



**PATTERN EXPERT**  
Solutions for Pattern Recognition

**Program Information**

**PATTERN EXPERT**  
*legeo*

[www.pattern-expert.com](http://www.pattern-expert.com)



The software PATTERN EXPERT legeo is designed to solve any kind of task in **reading two dimensional codes from digital images**. Using legeo – Latin for „I am reading“ – allows you e.g. to set up highly efficient Data Matrix readers for Automatic Identification Systems.

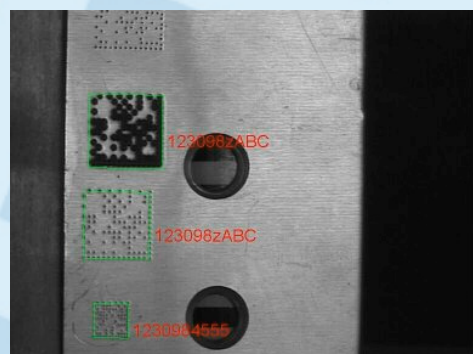
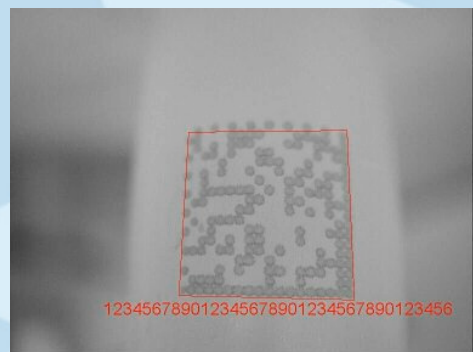
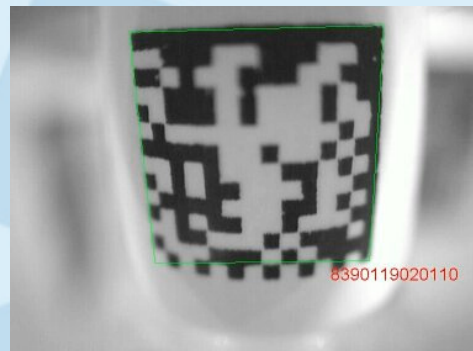
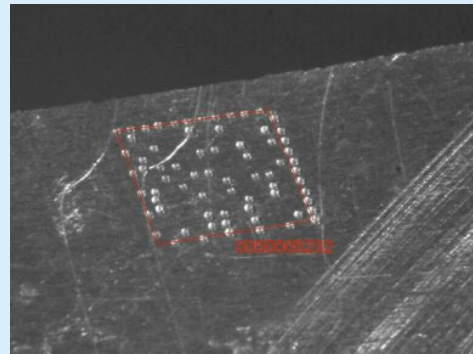
PATTERN EXPERT legeo is particularly suitable for industrial uses, like e.g. in pharmaceutical, electrical or automobile industries. One outstanding area of application is the use in complete logistic chains which are subject to some quality management system.

Currently, PATTERN EXPERT legeo is able to read **Data Matrix** resp. **Dot Matrix Codes** of type ECC200, as well as **PDF417 Codes**.

The Data Matrix code has been specified by AIM, the Association for Automatic Identification and Data Capture Technologies, and can be used freely and without any fee. Up to 2335 alphanumeric characters can be encoded. Included in the Data Matrix specification are powerful error correction algorithms which tolerate up to 25% incorrect data. PATTERN EXPERT legeo uses this feature to correct errors as far as possible and also to ensure 100% correct output.

The AIM specified code PDF417 can also be used freely. One PDF417 symbol can contain up to 1850 alphanumeric characters or up to 1108 bytes of binary data. Error detection and error correction algorithms are also included in this code. The level of error correction capability can be chosen by the user.

## Examples DataMatrix



PATTERN EXPERT legeo uses intelligent image processing algorithms in order to achieve its excellent reading performance. While keeping operation simple for the user, it efficiently and reliably deals with most difficult reading conditions:

- ◆ heavily curved codes (e.g. on a curved surface of some workpiece)
- ◆ small code surrounded by many other objects (e.g. due to large separation of camera and code)
- ◆ strong distortion due to perspective
- ◆ bad and non-uniform illumination
- ◆ shining surfaces
- ◆ poor contrast
- ◆ blur
- ◆ arbitrarily rotated or mirrored codes

Since PATTERN EXPERT legeo usually does not require any additional lighting, it is particularly suitable to be used at locations where a strong extra light source is prohibited by security reasons (e.g. by the danger of dazzling forklift or crane drivers).

The software package consists of two programs: „legeo Master System“ and „legeo Runtime System“. Both programs use one or more modules for the different types of code to be read, depending on the customer's choice.

The master program is used to adjust the system. Here, you can select the type(s) of code to be read, the camera, the desired trigger (e.g. a photoelectric barrier), and

the output device (e.g. the serial port, a remote computer inside the network, or some customer specific output device). Also, the master program can be used to test the system.

The master program enables the user to configure and operate the software in an extremely simple manner.

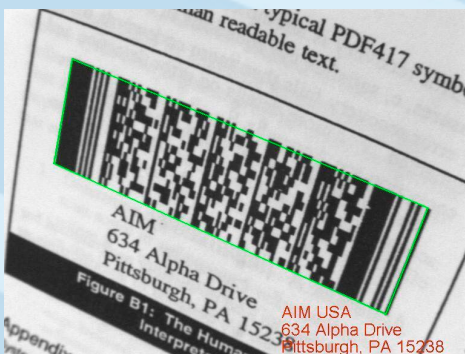
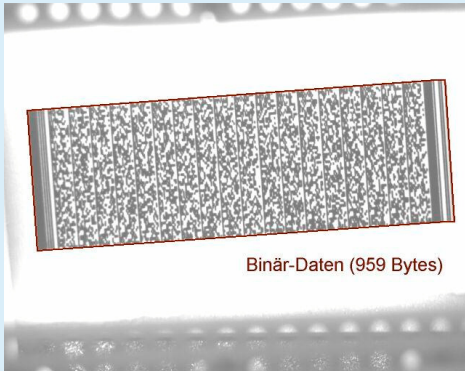
When the configuration is done and the system works as desired, the runtime program can be invoked. This is the working system which performs the reading process according to the selected configuration and outputs the results. Now the external devices – monitor, keyboard and mouse – are no longer necessary and can be disconnected.



As a standard solution, PATTERN EXPERT offers a system which additionally includes a compact industry PC („LVmPC“) and a progressive scan camera from Leutron Vision. The standard system is shown in the image.

Individual solutions for special purposes, e.g. special camera-lense combinations for reading tasks at large distances, special trigger mechanisms or special output formats, can be realized on request.

## Examples PDF417



## Technical Features:

- ◆ Currently supported codes: DataMatrix ECC200 and PDF 417.
- ◆ Dot Matrix, e.g. for embossed codes.
- ◆ All symbol sizes.
- ◆ Reading rate: up to 10 per second (depending on the images' contents).
- ◆ Arbitrary number of codes of different types legible in one image.
- ◆ Self adapting algorithms for image preprocessing and code reading, which continuously optimize the reading performance.
- ◆ Recommended minimal resolution: 4 pixels per symbol element.
- ◆ Image input and result output by flexible interfaces (individual solutions on request).
- ◆ Software trigger: the reading process starts automatically, when a new object comes into view.
- ◆ Support of all Leutron Vision framegrabbers, firewire (IEEE1394) and others.

**Further information and prices on inquiry. Please, order a trial version!**

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