

overview

commands description of vision systems

Welcome to the world of  
**vcwin**®  
the graphic user interface  
for machine vision systems  
made by Vision & Control



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### 1. Commands

#### Image analysis commands

| Command                               | description  |
|---------------------------------------|--|
| Grab image                            | grabs an image, sends image content to image page  |
| Shutter                               | electronic aperture for setting the exposure time  |
| Asynchronous flash                    | trigger-controlled image acquisition with flash  |
| Video mode                            | switches between display of live image and memory image  |
| Delete image                          | deletes either image memory, graphic or overlay memory   |
| Display                               | sets image page for input, processing & display  |
| Image preprocessing                   | uses image filters   |
| Locate point                          | finds a point  |
| Locate line                           | finds a line   |
| Locate circle                         | finds a circle   |
| Locate contour                        | finds a contour  |
| Blob analysis                         | determination of flat areas of equal grey value  |
| Search pattern                        | command for pattern recognition  |
| 360° pattern search                   | command for localisation of a pattern, rotation and position will be determined  |
| Save pattern                          | command for recognising and saving a pattern   |
| Advanced pattern search               | command for recognising and determining the rotational position of a pattern   |
| Rotary angle                          | command for determining the rotational position of an object   |
| Rotation based on moments             | command for fast determining the position and the rotary angle of an object  |
| Image transformation                  | transformation of image content, e.g. from an arc to a rectangle   |
| Colour blob analysis <sup>1)</sup>    | find from connected objects of certain colour gamut's  |
| Colour test <sup>1)</sup>             | command for determining and evaluation of colour variation   |
| Colour binarization <sup>1)</sup>     | black and white binarization of coloured objects with individual evaluation of the individual colour of channels       |
| Colour conversion <sup>1)</sup>       | conversion of coloured objects into a grey value image with individual evaluation of the individual colour of channels |
| Linescancamera                        | command for integrating the line scan camera's multiple lines into an image  |
| Rotate image                          | command for rotating an image section around a user-defined angle  |
| <sup>1)</sup> only for colour systems |  |

#### Inspection commands

| Command                    | description  |
|----------------------------|--|
| Test grey value            | determines the average grey value in a location window   |
| Test brightness percentage | determines the percentage of brighter pixels in an image window  |
| Count pixels               | command for enumerating pixels in a test window  |
| Brightness offset          | deviation of grey value of a test object in a test window and brightness tracking of all further commands      |
| Image difference           | grey value information of a reference image is subtracted from the image and the result saved in an image page |
| Inspect surface            | command for inspecting surfaces  |
| Transition at line         | command for counting the edges along a detection beam  |

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| Command                    | description  |
|----------------------------|--|
| Locate edges on circle     | command for the edges on an arc  |
| Focus                      | determines the focus value as a measure of sharpness                           |
| Search and identify object | command for searching and identifying objects                                  |
| Teach in objects           | command for teaching in objects  |
| Set character set          | teaches in individual characters and character sets                            |
| Read character             | inspection command for reading plain text characters                           |
| Data matrix code           | command for reading data matrix code, according to ECC200                      |
| Mask check                 | command for testing complex structures for completeness and freedom from error |

### System calibration

| Command                     | description  |
|-----------------------------|--|
| Geometry sets               | command for saving or loading of geometry structures                     |
| Calibrate                   | command for calibrating the Machine Vision system                        |
| White balance <sup>1)</sup> | command for configuring the white balance from the Machine Vision system |
| 1) only for colour systems  |  |

### Measurement evaluation

| Command                    | description  |
|----------------------------|--|
| Define point               | definition and calculation of new points in the test program |
| Define line                | calculation and definition of lines                          |
| Define circle              | calculation and definition of circles                        |
| Best fit line              | calculation of best fit line from points or contours         |
| Best fit circle            | calculation of best fit circle from points or contours       |
| C of G of Contour          | calculation centre of gravity and surface area of a contour  |
| Extreme points of contour  | calculation of extreme points of a contour                   |
| Contour distance           | calculation of distance of contour to geometry elements      |
| Contour curvature analysis | evaluation of the curvature of a contour                     |
| Contour angle              | evaluation of the angle of the a contour                     |
| Distance                   | determination of the distance between two geometry variables |
| Angle                      | angle calculation from geometry structure variables          |
| Combine results            | command for mathematical operations of results and values    |

### Documentation, selection and statistics

| Command               | description  |
|-----------------------|--|
| Evaluate string       | comparison and conversion of strings                   |
| Superimpose           | superimposes variables from the geometry structure     |
| Evaluate result       | command for logical combination and sending of results |
| Send measuring values | sending of measuring values (results and strings)      |
| Send image            | sending of images from camera to host computer         |
| False colour output   | command for coloured visualisation grey value areas    |

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### Process control command

| Command             | description   |
|---------------------|---|
| Line I/O            | communication of the inspection system with the process environment via digital I/Os                        |
| Port I/O            | communication of the inspection system with the process environment via digital I/Os                        |
| Gateway field bus   | configuration of data transfer over the gateway field bus   |
| Port control        | definition of branch commands to markers or subroutines depending on input signals from the hardware inputs |
| Data transfer       | communication with other devices using various protocols  |
| Process module      | command for connecting external module for I/O extension and profibus communication                         |
| Robot communication | command for the communication with robots   |

### Test program utilities

| Command                   | description   |
|---------------------------|---|
| Program control           | setting program branches and markers  |
| Indexed branch            | inserting multiple branches (jumps and subroutines) into the test program   |
| Stopwatch                 | starts an internal stopwatch with a comparison function   |
| Wait                      | command for inserting a pause   |
| Counter                   | command for inserting counting command  |
| System time               | saves the system time in a result variable  |
| Copy geometry variables   | copy geometry variables via a counter index   |
| Coordinate transformation | command for conversion from robot to camera coordinates   |
| Direct code input         | command for inserting user-created or new commands that the camera supports   |
| External storage device   | command for selecting a storage device  |
| Utilities for vicosys     | command for providing the following functions for use with the vicosys multi-camera system: <ul style="list-style-type: none"> <li>■ multiscreen mode</li> <li>■ set camera gain</li> <li>■ sort cameras</li> <li>■ set resolution</li> </ul> |

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### **2. Version**

Version number: 2.1.0

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