the warped area center point in vertical direction. > This parameter is present for historical reasons and is not used during computation/adjustment. Its validity is still checked, though.	110
RotationValue	-18000 .. +18000	Rotation value in grad * 100	-150 // rotate 1.5°
ParamSet	Data	Set of reference point shift vectors row-major ordered(left to right, top to bottom). Each reference point in x/y direction is represented as a signed integer value in range –32,768 .. 32,767 (2 bytes).	(X0, Y0) (X0, Y1) ... (XM, YN) M: #RefPointsX N: #RefPointsY
ParamSetLength	0..65553 5	Length of parameter set in bytes calculated using the following formula: 2 * NumRefPointsX * NumRefPointsY * NumBitsPerParam / 8	825 // 2*25*11*12/8
RotationLimit	0..180	Maximal rotation angle in grad (+/- value)	5 // +/- 5°
TrapezoidLimitX	0..65553 5	Maximum value for trapezoid transformation in horizontal direction (+/- value)	50
TrapezoidLimitY	0..65553 5	Maximum value for trapezoid transformation in vertical direction (+/- value)	50

ParallelogramLimitX	0..65553 5	Maximum value for parallelogram transformation in horizontal direction (+/- value)	50
ParallelogramLimitY	0..65553 5	Maximum value for parallelogram transformation in vertical direction (+/- value)	50
PinbalanceLimitX	0..65553 5	Maximum value for pin balance transformation in horizontal direction (+/- value)	50
PinbalanceLimitY	0..65553 5	Maximum value for pin balance transformation in vetical direction (+/- value)	50
PincushionLimitX	0..65553 5	Maximum value for pincushion transformation in horizontal direction (+/- value)	50
PincushionLimitY	0..65553 5	Maximum value for pincushion transformation in vetical direction (+/- value)	50
WidthLimit	0..65553 5	Maximum value for width transformation in horizontal direction (+/- value)	50
HeightLimit	0..65553 5	Maximum value for height transformation in vetical direction (+/- value)	50
ScaleMode	0 or 1	0 - scale factor is 1. Scaling might occur if image does not fit inside illuminated area 1 - scale factor is calculated based on RotationLimit value, such that, when rotated at maximum, the image will fit inside illuminated area	0

Please refer to the following chapters for details on how the parameters influence the result of the warped image.

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