



## PlugIn for DpuScan **Color Detection**

Supplement to the DpuScan Reference Manual

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## Actuality

It may happen that a more recent version of this manual for DpuScan is available for download from the Internet. Therefore, it is recommended that you should compare the version by means of the date printed on this page with the version on the Internet. You should use the most up-to-date version of the manual.

The Internet version of this supplement to the DpuScan Reference Manual is found on the Web at the following address:

<http://www.jkimaging.com/pdf/PlugIns/ColorDetection.pdf>

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February 7, 2011

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PlugIns for DpuScan are expansions for its functional scope and must be licensed separately. This documentation describes one such additional module for already existing licenses of DpuScan. The use of this PlugIn is possible only in combination with DpuScan. Therefore, this documentation can also be used only together with the documentation for DpuScan.

## 1 Color Detection

The Color Recognition PlugIn (PlgColor) makes it possible to differentiate color documents from non-color documents. Documents are analyzed by their color portion and are classified as bitonal or color image. The process of this classification can be set and configured by means of a learning process. The target is to differentiate pages with photos or other illustrations from normal text-only pages.

By means of the filter function, differentiation is possible even between pictures with different colors. This way, a page with a photo will be detected even if all sheets in the batch are printed on a colored background, or wear a colored logo.

The second functionality of the PlugIns concerns the detection of marks with specific colors. Again, a learning process is initiated where a document is presented to the PlugIn that is marked by a marker pen, or by a colored sticker. Marker pens often vary strongly in their color composition and therefore require to define a big tolerance! The PlugIn detects this color and memorizes it. When documents are scanned that have the same colors, the PlugIn will recognize this document and will index it as marked. This way, for example, documents can be separated if a document has this color feature. Up to three different marking colors can be recognized with the PlugIn.

Please find details about the setting possibilities for the PlugIns in Chapters [3.1.1 Property Page: Color Detection](#) and [3.1.2 Property Page: Marker Detection](#) on pages [7](#) and [10](#).

## 2 The PlugIn in the Task Definition

In the Task definition, after loading the images with the Task action "Load from scanner" or "Load from directory", you can add the search for marks.

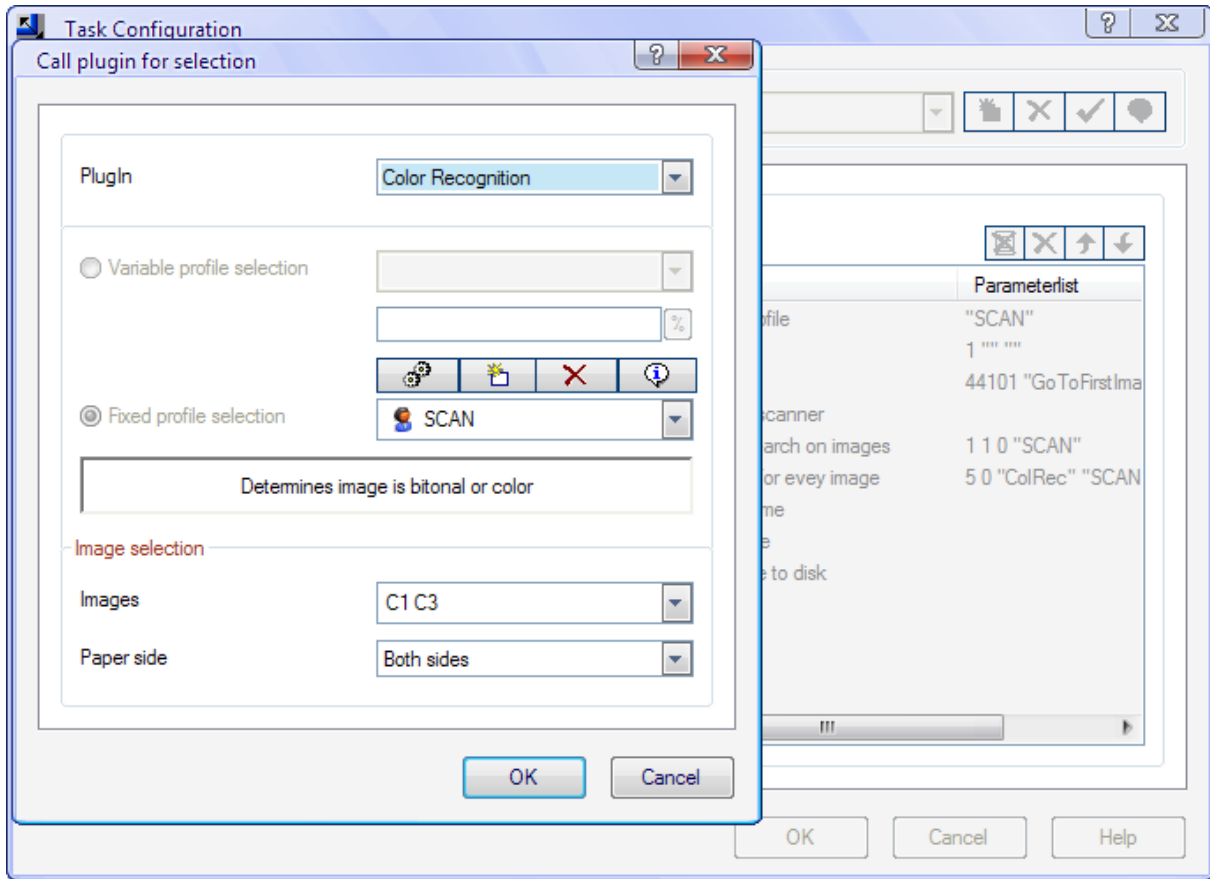


Illustration 1 – Calling the PlugIn in the Task

**This Task action is available only if the PlugIn was loaded in the actual Base Profile.**

Before its first usage, the PlugIn must be registered once. Please click the **Register** button and enter the key in the following dialog, in order to unlock the Color Detection PlugIn.

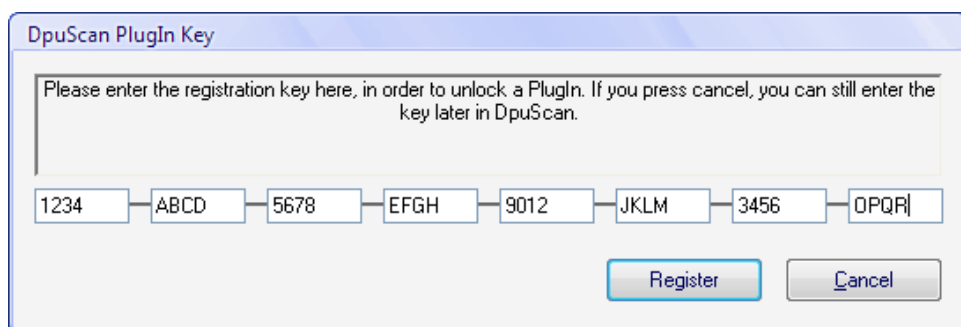



Illustration 2 – Registering Dialog

### 3 The Plugin in the Base Profile Configuration

The Plugin must be loaded and configured in the Base Profile configuration. Open the **Base Profile configuration**, select the **Process** property page and click on the  button besides the **Plugins**. After clicking the **Add** button, you reach the selection dialog for the available Plugins.

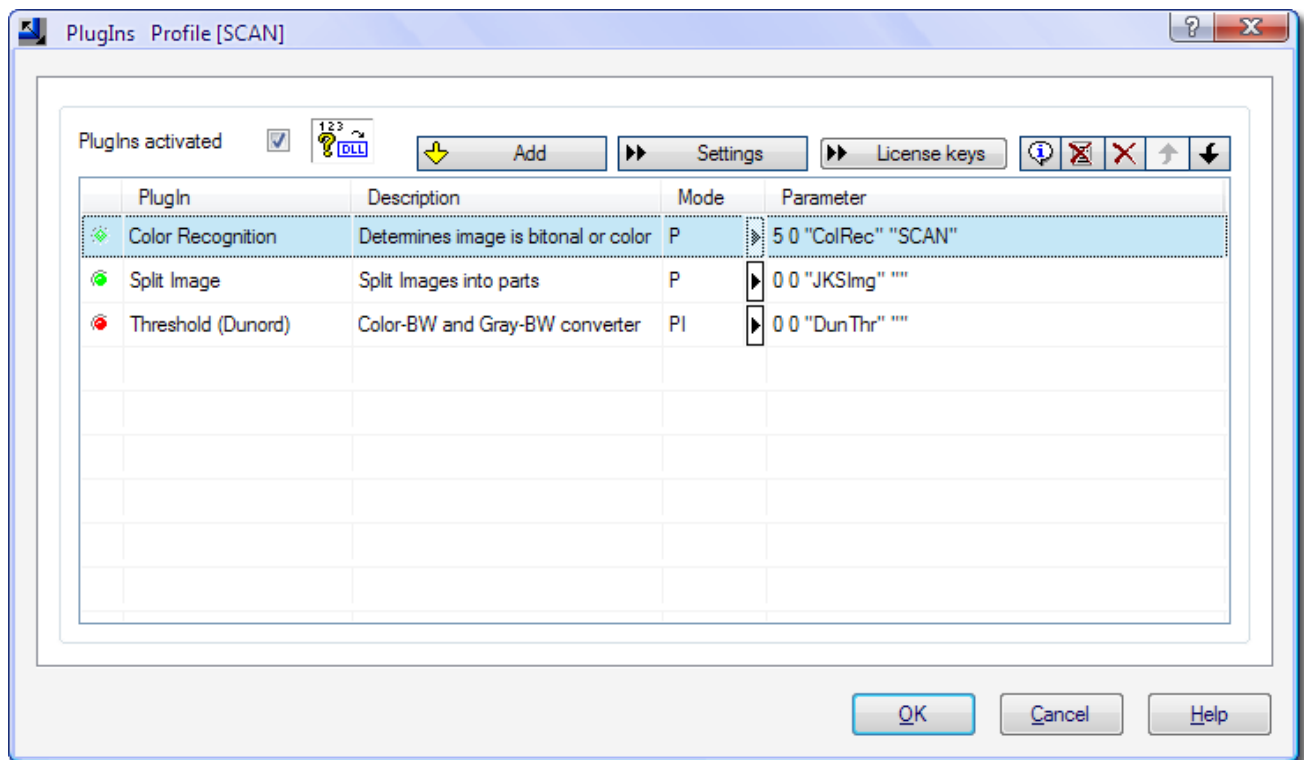




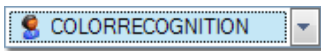
Illustration 3 – Selecting the Plugin

**Please note that the "Plugins activated" check box must be marked by a hook as otherwise the Plugins would not be used.**

Now select the **Color Detection** Plugin by highlighting the according line, then click the  **Add** button. Click  **Settings** in order to reach the two configuration dialog.

#### 3.1 Configuration of the Plugin

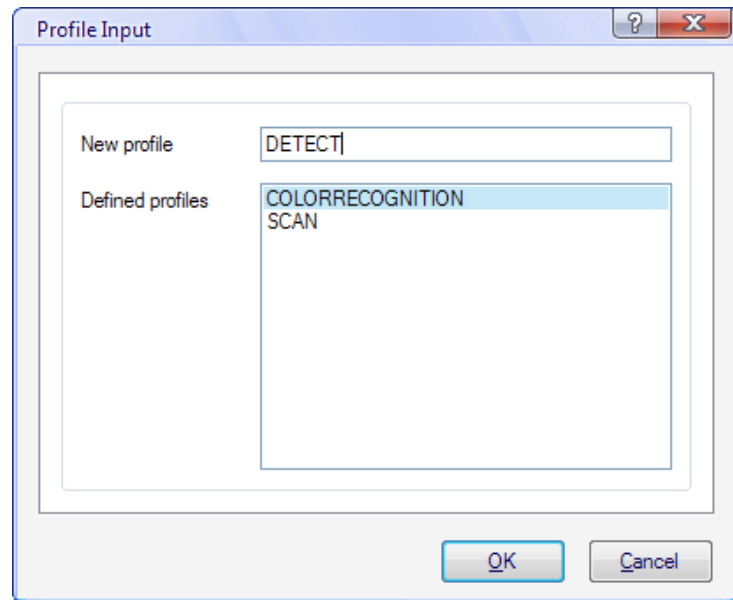
Open the Plugin selection with a double-click on the list entry – analog to [Illustration 1 – Calling the Plugin in the Task](#) on page 4. It displays, in its top area, the control elements for administering different Plugin Sub-Profiles.



Selects an existing Sub-Profile and assigns it to this Profile.



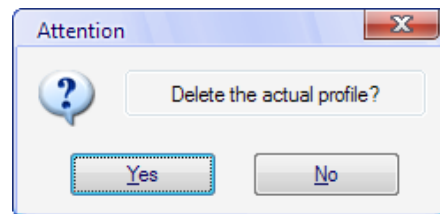
Defines a new configuration. The settings from the actual configuration are copied.



*Illustration 4 – Creating a New ID*



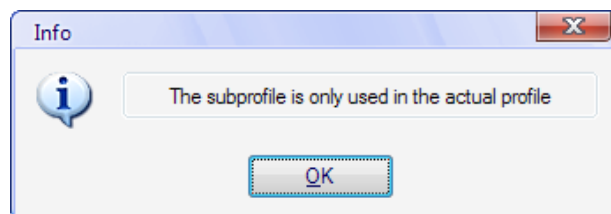
Deletes the actual configuration. A warning message will be given:



*Illustration 5 – Warning before Deletion*



Opens a dialog that indicates in which Profiles the actual Sub-Profile is also in use.



*Illustration 6 – Information about Usage of the ID*



This button opens the configuration dialog that consists of two property pages.

### 3.1.1 Property Page: Color Detection

The **Color Detection** page gives detail information about the PlugIn, in this case about its version, and the manufacturer.

This property page allows to make all settings that are required for Color Detection on an image. By Color Detection, scanned images are classified as bitonal, or as color images. This classification requires some settings that we explain below.

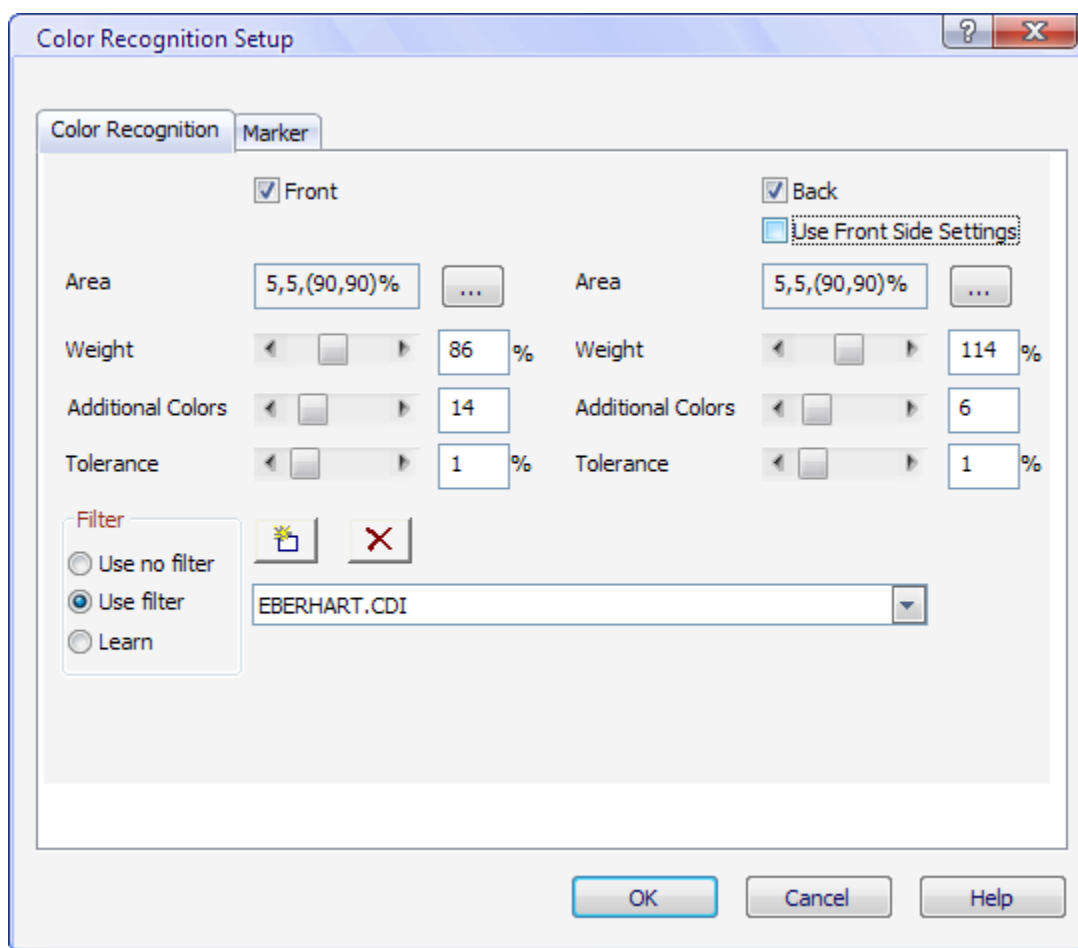


Illustration 7 – Property Page: Color Detection

#### Front

Enables Color Detection for the front side. The settings of the left-hand side of the dialog will be used.

#### Back

Enables Color Detection for the backside. The settings of the right-hand side of the dialog are used when the option **Use Front Side Settings** is disabled. If this option is active, the settings for the front side are used also for the backside, as defined on the left-hand side of the dialog.

<b>Use Front Side Settings</b>	When this option is enabled, the settings for the front side are used. The checkbox can be activated only when the front side settings are enabled. Otherwise, this setting is inactive.
<b>Area</b>	<p>A click on the button besides the input field opens a dialog that determines the size of the search area. The indications can be entered in percent, 1/10 millimeter, or 1/1000 inch. When the additional setup dialog is closed, the set parameters appear in the input field.</p> <p>This additional dialog is the only place where the dimensions of this input field can be set, or modified.</p>
<b>Weight</b>	This parameter determines how strongly the filter colors shall be suppressed. A higher value makes the detection less sensitive. An image must then have brighter colors in order to be classified as a color image.
<b>Additional colors</b>	The remaining bright single colors are counted. When the set limit value is surpassed, the color is classified as a color image. This makes sense when the original has only a minor color portion that, however, is concentrated on just a few, bright colors.
<b>Tolerance</b>	This value indicates how high the remaining total color portion must be in order to classify an image as color image. This allows to detect evenly colored originals without ruling colors.
<b>Filter</b>	<p>A filter may be used in order to influence the decision whether an image is classified as a color image, or not. Filters must initially be defined in a so-called learning mode. Switch the filter options to <b>Learn</b> and create a new filter by <b>Add filter</b>.</p> <p>A filter serves to train the Color Detection with specific original documents. For it, several typical, non-color originals are scanned in learning mode. Color portions that are contained in the images are trained, and filtered out.</p> <p>When the learning mode is switched off, all images that are more colored, or that that contain colors that differ from the previous trained colors, are classified as color images.</p> <p>The Option <b>Use no filter</b> uses no filter for the decision whether an image is a color or bitonal image.</p> <p>The Option <b>Use filter</b> uses the actually active filter that was created in a previous learning phase.</p>



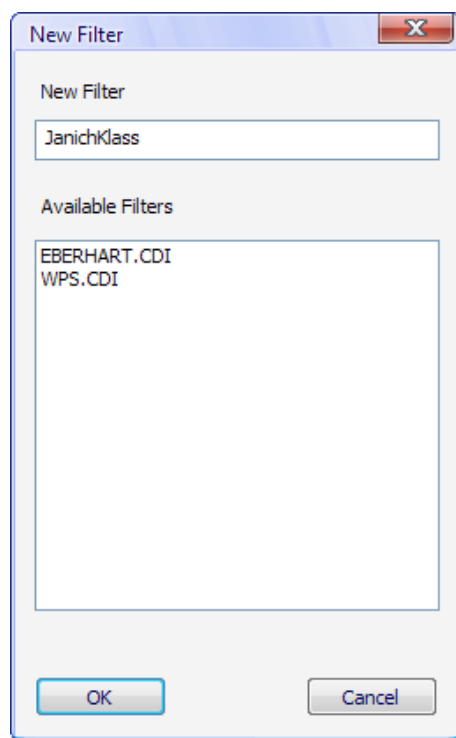


Illustration 8 –Property Page: Color Detection

#### Add filter

Creates a new, empty filter.

When the filter options are at **Learn**, the filter parameters will be created with the next scan process by means of the scanned documents. Please use typical originals that shall not be classified as color imaged, although the document contains a certain, always repeated color portion. The detected colors are later ignored when this filter is applied. This way, documents with the same, always repeated color scheme are classified as bitonal images.

#### Delete filter

Deletes the actually selected color filter from the disk.

#### OK

Closes the dialog and saves the modifications to disk

#### Cancel

Closes the dialog without saving.

#### Help

Opens the Help screen.

In the scan phase, scanned images are classified, by means of the settings, as bitonal, color, or unknown images. This classification is saved in a Variable.

The Variable **%(I.ColRecInfo)** can have the following values:

0: Color format is unknown

1: Bitonal image

2: Color image

### 3.1.2 Property Page: Marker Detection

On this property page, all settings are made for the marker detection on an image. Markers are color lines that were drawn on a paper original by a marker pen. The Plugin can learn up to three different marker colors, or color stickers (learning phase) in order to later search these learnt colors in documents, in the scanning phase.

Via a Variable, DpuScan is advised whether the learnt color was detected, or not. This information can, for example, be used to separate documents.

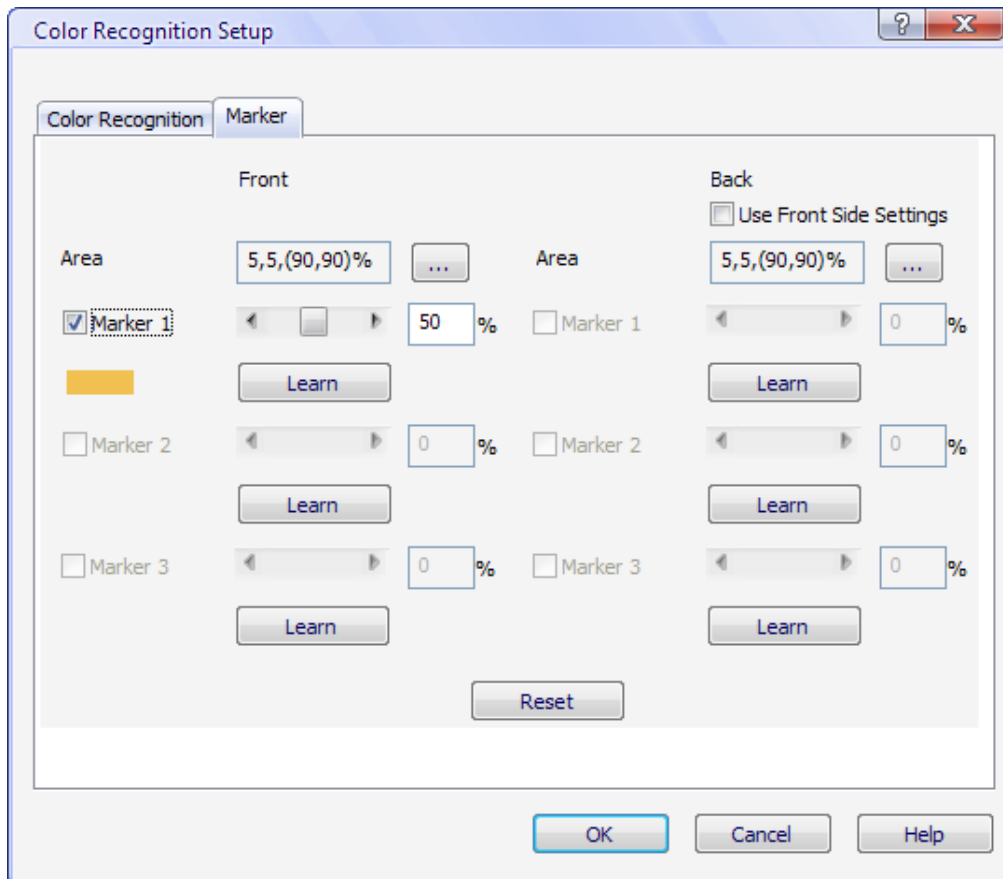


Illustration 9 – Property Page: Marker

**Use Front Side Settings** When this option is enabled, the settings made for the front side are also used for the back side. The checkbox becomes available only if front side settings are made for at least one marker. Otherwise, this setting is inactive.

**Area** A click on the button besides the input field opens a dialog that determines the size of the search area. The indications can be entered in percent, 1/10 millimeter, or 1/1000 inch. When the additional setup dialog is closed, the set parameters appear in the input field.

This additional dialog is the only place where the dimensions of this input field can be set, or modified.

## Marker 1-3

Activates the marker search for the according Marker, for the front or back side. The checkbox can be activated only when a marker color has prior been determined by a learning phase. The color cannot be altered manually; a learning is necessary, indispensably.

## Learn

For learning a color, click this button. A dialog displays in order to open a document with the desired color mark. Make sure that, during the learning phase, no other colors exist on the document, besides the marker color. The Plugin will detect the color that is stressed most. The detected color is optically displayed so that you can check it.

## Scan Phase

In the scan phase, all learnt colors may occur on the document. The Plugin assigns the Variables **%(I.Marker1Info)[0,1]**, **%(I.Marker2Info)[0,2]** and **%(I.Marker3Info)[0,3]** whether color 1, 2 or 3 was detected, or not. 0 means that the color was not detected. The numbers 1, 2 or 3 signalize the existence of three Marker colors. For reason of compatibility with the scanner driver, the marker detection is not returned as 0 or 1, but 0, 1, 2 or 3, although the Variable **%(I.Marker1Info)** is exclusively utilized for the first color.

There are two further Variables that have a similar content of information like the three Variables we just described.

The Variable **%(I.MarkersInfo)** combines the information from the three earlier described Variables in one Variable. When it delivers, for example, 103, it means that **%(I.Marker1Info)** is 1, **%(I.Marker3Info)** is 3 and **%(I.Marker2Info)** is not existing, therefore 0.

Another Variable determines the ranking sequence of the colors:

**%(I.MarkerLevel)** determines which color has the biggest color portion. A value of 310 means that colors 1 and 3 were detected, and that color 3 has the biggest color portion. Please remember that this Variable always starts with the essential information at the left-hand side. This means that colors that were non detected are symbolized by a flash-right 0. 300 means that only the third color was detected; therefore it appears flush-left, and the two zeros are placed right-hand.

## Reset

Deletes all learnt filters.

## OK

Closes the dialog and saves the modifications to disk.

## Cancel

Closes the dialog without saving.

## Help

Opens the Help screen.

### 3.2 Learning Mode

During the learning mode, typical originals are introduced to the PlugIn in order to train certain colors. The target is to classify color pages that always contain specific color areas as bitonal images. So, in this learning mode, documents that shall be classified as bitonal images are scanned on purpose. The background is to differentiate originals like, for example, invoices or forms that do contain color portions but otherwise nearly look all the same, from other originals. For this purpose, the PlugIn in creates a color table in this learning mode and adds all colors that are detected on the originals. You should therefore use only originals for training that contain exclusively the colors that shall be filtered out in a later scan process.



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