

PlugIn for DpuScan 2D Barcode Recognition

Supplement to the DpuScan Reference Manual

Copyrights

© 1997 to 2006 J&K Imaging, Marietta/USA and Janich & Klass, D-Wuppertal.

All rights reserved. Printed in Germany.

The information contained in this documentation is the property of J&K Imaging, Marietta and Janich & Klass, Wuppertal. Neither receipt nor possession hereof confers or transfers any right to reproduce or disclose any part of the contents hereof, without the prior written consent of J&K Imaging, Marietta and Janich & Klass, Wuppertal.

Trademarks

The DPU logo is a registered trademark of Janich & Klass, Wuppertal. DpuScan is a trademark of J&K Imaging, Marietta/USA. All other product names and logos are trademarks or registered trademarks of their representative companies.

Disclaimer

The instructions and descriptions in this manual were accurate at the time of this manual's printing. However, we reserve the right to alter the description and/or the product at anytime without prior notice.

J&K Imaging and Janich & Klass assume no liability for damages incurred directly or indirectly from errors, omissions, or discrepancies between this manual and the product.

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 annex to the DpuScan Reference Manual is found on the Web at the following address:

<http://www.jkimaging.com/pdf/PlugIns/A-2D Barcodes-English.pdf>

© 2006 Janich & Klass Computertechnik GmbH, Wuppertal, Germany

September 13, 2006

Table of Contents

1	2D Barcode Recognition.....	4
2	Configuration in the Task.....	5
3	Configuration in the Class.....	6
3.1	Administering the PlugIn Configurations	8
3.1.1	Property Page: General.....	10
3.1.2	Property Page: Percentcode	11
3.1.3	Property Page: Information	12
4	Configuration for 2D Barcode Recognition	13
4.1	A Setting Example	16

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.

This documentation describes the PlugIns both for Datamatrix and for PDF417 codes, both with the engine from Axtel, as they are identical concerning their operation and surface. But the PlugIns are separate products and must be purchased separately.

1 2D Barcode Recognition

In addition to linear barcodes that consist of stripes with different distances and different width, there are the so-called 2D barcodes. Usually, they do not just contain a number of a short alpha-numeric string like classical barcodes. They can carry far more information and still occupy only little space on the document.



Illustration 1 – Datamatrix Code and PDF417 Code

2 Configuration in the Task

For usage in the process mode, you must first get the images and then execute the Task step "Call Plugin for every image". This step is available only if the Plugin was loaded in the actual Class.

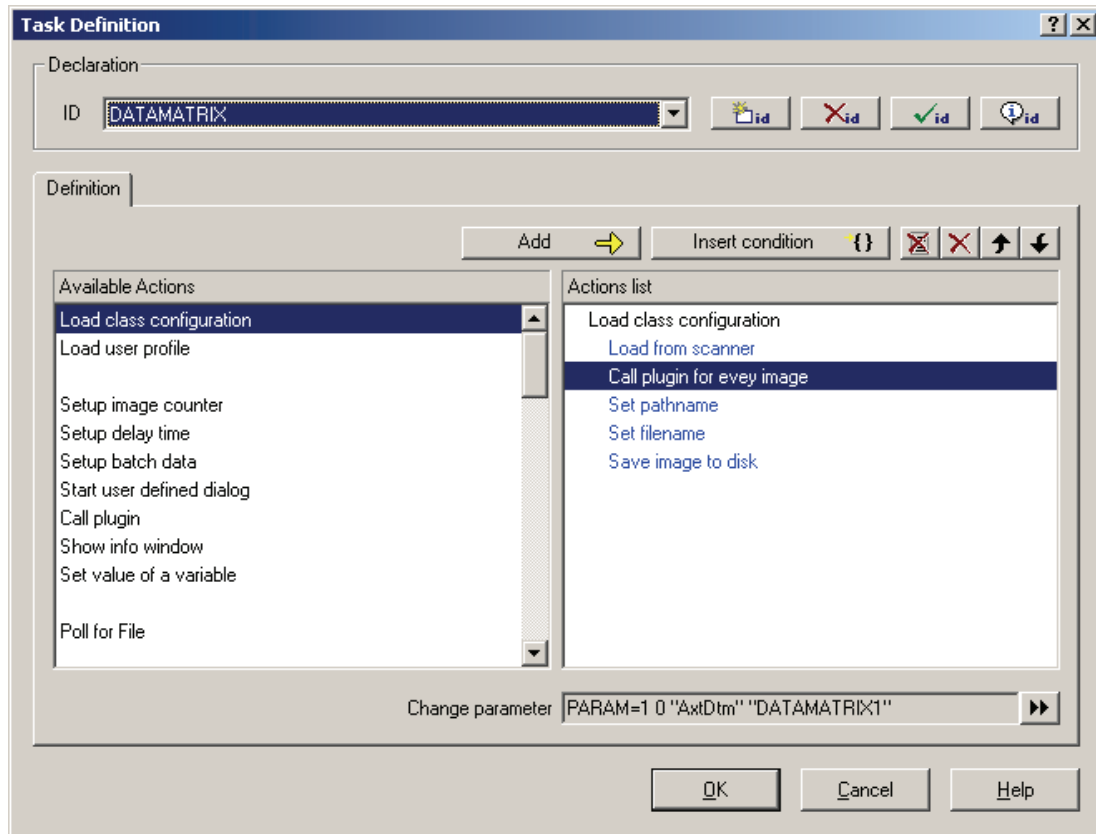


Illustration 2 – Usage in the Task

For the PlugIn call, you can select an **ID** from the list of existing configurations, or you define a new one here, with a click on the **Config** button. You can also determine for which specific **Images** the PlugIn shall be called.

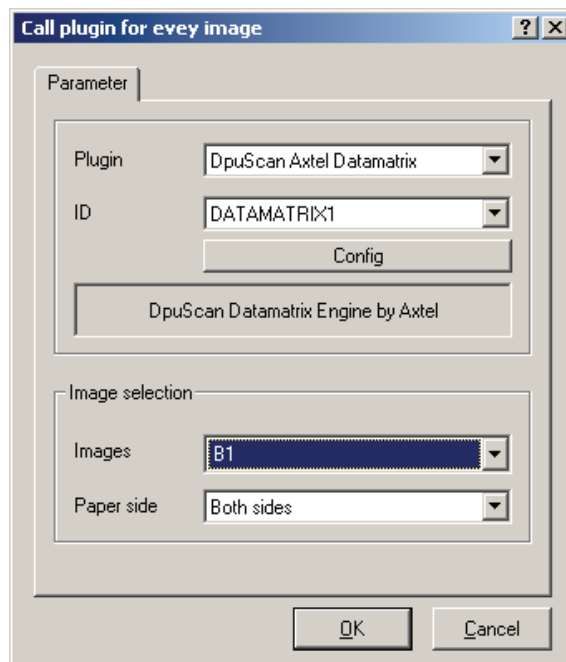


Illustration 3 – Select Parameters When Calling in the Task

The PlugIn for Datamatrix or PDF417 is normally used for bitonal images. When grayscale or color images are delivered to the PlugIn, they are internally converted to bitonal images by using standard parameters. It is however more advisable to execute a binarization before calling the PlugIn as you can influence the parameters for the transformation and can also use filters for optimizing the images specifically for the code recognition, in due course.

The configuration is defined in detail in the configuration of the Class, see Chapter [3 Configuration in the Class](#) on page [6](#).

3 Configuration in the Class

The PlugIn must be loaded and configured in the Class. This is done in the **Class Configuration**, on the **Process** tab. A click on the **PlugIns** button opens the dialog with the list of all actually active PlugIns. Use the **Add** button to reach the selection dialog for available PlugIns.

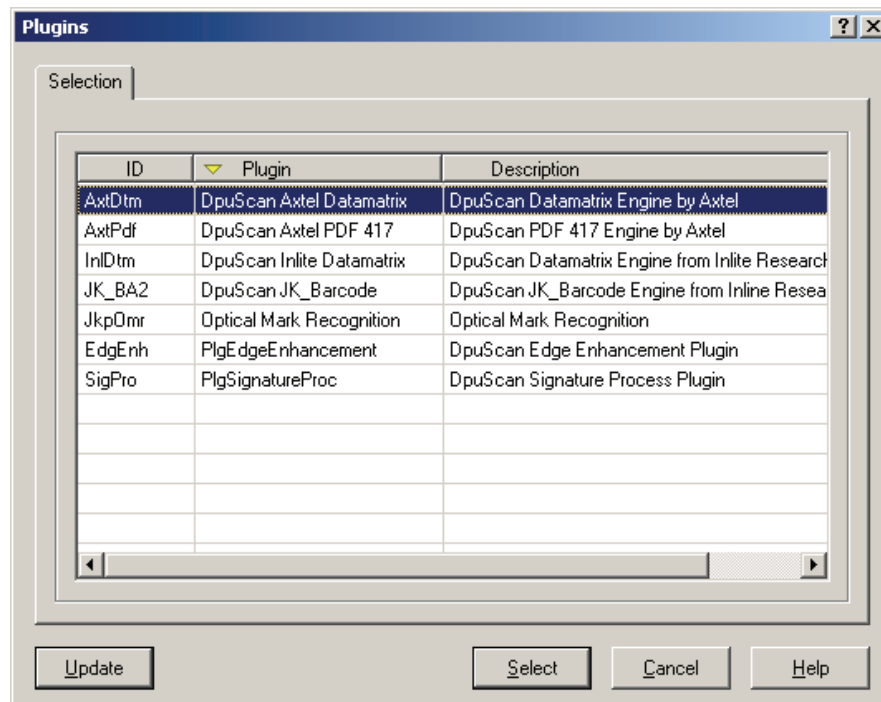


Illustration 4 – Selecting the Plugin

After you made your selection, the Plugin appears in the list of Defined Plugins.

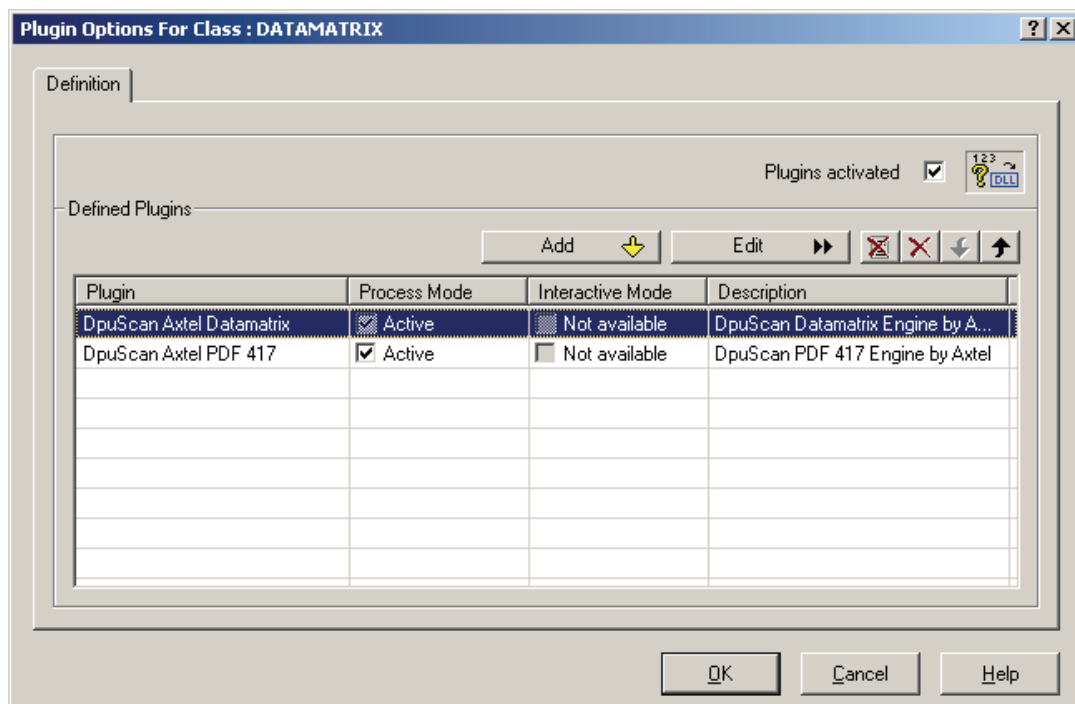


Illustration 5 – Plugin Configuration for the Class

The Plugins for Datamatrix and PDF417 are now loaded for use within the Class.

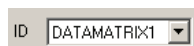
Please note that the "PlugIns activated" checkbox must be marked by its hook as otherwise the PlugIns will not be used.

The input in the line in the above illustration shows, in its **Process Mode** column, an activated check box. The **Interactive Mode** however is marked as Not available because these PlugIns have no Interactive Mode of their own.

A click on the **Edit** button opens the dialog for administration of PlugIn configurations and for data exchange between the PlugIn and DpuScan.

3.1 Administering the PlugIn Configurations

The top area of the dialog offers the usual elements for administration of configurations.



Selects an existing configuration and assigns it to this Class.



Creates a new configuration. The settings made for the actual configuration are copied.

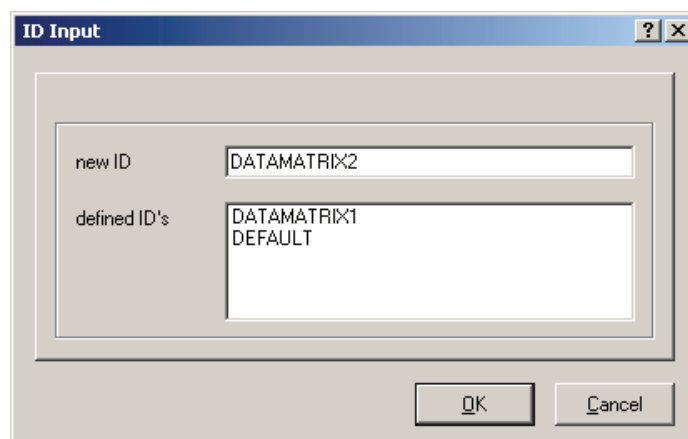


Illustration 6 – Creating a New ID



Deletes the actual configuration. A warning message will be thrown in due case:

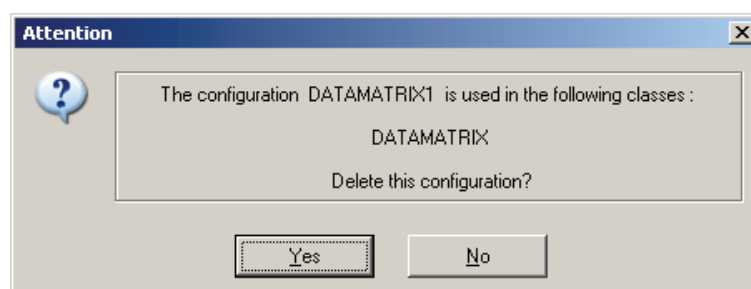


Illustration 7 – Warning before Deletion



Applies the modifications to the actual configuration. You will be asked whether the changes shall be saved:

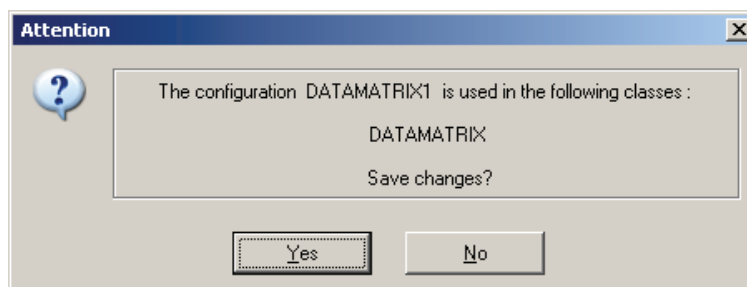


Illustration 8 – Question before Saving



Opens a dialog that displays in which Classes the actual configuration is also used.

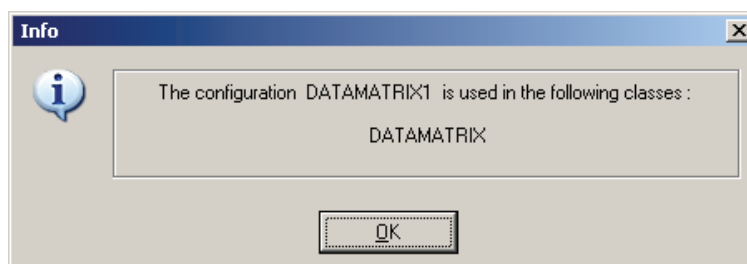


Illustration 9 – Information about Usage of the ID

The remaining area below offers the three property pages **General**, **Percent Code** and **Information**.

3.1.1 Property Page: General

The **General** page gives detailed information about the PlugIn, in this case about its version and its manufacturer.

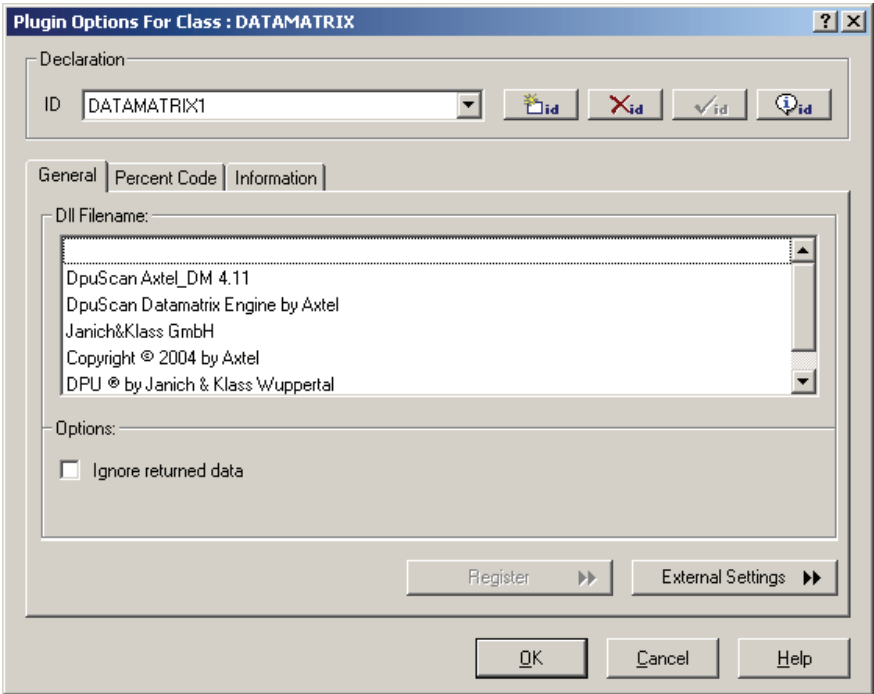


Illustration 10 – PlugIn Configuration, General Page

- Ignore returned data** The variables are not returned to DpuScan if this checkbox is activated.
- Register** Opens the dialog for entering the registration key, see below.
- External Settings** Opens the dialog for configuration of the PlugIn, see Chapter [4 Configuration for 2D Barcode Recognition](#) on page [13](#).

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 decrypt the PlugIn.

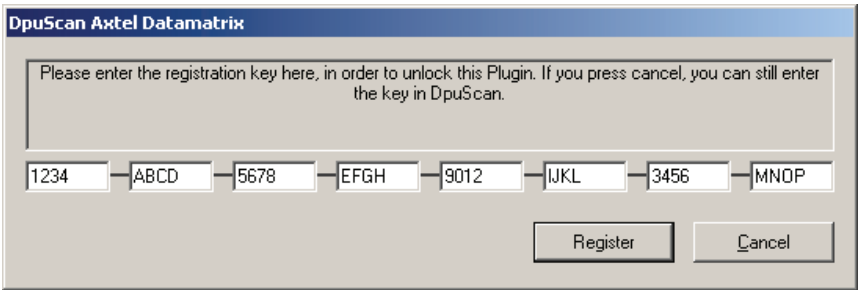


Illustration 11 – Registration Dialog

3.1.2 Property Page: Percent Code

The **Percent Code** page lists the variables which the PlugIn uses or which were defined in the configuration. There is always the variable `%(I.2D_AXTEL_DM0)` `%(I.2D_AXTEL_DM0)` or `%(I.2D_AXTEL_PDF0)`. This variable is filled if no other frames were defined. The search is made across the entire image. As soon as a frame was defined in the configuration, the variable is no longer filled.

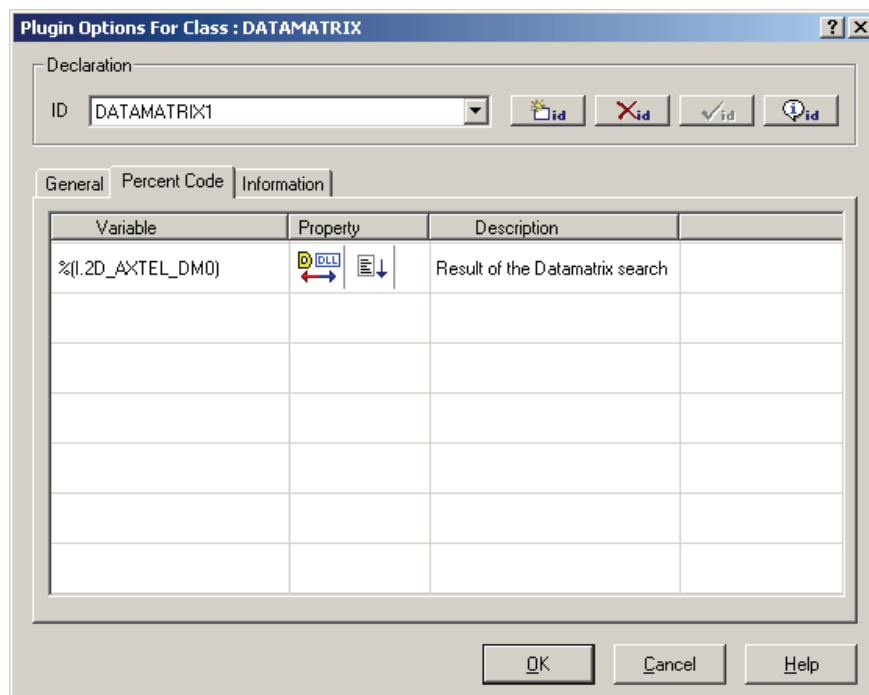


Illustration 12 – Property Page: Percent Code

3.1.3 Property Page: Information

This page offers, in a tree view, information about the name of the PlugIn, of its producer and its version.

The ID branch lists the windows, images and variables which the PlugIn uses.

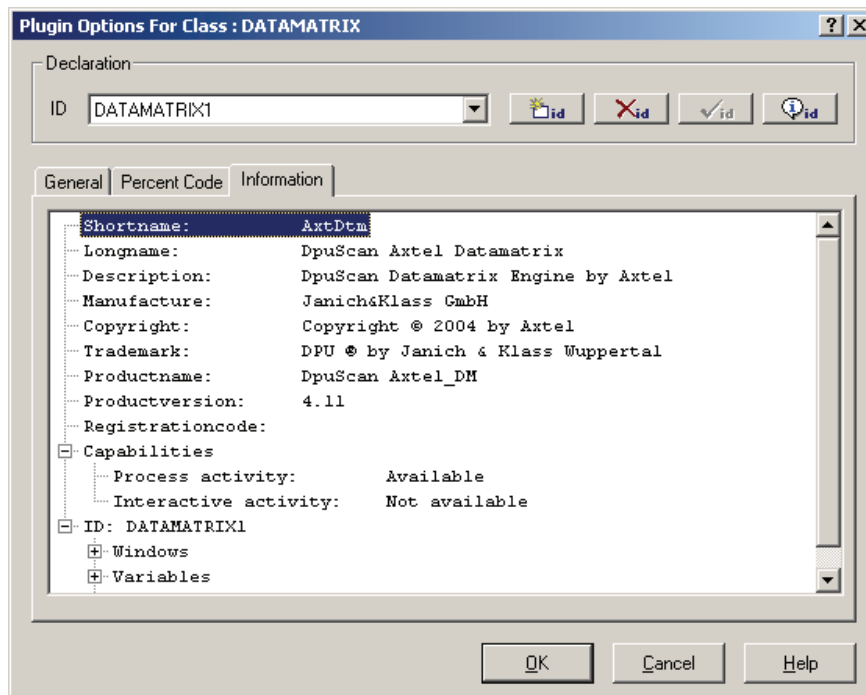


Illustration 13 – Property Page: Information

4 Configuration for 2D Barcode Recognition

When you are on the **General** page and click the **External settings** button, the dialog opens for configuration of the 2D Barcode Recognition PlugIn.

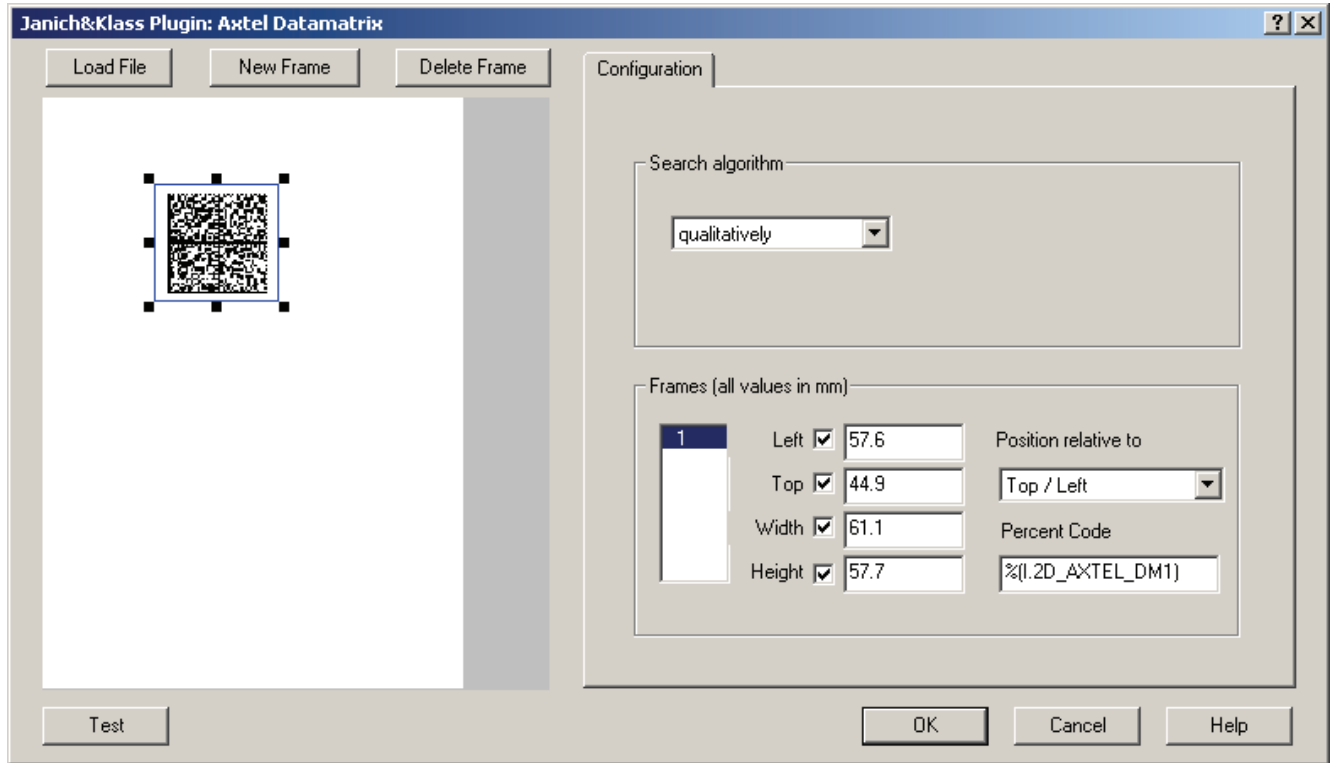


Illustration 14 – Datamatrix Code Recognition: Configuration Dialog

It shows, on its left side, a preview window and operating elements for loading an image and for setting and deleting of frames. Next to it is the **Configuration** Property Page.

Load File Will show an "Open file" dialog in order to load an image from your hard disk. This image is then displayed in the window below.

New Frame Adds a new frame.

Delete Frame Deletes the actual highlighted frame.

Preview Window In the preview window, some functions are assigned to the mouse buttons:

Click on left button zoom into the image

Click on right button zoom out of the image

Frames can be spanned with the left mouse button pressed down

Selection of all elements inside the spanned frame

Move the mouse with right button pressed down:

Move the actually visible image section

Shift key pressed down:

Keep your left mouse button pressed down to directly span up a new frame.

Keep control key pressed down and click on individual frames:

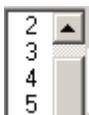
Multi-selection of several frames.

Test

When you click this button, the contents of the actual frame are read and the results are displayed in a dialog box. If no frame is defined, the search will be executed on the entire image. If more than one barcode is found, they will appear in the result variables separated by comma.

The **Configuration** tab is used to set the Search algorithm, and to define the frame properties. You can alter the automatically pre-assigned properties for each of these frames.

Search algorithm



Possible settings are "qualitatively" or "fast". Default setting is "qualitatively". We recommend to keep to this setting if ever possible.

Allows to select already defined search fields. You can select either individual frames, or make a multi-selection. This multi-selection is done Windows-conform with the Shift key or Control key pressed down.

Left

Indicates the position of the left-hand edge of the frame. The value bases on the actual selection in the dropdown list **Position relative to:**.

Top

Indicates the position of the top edge of the frame. The value bases on the actual selection in the dropdown list **Position relative to:**.

Width

Defines the width of the frame.

Height

Defines the height of the frame.

Position relative to

Indicates the reference point for defining the frame position.

Percent Code

Name of the variable that contains the results from the barcode recognition. The name is proposed by the PlugIn and can be overwritten.

In case of a multi-selection, the properties Left, Top, Width, and Height can be set to the same values for all selected elements, probably for all barcodes in one line. For values that are already equal when selected, the input field is active, and the value can be altered.

The input values for those values which are different for the selected elements, cannot be altered.

Only if the check box next to the input field is activated, you can enter values here, and they will be assigned to all selected elements. This serves to prevent from undesired alterations.

Frames (all values in mm)

1	Left <input checked="" type="checkbox"/>	124.6	Position relative to Top / Left
2	Top <input type="checkbox"/>	36.4 - 102.6	
3	Width <input checked="" type="checkbox"/>	42.4	
4	Height <input checked="" type="checkbox"/>	37.4	

Percent Code: %(I.2D_AXTEL_DM4)

Illustration 15 – Altering Properties in a Multi-Selection

In the above illustration, the search frames 3 and 4 are selected. They lie next to each other and shall form a column. In order to be able to enter this precisely, the check boxes for **Left**, **Width** and **Height** are activated. When you now enter new values in these fields, they are assigned to all selected elements. So, the fields 3 and 4 have the same width, height, and the same distance from the image border.

The **Top** input field is filled with the minimum and the maximum value for the actually selected frames.

4.1 A Setting Example

The batch to be processed contains at the start of every new document sheets with Datamatrix codes. These codes contain a block with data in XML notation and are always placed at the same position on the sheet. Their recognition shall be executed in Process Mode.

In order to prepare the setup, a sheet with a Datamatrix code is scanned, using the relative Class, and saved as a TIFF image. It is important to use the according Class because the image example is captured with the settings for scanner and image processing that will be valid for the process. Mainly, the setup for Deskew is important. They determine the later size of the image and also the position of the barcode that must be found in the image.

In the Class configuration, you have to add the Plugin via **Process | Plugins**, see [Illustration 5 – Plugin Configuration for the Class](#) on page 4.

With a double-click, you reach the next dialog, see [Illustration 10 – Plugin Configuration](#) on page 4.

There, you first must define a new configuration. You will reach the setting dialog using the **External settings** button.

The image with the Datamatrix code which you saved before is not loaded into the preview window with the **Load file** button. Use the **New frame** button to add a new frame. The frame must be moved and edited in its size until the barcode to be read lies within the frame

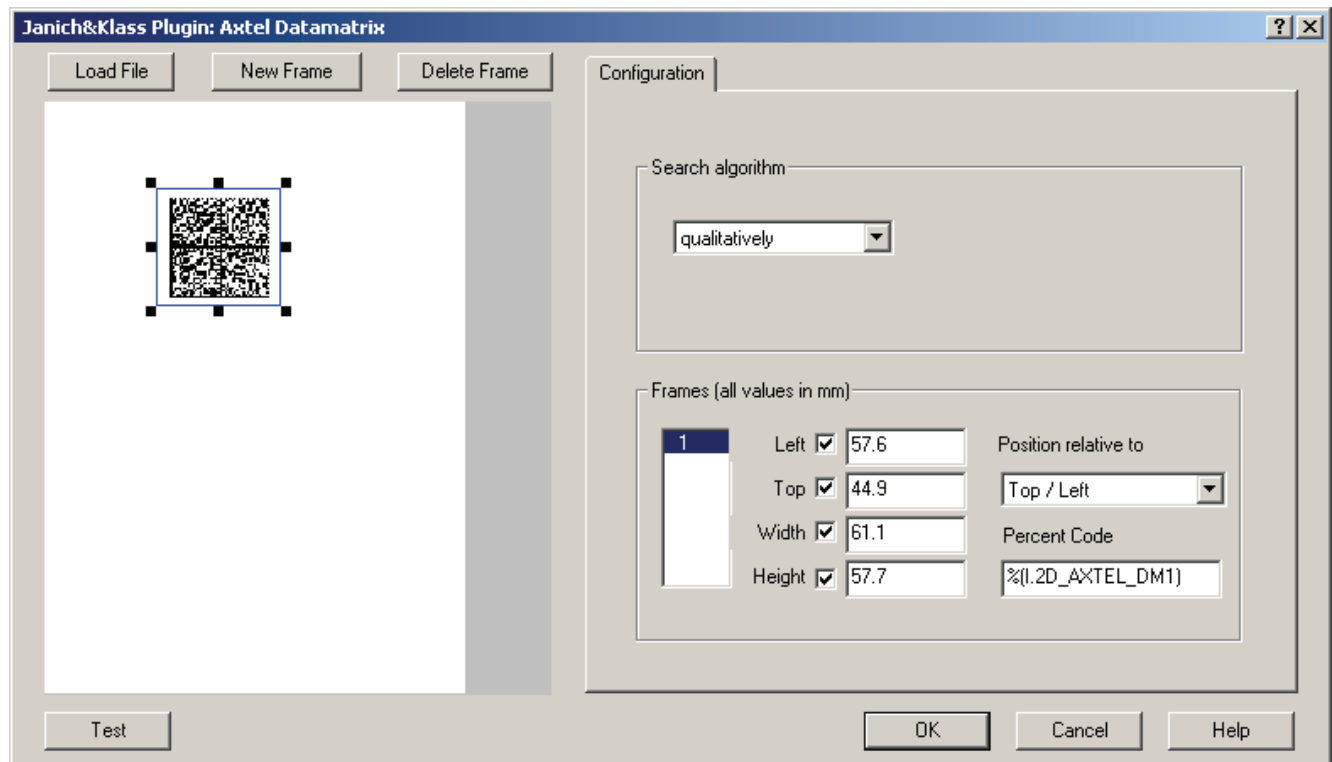


Illustration 16 – Configuration Example for Datamatrix Code Recognition

In order to reach sufficient safety for recognition in the process, the frame should be defined to be a little bit larger than the code to be read. For this frame, the PlugIn has generated the variable `%(I.2D_AXTEL_DM1)`. This name is kept active.

Click the **Test** button to check the reading result now.

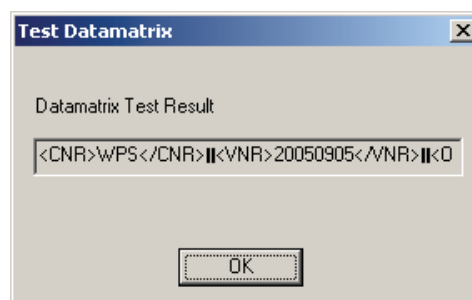


Illustration 17 – Dialog to Display the Test Results

If the results are correct, you can save the setup with a click on the **OK** button.

Now you must add a line for the variable in the definition of the Batch File. Open its definition via the **Batch File** button on the **Data Target** tab in the Class configuration.

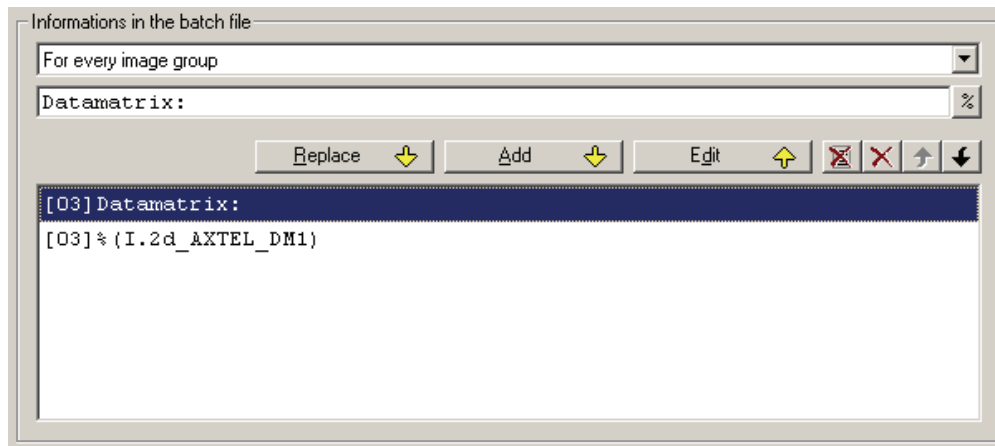


Illustration 18 – Definition for the Batch File

The fix text "Datamatrix" is taken voluntarily in order to mark the beginning of a code in this example. As the last step, you must adapt the Task configuration.

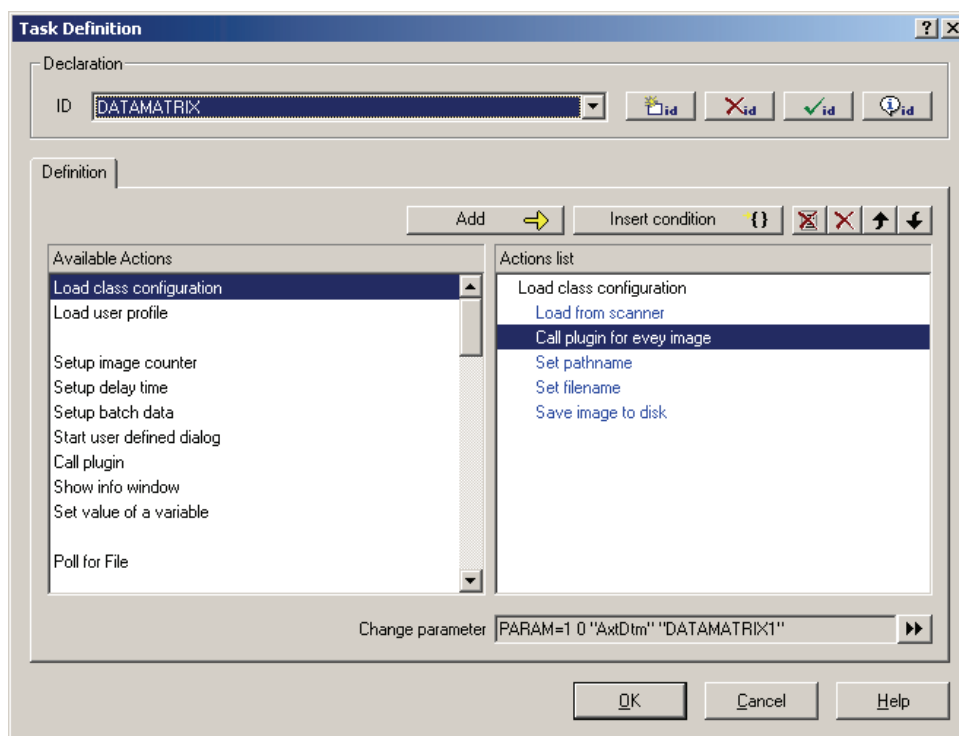


Illustration 19 – Add the Task Step

Add the Task step **Call plugin for every image** to the Actions list. It is inserted after the Action "Load from scanner". If you also use filters for the image, the Plugin action should eventually be inserted after filtering.

With a double click on the new line, you will call its Parameters dialog. There you determine on which image the search is to be executed and which set of parameters (ID) shall be used.

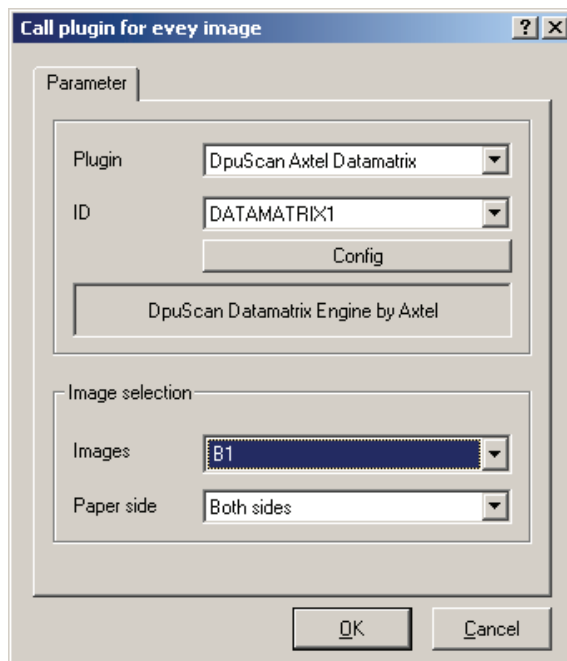


Illustration 20 – Select Parameters When Calling in the Task

Save these settings to complete the configuration.

The results in the Batch File for this example configuration will look as follows:

```
Datamatrix:
<CNR>WPS</CNR>
<VNR>20050905</VNR>
<ORGNR>S35T27</ORGNR>
<ORDER>BL</ORDER>
<AS>501W</AS>
<DKL>274</DKL>
<NOTE>Evaluation</NOTE>
```

The two lines in the Batch File create the above output because the contents of the code result in several lines, in this example.



Janich & Klass Computertechnik GmbH
Zum Alten Zollhaus 24
D-42281 Wuppertal
Germany
Phone: +49 (0)202 2708-0
Fax: +49 (0)202 700 625
<http://www.janichklass.com>

J&K Imaging, L.P.
1633 Sands Place
Marietta, GA 30067
USA
Phone: (770) 984-1212
Fax: (770) 953-8399
<http://www.JKImaging.com>

408.200401.001 7