

# weQube – the Smart Camera

## Unbeatable in Two Dimensions



weQube is the Smart Camera which unites innumerable features into a single, high-performance platform. With its intelligent, modular software concept, weQube adapts itself to your situation whenever required and is the ideal solution for meeting all your needs: Whether you want to use weQube for image processing, for detecting letters and symbols or for scanning 1D/2D codes – just select the required software package. Try it yourself and find out how your processes can be decisively simplified.

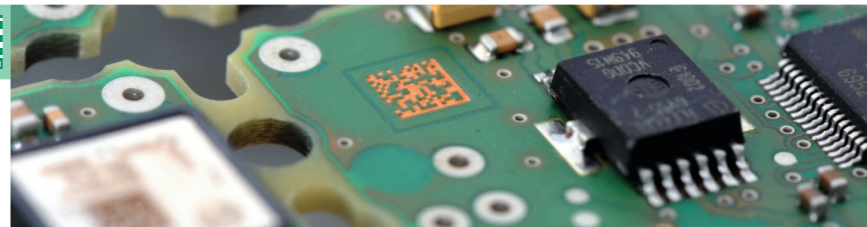
## The Software Packages



### weQubeVision Standard and Pattern Matching

weQubeVision combines any number of image processing functions in one application. At high speed: A separate communication processor ensures rapid image processing even when using Industrial Ethernet.

There are two versions of weQubeVision: the standard version and a variant with pattern matching as an additional function. In addition to all common image processing functions, this offers the option of recognizing objects regardless of their position and rotational orientation within the image, and of using other image processing functions based this option.



### weQubeDecode

The scanning package transforms the weQube into a 1D/2D code scanner which is even able to reliably decipher damaged and poorly legible codes thanks to integrated code reconstruction.

### weQubeOCR

weQubeOCR reads predefined OCR-A and OCR-B fonts over several lines in a single scanning operation. The teach-in function provides you with the additional option of teaching in new fonts in order to adapt weQubeOCR ideally to your application.



### weQubeUp

Tomorrow as well, weQube will be well aligned to your requirements. weQube's scope of functions can be expanded with the help of license-based upgrades.

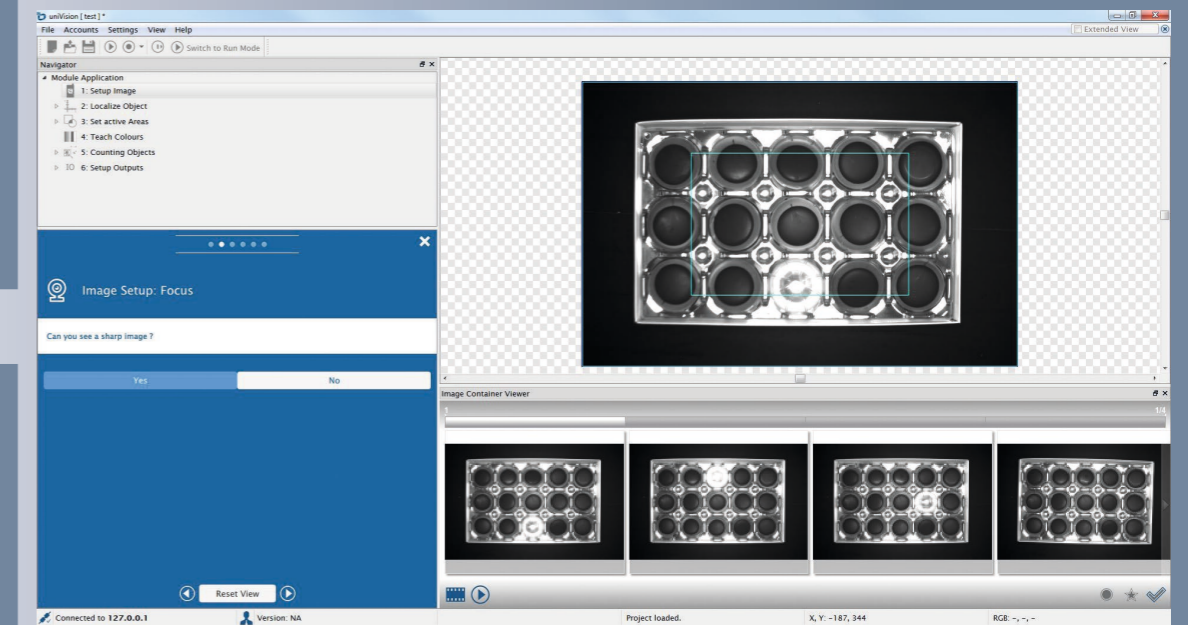


## Intelligent Image Processing for Beginners!

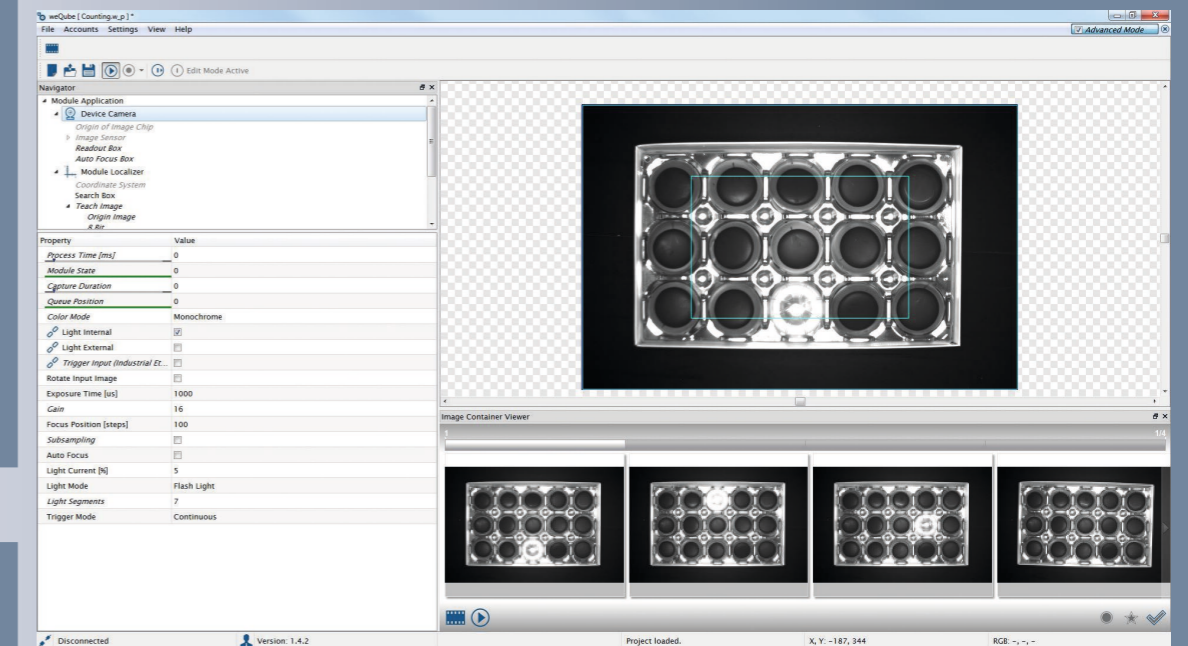


## Intelligent Image Processing for Experts!

uniVision software permits simple and intuitive implementation of image processing applications. The integrated uniVision wizard accompanies you through each individual step. Detailed information displayed as text provides exact descriptions of all possible options. And thus the comprehensive range of performance features made available by weQube is quickly opened up to all users – from beginners to experts.



Fast, simple and intuitive: the most important setting options for perfect image processing.



Extra setting options for professional image processing are included for experts.



### A Single Software for All Applications

Here you'll find a detailed overview of all available weQube software functions. Depending on which license you purchase, either a selection of functions or all functions are made available to you.

#### Software – the Advantages

- Wizard-guided user interface
- Multilingual operation.
- Individually adaptable user interface.
- Configurable parameters
- Diagnostic capabilities
- Individual results can be combined with each other.



### Localizer



Objects can be tracked and reliably detected. The following image processing functions are set up on the basis of this coordinate system.

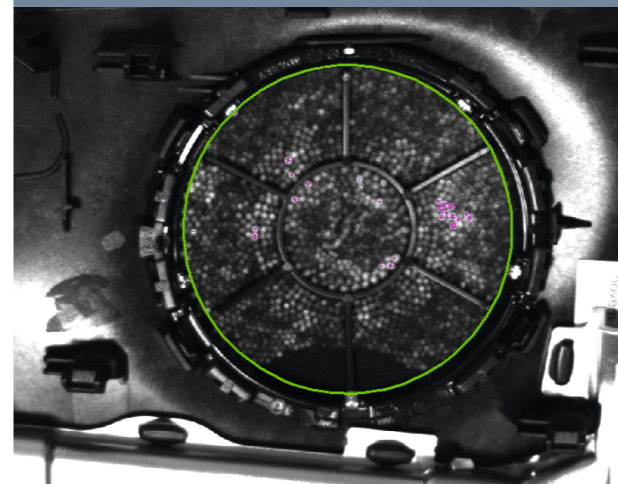
The localizer module allows for translatory tracking. The coordinate system's X and Y positions are adjusted to this end, but not its rotary position. And thus the localizer is suitable for objects for which rotary position is irrelevant.

Furthermore, an easy to detect feature which stands out from the rest of the image (especially high-contrast area, special shape, edge or corner) is helpful for successful tracking.

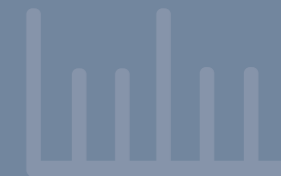
Note: In addition to translatory tracking, rotary tracking is also possible. This can be set up in the coordinate system module.



### Measure



Specify and perform dimensional conformance inspections of distances, lengths, diameters or angles. Lines and circles are found with the help of search rays. Distances and angles can be measured between detected lines or points.



### 1D/2D code and OCR module

#### Code 1D

All common 1D codes can be read with the 1D code module. The following 1D codes can be read: Code39, Code128, 2/5 Industrial, 2/5 Interleaved, Codabar, EAN-13, EAN-13 Add-On 2, EAN13 Add-On 5, EAN-8, EAN-8 Add-On 2, EAN-8 Add-On 5, UPC-A, UPC-A Add-On 2, UPC-A Add-On 5, UPC-E, UPC-E Add-On 2, UPC-E Add-On 5, Code 93, MSI, PharmaCode, RSS-14, RSS-14 Truncated, RSS-14 Stacked, RSS-14 Stacked Omnidir, RSS Limited, RSS Expanded, RSS Expanded Stacked.

#### Code 2D

All common 2D codes can be read with the 2D code module. The following 2D codes can be read: Data Matrix ECC 200, QR Code, PDF417

#### OCR

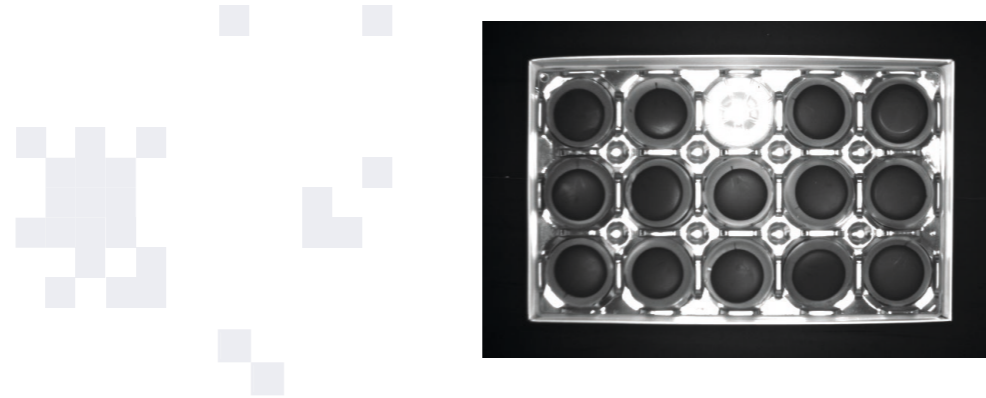
Read letters, numbers and symbols.





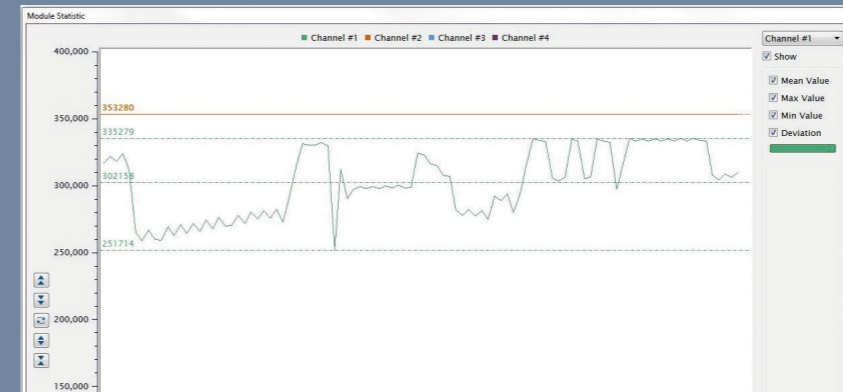
## Cluster

Detect, count or sort objects reliably in order to check for presence and correct quantity.



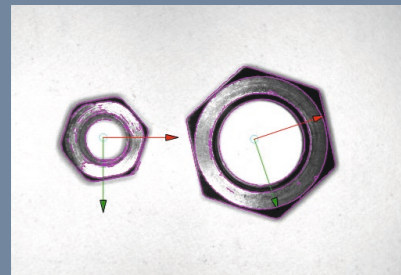
## Statistics

The application can be fine-tuned on the basis of statistical sensor data.



## Pattern Matching

weQube with pattern matching as an additional function recognizes objects regardless of their position and rotational orientation within the image (X, Y and 360° tracking).



## Other Functions

### Filter



### Image Comparison



### Device Indicator



### Coordinate System



### Region



### Threshold



### Match Code

2≠1

### Communication



### Mathematical

+ -

### Logic



### Device IO Unit

IO

### Device Display



### Numeric Comparison

2 < 1  
> 1  
!=

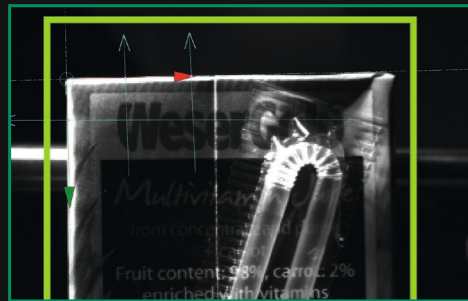
### Threshold HSV



Detailed information regarding other functions provided by uniVision software can be accessed at [www.wenglor.com/VisionWorld](http://www.wenglor.com/VisionWorld) in the "Smart Cameras" tab.



# weQube: a World of Applications.



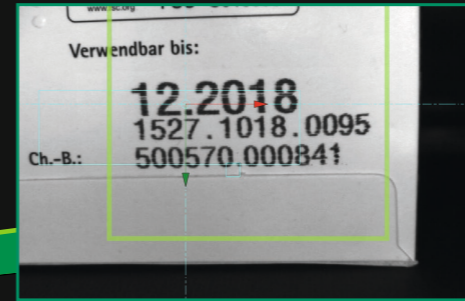
### Position Detection

weQubeVision checks the position of a drinking straw.



### Fill-Level Monitoring

The weQube Smart Camera checks for the presence of the bottle cap, as well as for correct bottle fill-level, with a single inspection operation.



### Character Recognition

weQubeOCR reads predefined or taught in fonts over several lines in a single scanning operation.



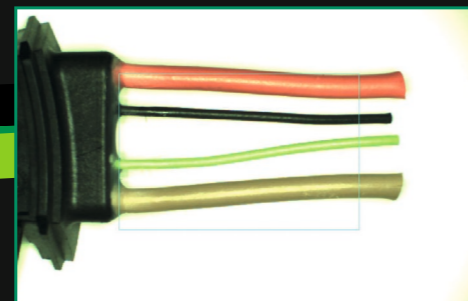
### Label Inspection

WeQubeVision with pattern matching determines whether or not a label is present and correctly positioned.



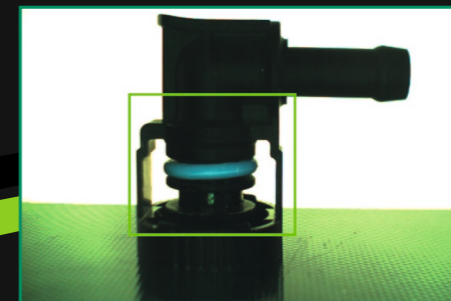
### Barcode Reading

weQubeDecode reads the barcode from a product.



### Color Detection

weQubeVision checks the color of objects.



### Position Monitoring

The weQube Smart Camera checks for correct positioning of a seal. During the same work step, the seal's color is checked and a data matrix code is read.



### Dimensional Conformance Inspection

weQubeVision checks objects for dimensional conformance.

Reference videos for these applications can be found in the Solutions area of our VisionWorld.



## Platform-Independent **Web Server**



### Controlling weQube from Your Mobile Office

The web server is suitable for all formats and terminal devices and makes it possible for you to enter numerous settings – regardless of where you are:

- Display of live images.
- Subsequent teach-in of six freely selectable parameters.
- Save and load the sensor configuration.
- Define the start-up project.
- Switch amongst different projects.
- Create Teach<sup>+</sup> files by simply clicking a button.
- Change network settings.
- Change password.

## Lima Protocol Based on XML

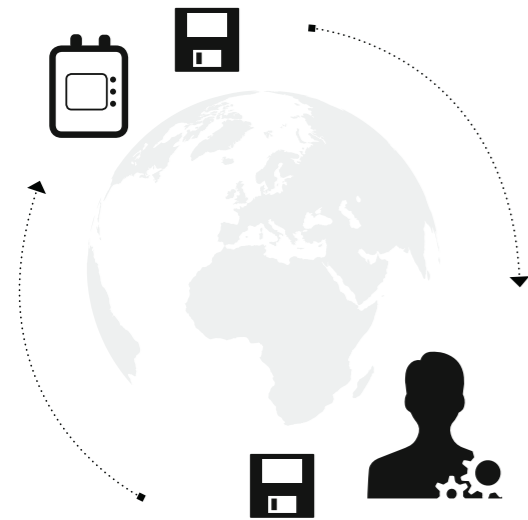
```
<LIMA CMD="Project_SetNode" DIR="Request"PATH="Module Application.  
Device Camera.Exposure Time [us]"VALUE="2000" />
```

### Maximized Integration Freedom

In particular where the visualization of your application is concerned, we place great importance on assuring that you can see exactly what you want to. We've developed an open protocol based on XML for the purpose of individualized integration into your system, whose constituents can be incorporated into your system individually as modules or all together – without losing track of things.

- Suitable graphic representation of weQube data without excessive effort.
- Targeted selection from a maximized scope of functions.
- Easy integration into existing systems thanks to XML-based interface protocol.

# LIMA XML



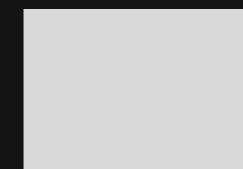
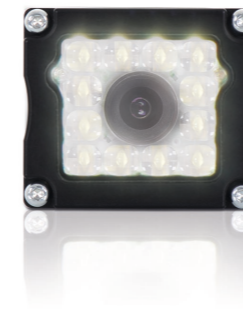
## Teach<sup>+</sup> – the Advantages

- Fast project adaptation anywhere.
- No direct access to the customer network.
- Duplication of settings.
- Plug & play for sensor replacement without a laptop.

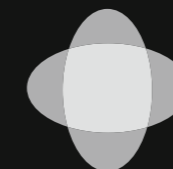
The **protective housing** for weQube with autofocus from wenglor's InoxSens product range permits use in hygienically sensitive industrial environments. The laser-welded housing made of noncorrosive V4A stainless steel fulfills the demanding requirements specified for **IP69K protection**. The product design ensures ideal draining of liquids from the surface.

## Teach<sup>+</sup> – the Mode of Operation

1. Save and transmit project data by simply clicking a button.
2. Send file to customer or wenglor support department.
3. Process the project data.
4. Return and upload updated data by clicking a button.



weQube Luminous Field



Conventional Luminous Field

## weQube with Autofocus

- 12 high-power LEDs (white, red or infrared light).
- LED ranges can be controlled individually.
- Special optics generate a unique luminous field.
- No loss of brightness at the edge of the image thanks to optimized illumination.

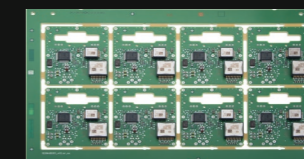


Image recording without C mount lens (9 mm focal distance)



Image recording with C mount lens (35 mm focal distance)

## weQube with C mount threaded connection

The new weQube housing with C mount threaded connection is compatible with all commercially available camera lenses based on the C mount standard. The great diversity of usable optics permits precise adaptation of the image to the respective application – for flexible ranges of vision from greater distances as well. wenglor offers lenses with various focal distances.

1

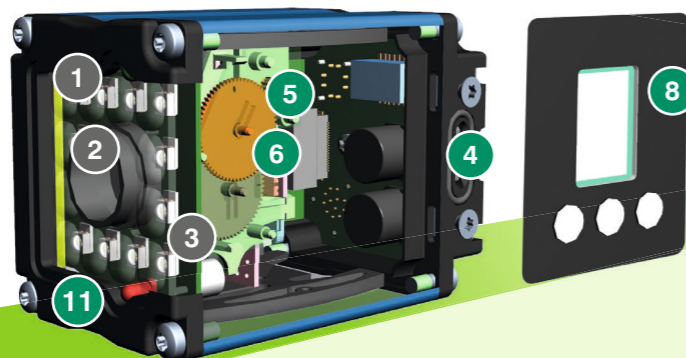
**Integrated Autofocus** gets your application into focus automatically and saves you the trouble of tedious manual focusing.

2

Interchangeable **protective discs** with integrated polarization filter protect the lens on the one hand, and they provide for perfectly aligned light on the other hand. The optional protective housing (IP69K) provides additional protection.

3

No need for external illumination: The **12 high-power LEDs** (red, white or infrared light) make additional light sources superfluous in most cases.



4

Data can be quickly and easily stored to the device and transmitted with the help of the interchangeable **micro SD card**.

11

**Red and green LEDs** provide for visual feedback concerning 4-place readable process data.

8

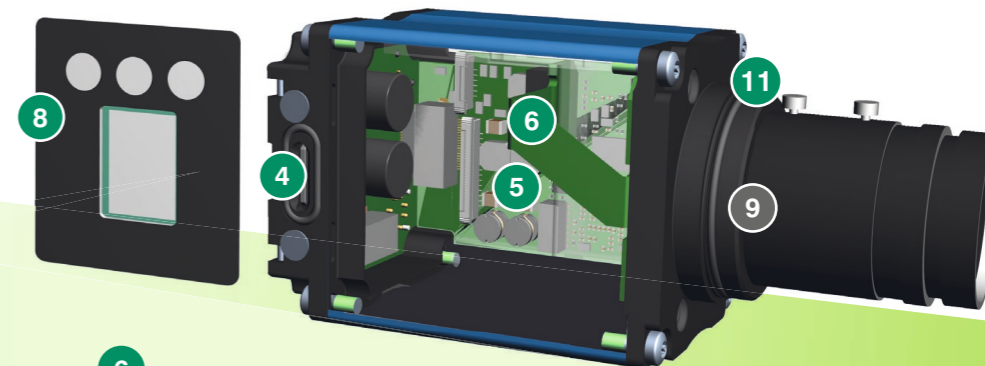
The graphic **OLED display** ensures simple and intuitive operation.

5

The high-performance processors included with **wenglor-MultiCore technology** permit fast and reliable management of all image processing tasks.

9

The **weQube housing with C mount threaded connection** is compatible with all commercially available camera lenses based on the C mount standard, and permits **precise adaptation of the image excerpt** to the respective application – for flexible ranges of vision from greater distances as well.



6

The two **CMOS image chip versions**, namely **color** and **monochrome**, make differentiation possible for special applications in color or gray tone ranges.

12

Rugged aluminum housing with **IP67** protection.

10

Numerous interfaces assure trouble-free communication within the Industry 4.0 setting: can be switched to **Ethernet**, **PROFINET** or **EtherNet/IP™**, **RS-232**, **FTP server** etc.

7

**6 free inputs and outputs**, including **1 rotary encoder input**, provide for maximum flexibility for integration into your system.

