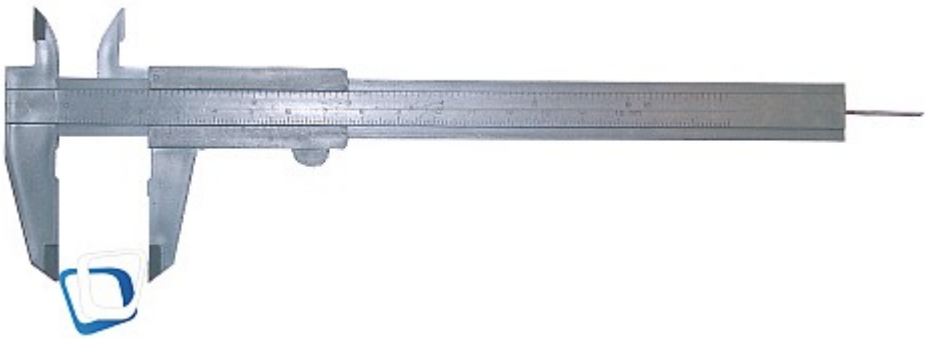
DATINF® GMBH – DATA ANALYSIS & APPLIED INFORMATICS

Manual

Datinf® Measure



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Manual Version 3.2 Rev. 5

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Introduction

Datinf® Measure is a flexible program for length and surface provision in digital images. An adjustable scale allows the program to be used for various different purposes. Datinf® Measure uses vector-based shape measurements similar to those used in drawing programs on an original digital image. Shape measurements can then be saved and be worked on at a later date. Measurement results can also be exported using the clipboard or as an XML file for use with MS Excel. The software works with images in various resolutions and formats. Through the use of fast algorithms, the software can also be used for the analysis of high-resolution images.

Setup

To install the program, double-click on Setup-program and follow the installation instructions. After installation is complete the program will be in demo mode. Some program functions are therefore unavailable.

Product Registration

When you start the program the registration window will appear. Please enter the registration key you received upon purchase of the program. If you chose not to register, you can work in the demo mode to test whether the program meets your needs. The functions available in the demo mode however are somewhat limited, e.g. measurement results and data cannot be saved.

Updates

The software checks whether an update exists. The update installation will be started on request. The update function can be deactivated via the settings (see p. FIXME).

First steps

In order to carry out a meaningful measurement, the scale of the image must be known. Ideally, the image should have a scale so that the software can be easily calibrated for this size.

The following steps are necessary to carry out a successful measurement:

1. Load an image: click the image symbol  , use the files menu or drop an image on the working space.
2. Click on the graphical scale icon  , then select the desired start and end points on the scale in the image then enter the corresponding value to be measured with the selected unit type
3. Measure a shape
   - Select the required measuring tool (line, rectangle, square, ellipse, circle, curve, polygon, magic wand) and position over the desired part of the image
   - Move or scale object if necessary
4. Export measurement results
   - export measurement results for further processing, e. g. using Excel
5. Save measurement for further processing if necessary

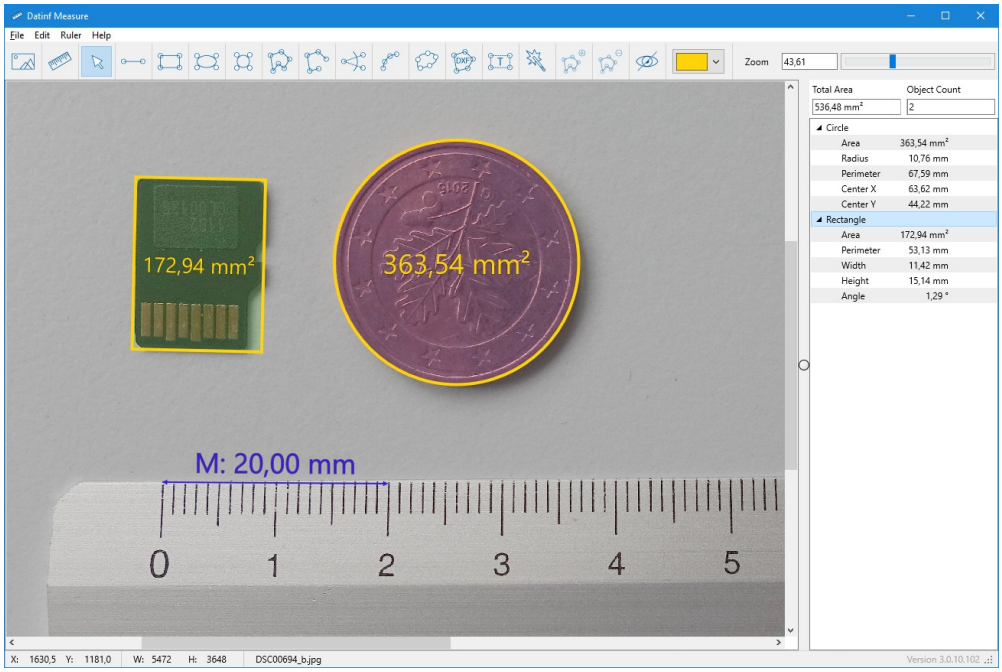

Fig. 1: Program window with various measured objects

Tools

Load images

The Load image tool  can be selected or the file selection dialog for image selection can be displayed from the menu under File → Load Image. Supported image types are JPG, BMP, PNG, TIF and PDF. The file menu can also be used to load an image from the clipboard.
In the case of file type PDF, a window opens in which for multi-page PDF files the corresponding page and additionally the quality for the internal PDF conversion are set. The quality setting DPI stands for **D**ots **P**er **I**nch. For letter size pages, a value of 240 DPI should provide sufficient accuracy for most measurements.

Graphical Scale Tool

The scale specification allows for the software to be calibrated for the scale of an image.
After calibration, object size and area specifications are indicated in the unit type as well as the scale.

Using the  tool, the scale can be graphically determined by the measurement of an object of known size. This measurement is made in the same way as the line measurement. After determining the graphical scale of the line, the dimensions will be shown in the scale window.

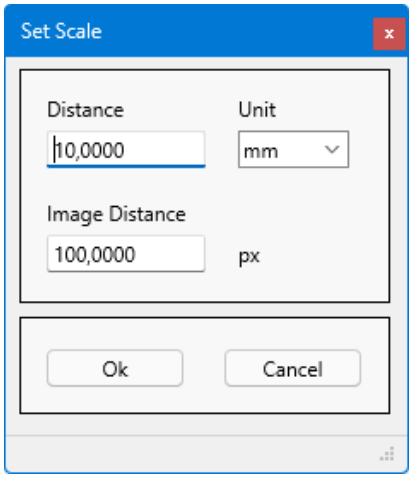

Fig. 2: Scale settings

If the scale is known, the information for the distance in the image and the real distance with unit can also be entered directly.

Selection Mode

By clicking on the mouse icon  the program will be set in the selection mode. In this mode objects can be selected and altered.

Property Editor

For each object, the most important parameters can be changed in the Property Editor. The Property editor is displayed after right-clicking on an object and selecting "Properties".

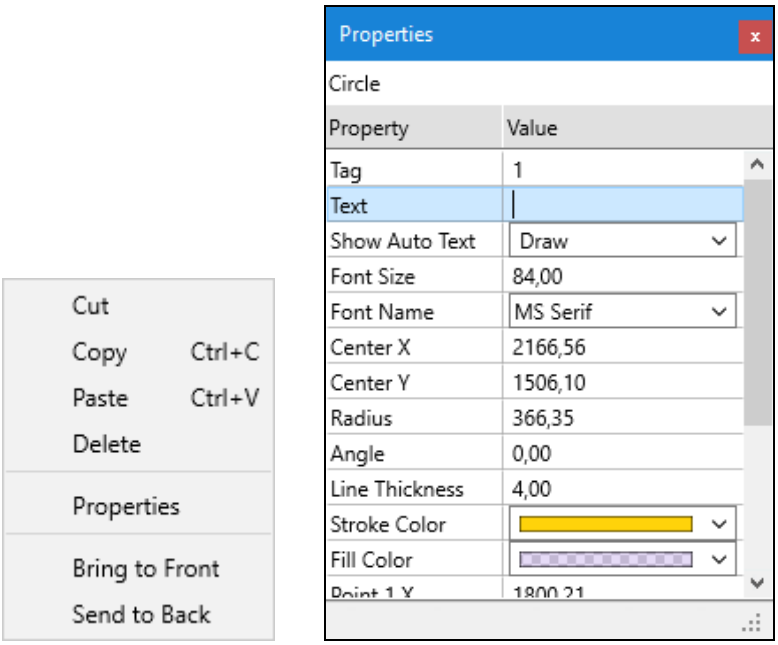

Fig. 3 and 4: Popup Window (Right-Click on Object) and Property Editor

Coordinates and lengths are specified in the unit that was selected when setting the scale. If necessary, the unit can be switched to pixels using the checkbox at the top.

Measuring and drawing tools

All tools that insert a measurement object will return to selection mode, unless the ''keep tool selected'' option is checked by holding down the Ctrl key when clicking a tool icon.

Line Tool

Select the Line tool  for length measurement. The start point of the line is determined with the first click and the end point with the second. Press and hold the Shift key for horizontal or vertical lines.

Rectangle Tool

Select the Rectangle tool  to measure a rectangle. The first click determines the first corner and the second click will determine the diagonal corner point.

Ellipse and Circle

Select the ellipse tool  or the circle tool  for the measurement of ellipses or circles. The first click will determine the first boundary point and the second click will determine the diagonal second boundary point.

Polygon and Polygonal Chain

Select the polygon tool  or the polygonal chain tool  for the measurement of more complex shapes or routes. Every click will determine another corner point and by double clicking the polygon can be closed.

Angle

For angle measurement using the angle tool  , three points must be set successively, the second point is the vertex of the angle.

Curve and Closed Curve

Select the spline tool  for the measurement of curves or bows. The first click will determine the starting point. The form of the smooth curve will be determined by the next clicks. A double click will finish the curve. For a closed curve use the tool  .

DXF Objects

The DXF tool  allows the loading of simple objects in DXF format (Bezier curves and various other more complex elements are currently not supported). The loaded DXF element can be moved and rotated. Thus, it is possible to determine whether an object in an image complies with the specifications of a DXF drawing.
Note: The DXF format is not fully supported.

Label Tool

The label tool  can be used to insert a text object. In addition, each object can be labeled using the text entry in the property editor.

Magic Wand

The magic wand  can be used to produce a polygon measurement from a group of image particles of the same color. The magic wand sensitivity can be adjusted by setting the Threshold value in the property editor.
The default threshold value can be found in the program settings.

Add and remove corners

The ''add''/''remove'' corners icons  and  allow for the adding or removing of extra corner points to/from a polygon, a polygonal chain or a curve.

Results Table

Measurement results will appear in the results table in order of measurement. Different values are shown depending on the type of object measured.

Right-clicking over the results table will open a pop-up menu

Fig. 5: Popup menu of result table

Selecting ''Properties'' will show the property editor.

Menu functions

Load Image

See Load Images on p. 6

Load Image from Clipboard

This function loads an image from the clipboard.

Create Image

If you want to use measure just for drawing, you can create a background image. The create image dialog allows to define the image width, height, and color.

Save Image

For saving, the properties of the displayed image are used. All Objects are integrated into this image file as non-editable objects. The image size is determined by the zoom settings.

Load Measurement

After selecting "Load measurement" a file dialog opens to select the measurement file. When loading, it is automatically detected whether an image is contained in the measurement file. Measurement files saved with older versions of the program (prior to version 3.0) cannot be opened.

Save Measurement

Save measurement saves all measurement objects and the scale.

Save Measurement and Image

Save Measurement and Image saves all measurement objects, the scale and the background image. Internally, the background image is converted into a jpeg image.

Please note that the measurement file can become very large if the image data is saved!

Export Data

The measurement results can be exported as a text file in CSV format (ASCII) or as an XML file for use with Excel.
In addition, it is possible to copy the results as tab delimited text to the clipboard.

Print

For printing, a print preview window opens.

Correct Distortion

To correct the perspective distortion, a rectangle of known dimensions must be included in the original image.
Steps for distortion correction

- Load image
- Menu: File → Correct Distortion
- Position the corners of the square to match the known rectangle
- Enter real width, height and unit, click Apply

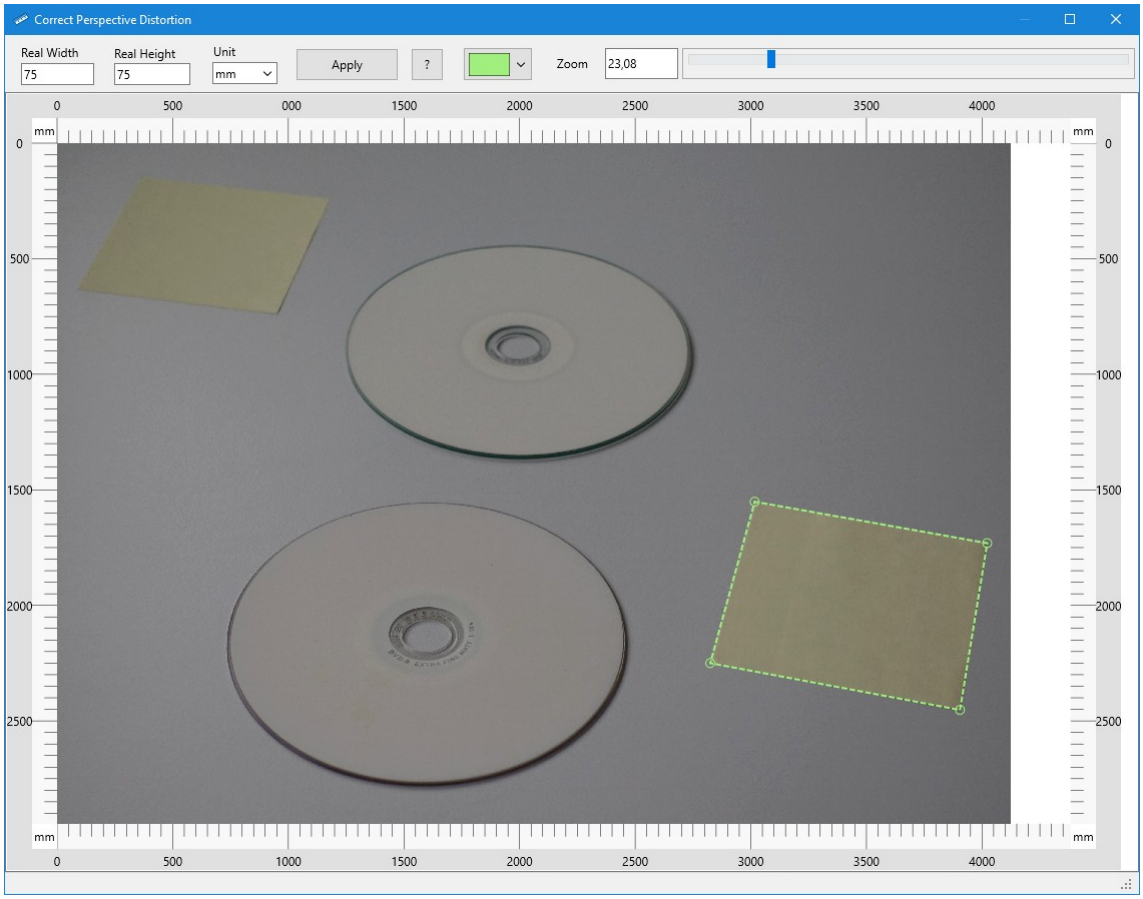

Fig. 6: Screenshot: Correct perspective distortion

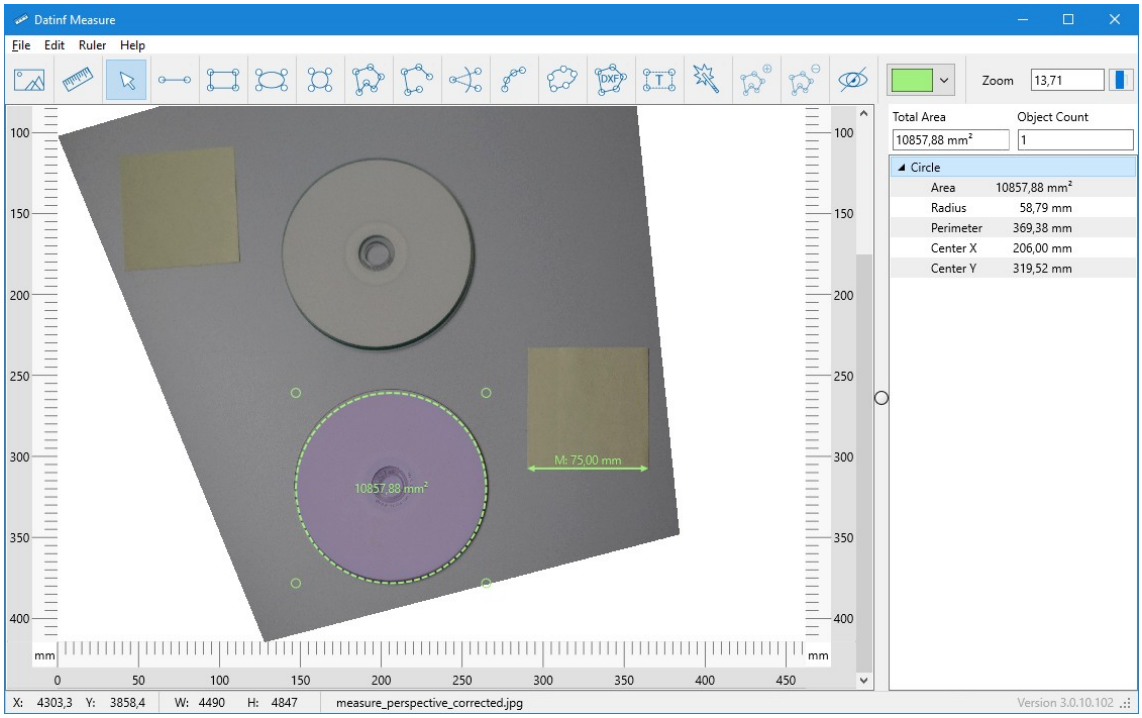

Fig. 7: Screenshot: Measure with distorted image

Settings

In addition to the default settings of the objects (stroke color, fill color, stroke width, font, font size), you will also find options for setting the decimal places, default wand sensitivity, marker size and update settings.
When the window is closed, these settings are saved as program default.

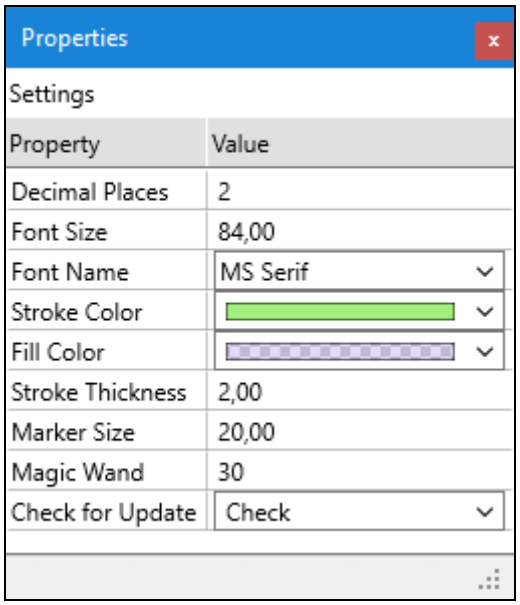

Fig. 8: Program settings

The Workspace

A measured object can be activated on the workspace by clicking on the object's edge. The activated object can then be enlarged or reduced using its corner points and can be moved by dragging and dropping.

More than one object can be selected by using the mouse to click, hold and drag over a number of desired measured objects. All objects within the rectangular selection will be then be activated.

Selected objects can then be copied and deleted (edit menu). Right clicking on an object will show the object popup window for object handling.
Right clicking on the workspace will open a popup menu with several default options.

The order of the measured objects on screen can also be altered. An object's position can be switched to either the foreground or the background under menu, ''Edit'' →" bring to front'' or "send to back".

Measurement error due to distortion

Measurement error due to visual distortion can be easily avoided by selecting the appropriate spacing and through use of the zoom. For easy control with Datinf® Measure the recording of more than one measurement of the same size for the purpose of a controlled measurement can be used.

Program control through call parameters

The start behavior of the software can be influenced by passing a control file as a program parameter. Example of a program call:

measure.exe "d:\data\mconfig.ini"

Example for control file mconfig.ini:

```
[Control]
ImageFile=d:\data\img3456.jpg
DIMFile=d:\data\img3456.dim
SavePath=d:\results
OutputImageFilenameFormat=measure_yyyymmdd_hhMMss_nnn.jpg
OutputDataFilenameFormat=measure_yyyymmdd_hhMMss_nnn.csv
ShowSaveButton=true
Maximized=false
```

Parameter description

Parameter	**Description**
ImageFile	File name of image file
DIMFile	File name of dim file
SavePath	Directory in which the image and result files are to be saved
OutputImageFilenameFormat	Format description for the automatically generated file name for saving the image, e.g. measure_yyyymmdd_hhMMss_nnn.jpg
OutputDataFilenameFormat	Format description for the automatically generated file name for saving the measurement results, e.g. measure_yyyymmdd_hhMMss_nnn.csv;
ShowSaveButton	Show save button; save files as configured under SavePath, OutputImage-FilenameFormat and OutputDataFilename-Format (allowed values: 0 and 1 for false and true)
Maximized	Start program maximized (allowed values: 0 and 1 for false and true)

FAQ – Frequently Asked Questions

What hardware requirements are needed?

The software runs on standard PCs with the latest versions of Windows from Windows 7. A recent computer system and at least 2 GB of memory is recommended. The main program windows are scalable.

Are my images suitable for measurement?

A pre-requisite for a measurement is to choose a distortion-free image. Ideally, images with a known scale, or with a characteristic of known length within the image which can determine the graphical scale should be selected.
Currently, only images with a maximum page length of 8192 pixels can be loaded.

Which image formats are supported?

In the current program version, the most common image formats, for example,
- BMP (Windows/OS2 bitmap)
- JPG (JPEG)
- PNG (Portable Network Graphic)
- TIF (Tagged Image File Format)

are supported.
In addition, it is possible to import individual pages from PDF files.