



ev[o]VIU

VISION AND INSPECTION UNIT

VIU:VISION



LEVEL 1 Headless platform

- Smart camera for inhouse projects
- Script solution to control hardware components
- Free programming of machining algorithms
- System includes simple pre-processing functions

LEVEL 2 API & customized project

- Launch of VISIONWEB to configure and control evoVIU via web app from any device
- Launch of VISIONAPI to control evoVIU via HTTP rest commands
- Costumized processing routines and workflows for business partners
- Introduction of a simple user management

LEVEL 3 Scriptable machine vision

- Launch of custom workflows to control and create image processing directly in VISIONWEB
- Configurable endpoint communication for various protocol interfaces
- Optimized installation management
- Optimized user management

LEVEL 4 Workflow-based solution

- Complete system control via evoVIU VISIONWEB and VISIONAPI
- Dynamic image processing workflows
- Image processing library
- evoVIU Manager





AUTOMOTIVE INDUSTRY

- Optical inline testing
- DPM recognition
- Crack detection
- Weld seam inspection
- Fingerprint



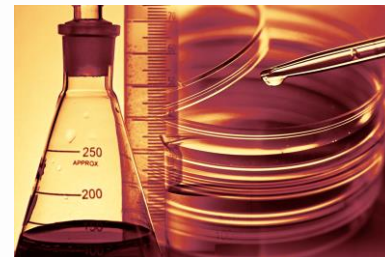
AGRICULTURE & FOOD INDUSTRY

- Deformation check
- Ripeness & Color change
- Pest detection
- Foreign body detection
- Fingerprint



LUMBER INDUSTRY

- Pattern recognition
- Branch detection
- Fungus detection
- Insect detection
- Fingerprint



RESEARCH & SCIENCE

- Research project
- Educational project



VIU:HARDWARE

 Overview of all hardware components

OVERVIEW

VIU:INTERFACE

- ☐ Various system interfaces
- ☐ Various protocols

VIU:BASE

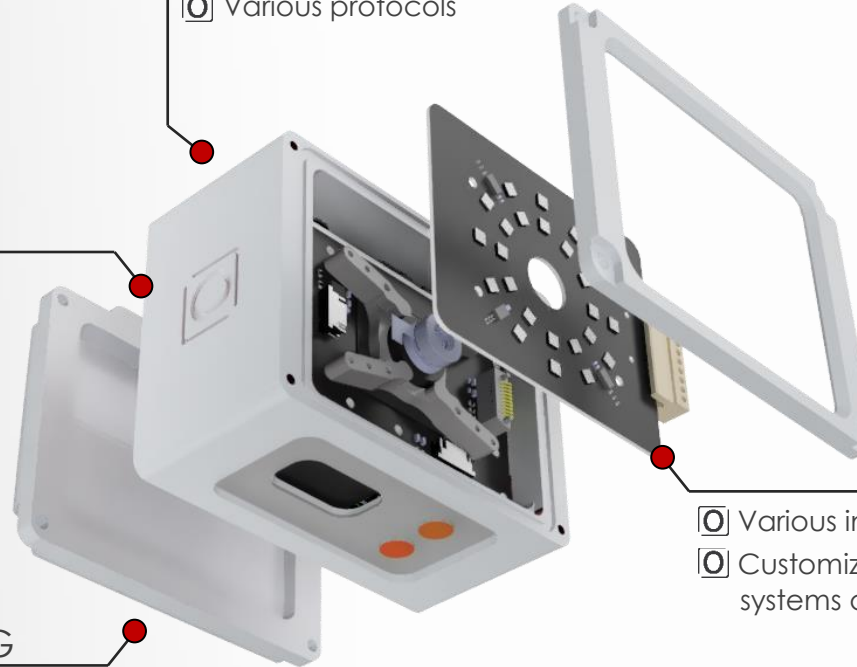
- ☐ Smart Camera - Basic
- ☐ Various camera sensors
- ☐ Different lense options

VIU:LIGHT

- ☐ Various internal and external light modules
- ☐ Customized integration of various lighting systems and sensors

VIU:MOUNTING

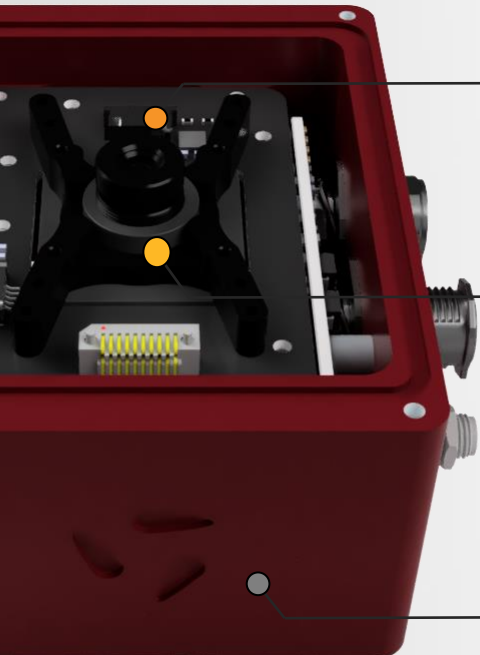
- ☐ Customized mounting systems for individual integration



Dimension: 92 x 71 x 60 mm
Protection class: IP67
Weight: 560 g
Material: Aluminium



VIU:BASE



Liquid-Lens Controlable up to 255 steps / High shock resistance

2.6 mm	3.8 mm	4.7 mm	7.5 mm	9.6 mm	15.8 mm
F: 2.5 CRA: 17° 4mm - ∞	F: 2.2 CRA: 32,4° 5cm - ∞	F: 2 CRA: 34,4° 5cm - ∞	F: 2.9 CRA: 16.5° 5cm - ∞	F: 3.7 CRA: 12.5° 5cm - ∞	F: 4 CRA: 5.5° 5cm - ∞

Image sensor

13 MP	AR1335 ON semiconductor	5 MP	AR0521 ON semiconductor
Pixelsize: 1,1 x 1,1 µm Image circle: 1/3" Shutter: Rolling shutter Frame Rate: up to 30 fps Mono/Color: Color Exposure time: 68 µs to 2.3 s		Pixelsize: 2,2 x 2,2 µm Image circle: 1/2.5" Shutter: Rolling shutter Frame Rate: up to 60 fps Mono/Color: Color Exposure time: 43 µs to 1.4 s	

System memory

16GB

16 GB eMMC system memory
Up to 64GB on request

Processor interface

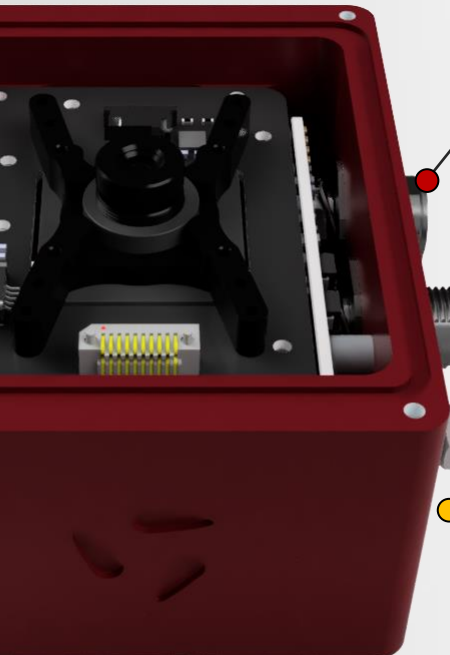
iMX8M

NXP iMX8M – 1.5Ghz Quad Core with Vivante GC7000 GPU
4GB RAM



LOOK HOW
IT WORKS

VIU:INTERFACE



Gbit-Ethernet

M12-X-coded | Standard

Power supply & Docker interface

IO-Link

M12-A-5pin
9 – 36VDC
1x Trigger input
2x Digital output
IO-Link-driver

Ext. light

M12-A- 5pin
9 – 36VDC
1x Trigger input
2x Digital output
High-current

GPIO

M12-A-12pin
9 – 36VDC
2x Trigger input
4x Digital output
4x Analog IN/OUT

Profinet

Custom

Radio interface

WiFi

2.4 & 5GHz
802.11 ac/a/b/g/n

5G

VIU:LIGHT



it's possible!
evopro

Loxi 1

Direct lighting
Internal

Color:

R G B A W

Keyfacts:

- Diffuse light module
- Individual settings and brightness for every LED
- Up to 8 bright levels
- TOF-depth-sensor

Use cases:

- Organic surfaces
- Barcode
- Labels
- Field-View

Loxi 2

Diffuse lighting
Internal

Color:

R G B A W

Keyfacts:

- Diffuse light module
- Individual settings and brightness for every LED
- Up to 4 bright levels

Use cases:

- Metal surfaces
- Labels, Barcodes

Loxi 3

Diffuse lighting
External

Color:

R G B A W

Keyfacts:

- Diffuse light module
- Individual settings and brightness for every LED
- Up to 8 bright levels

Use cases:

- Metal surfaces
- Labels, Barcodes

eCL

Direct lighting
External

Color:

R G B W R

Keyfacts:

- Direct light module
- Individual settings and brightness for every LED in every color
- Image Fusion functionality

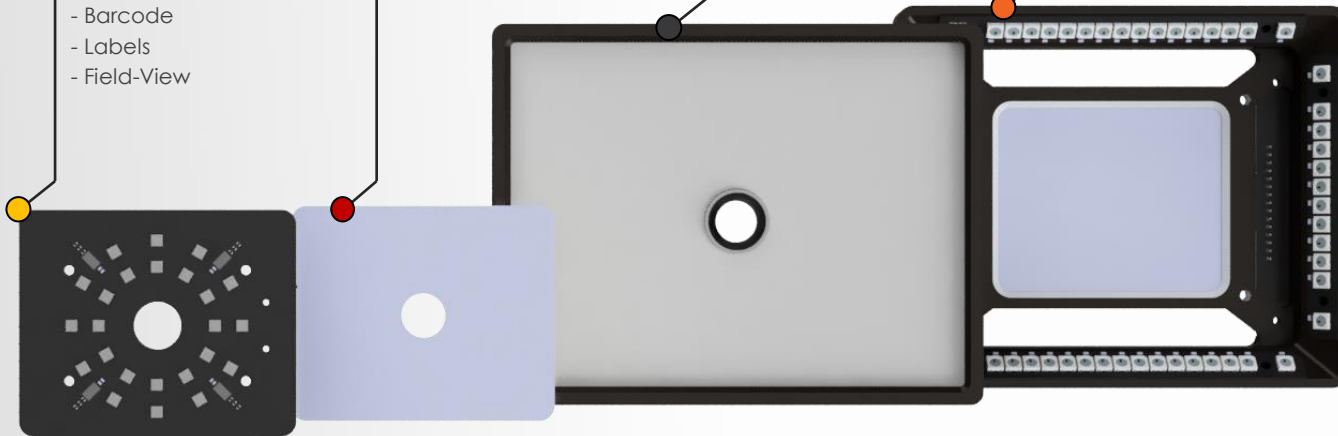
Use cases:

- 3D shapes / braille recognition
- Embossed characters and shapes

CUSTOM

You need a specific light module or a different light scheme to solve the task?

Don't hesitate to contact us. We are delighted to help you with customized light modules in a short time.

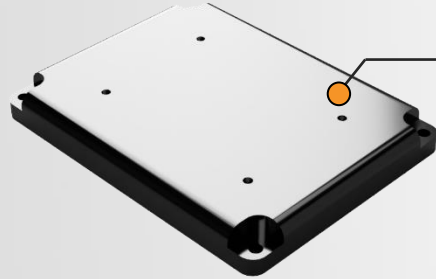


VIU:MOUNTING



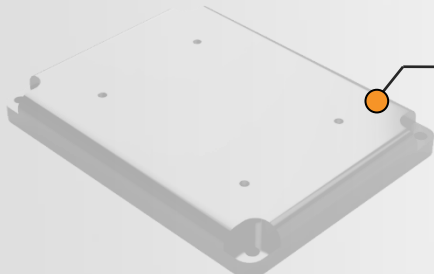
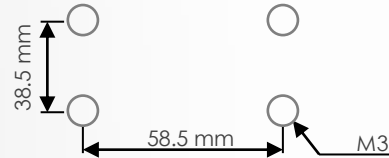
SIDE-DOCKER

Compatible with the mounting system of the company Springer GmbH



TOP-DOCKER

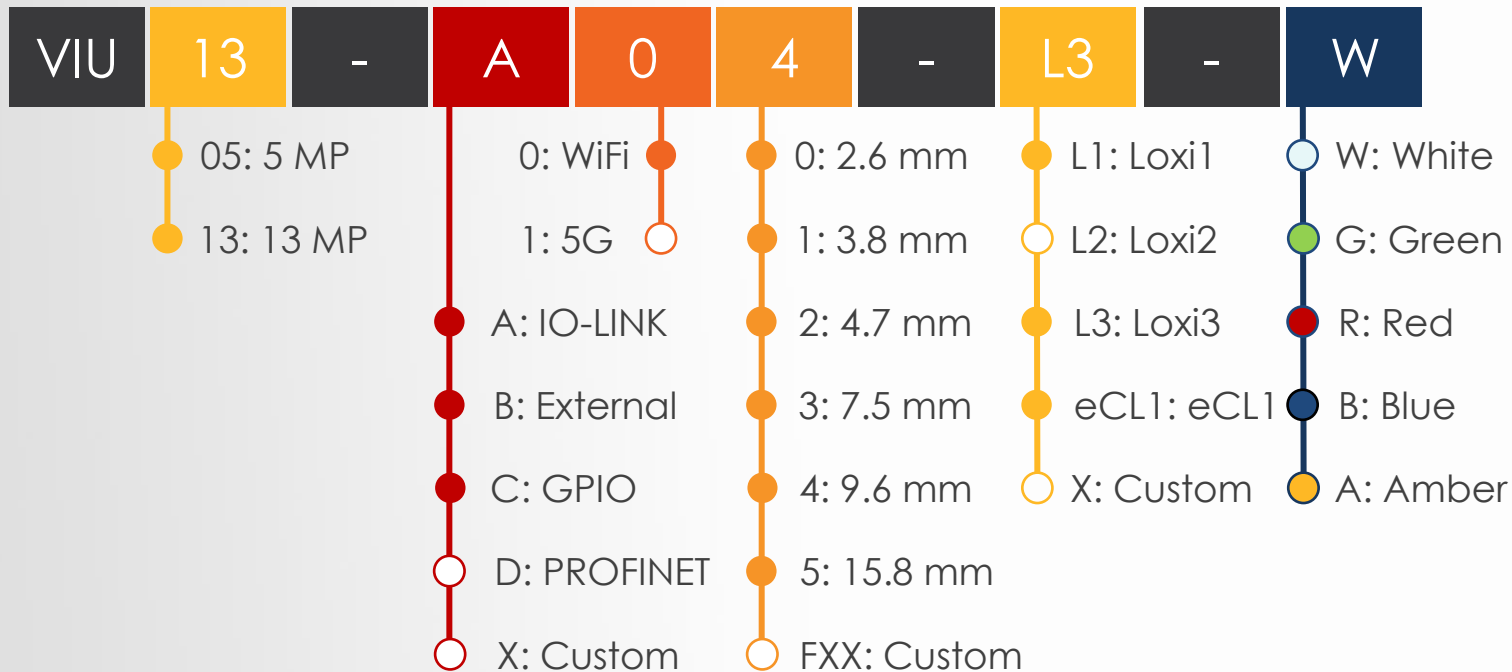
Compatible with screw-on plates and individual mounting systems

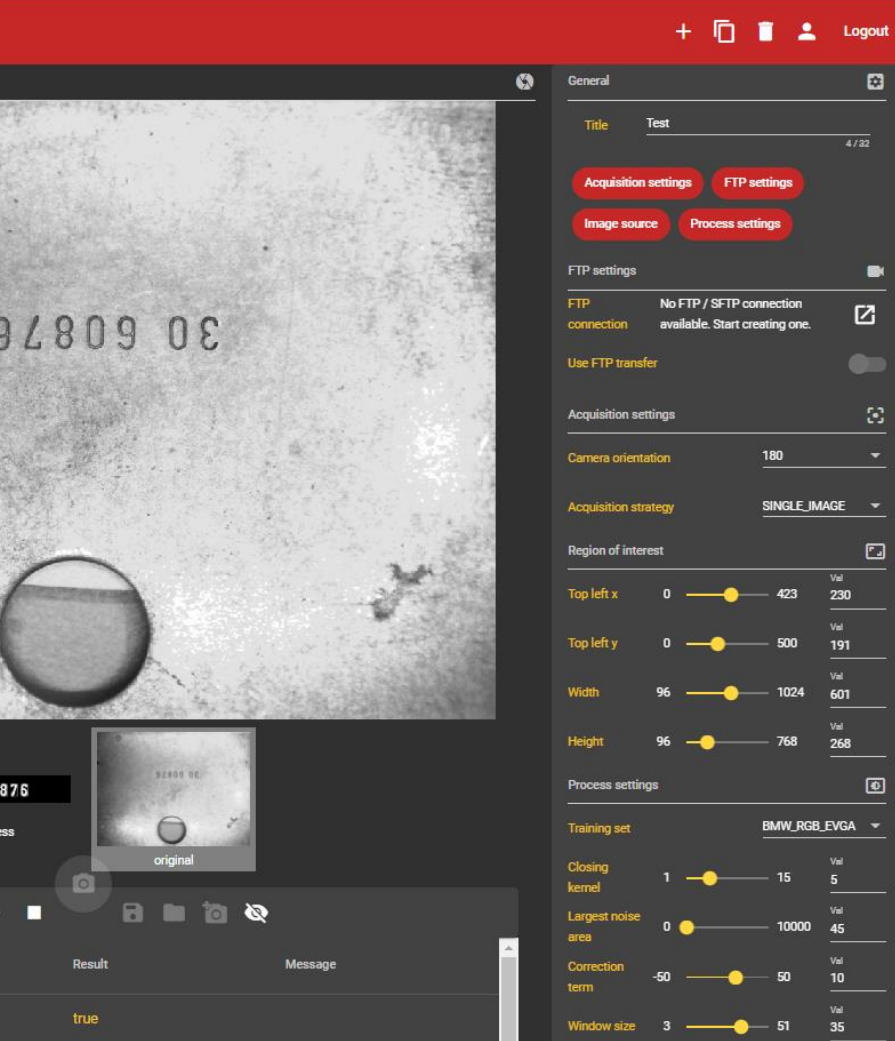


CUSTOM

Do you have a special mounting system and you want to save installation space? Just contact us and we will help you with finding the best solution.

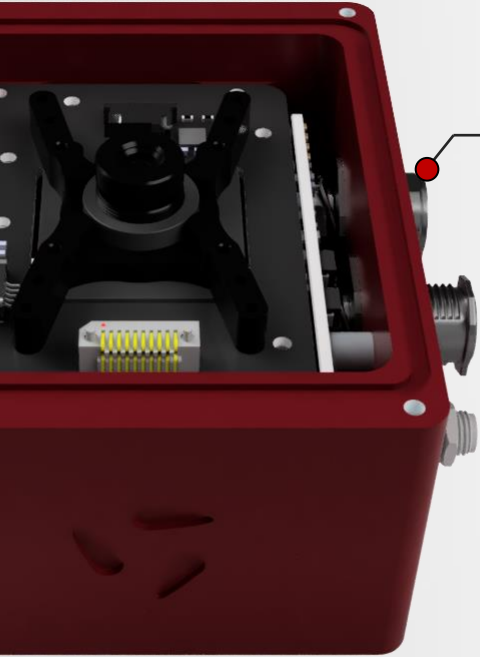
ORDERING CODE



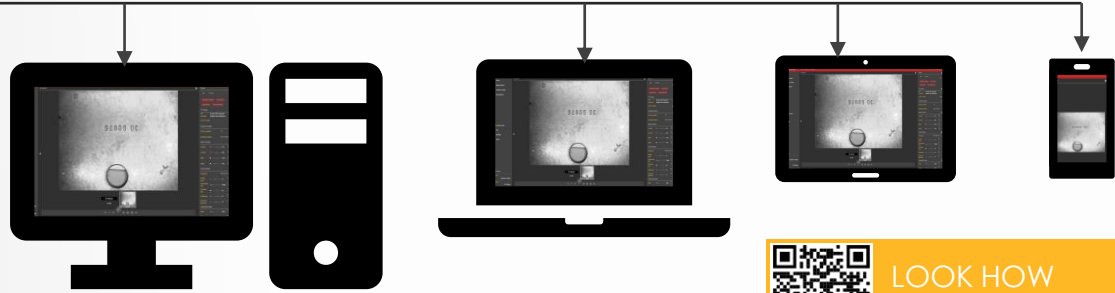


VIU:VISIONWEB

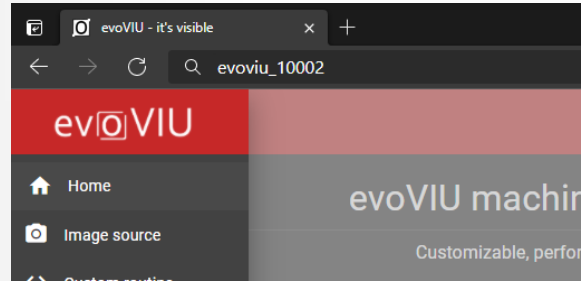
 Control your VIU on any device



Connect your VIU from anywhere



LOOK HOW
IT WORKS



Runs on every web browser

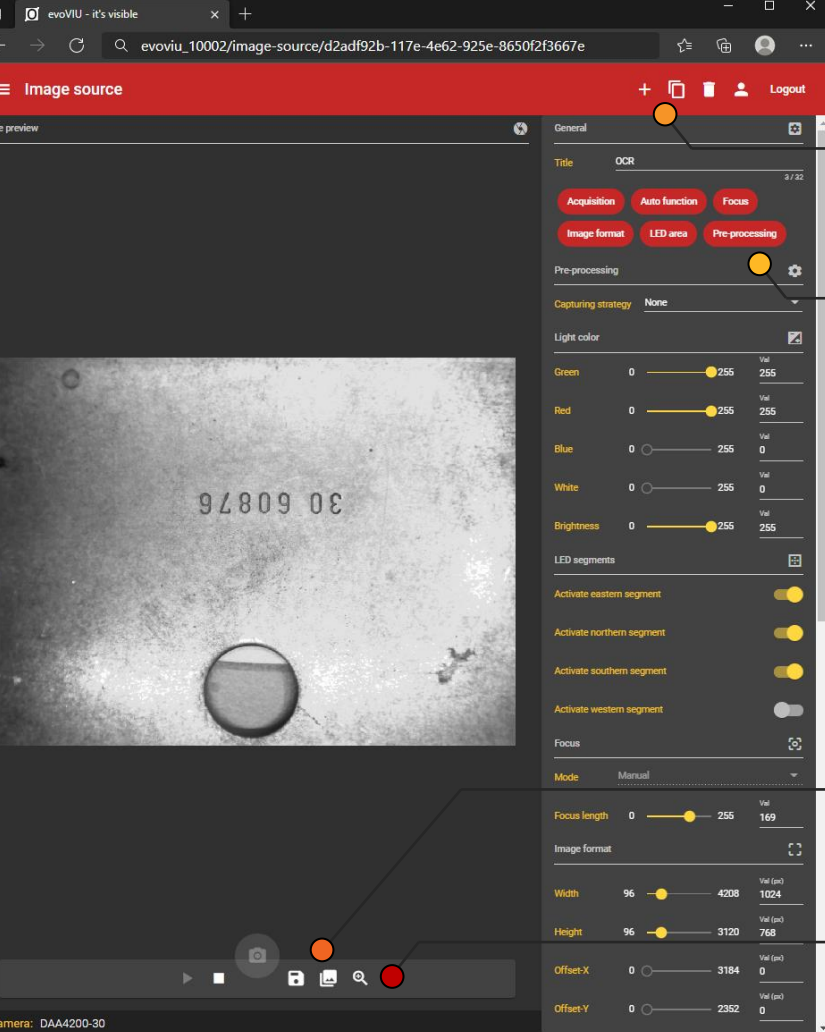
No installation or server required

Up to 4 users on one evoviu at the same time

Editor and Viewer mode

Access over Ethernet, Wifi or access point

Works as access point, if no network is available



Setup your image source

Create, duplicate and delete

Settings

Capturing strategy

Light settings

Focus

Image format

Trigger mode

Exposure time

Gain

Scaling

Sharpness

Color space

Gamma

Color channel

Balance ratio

Anti-flicker

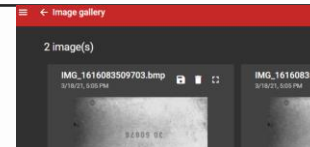
Contrast mode

Brightness

Gallery



Zoom



LOOK HOW
IT WORKS

evoviu - it's visible

evoviu_10002/custom-routine/e74d8350-7436-421c-9676-f3e48cc011ae

Custom routine

Live preview

General

Title TK Stamp 8 / 32

Acquisition settings FTP settings

Image source Process settings

FTP settings

FTP No FTP / SFTP connection available. Start creating one.

Use FTP transfer

Acquisition settings

Camera orientation 180

Acquisition strategy SINGLE IMAGE

Region of interest

Top left x 0 423 Val 230

Top left y 0 500 Val 191

Width 96 1024 Val 601

Height 96 768 Val 268

Process settings

Training set BMW_RGB_EVGA

Closing kernel 1 15 Val 5

Largest noise area 0 10000 Val 45

Correction term -50 50 Val 10

Window size 3 51 Val 35

Smoothing kernel size 1 15 Val 7

Width 0 2000 Val 11

Height 0 2000 Val 11

Code Quality Result Message

3060876 67,94,80,89,88,78,84 true

3060876 68,93,80,87,86,77,82 true

3060876 75,94,81,87,88,80,81 true

3060876 71,94,81,87,84,81,78 true

Camera: DAA4200-30

Setup your custom routine

Create, duplicate and delete

Settings

FTP settings

Acquisition strategy

Intensity level

Closing kernel

Correction term

Smoothing kernel size

Code information

Code width

Camera orientation

Region of interest

Training sets

Largest noise area

Window size

Largest noise region

Character numbers

Code height

This is an example parameter set for the OCR recognition function. For other custom routines, these parameters may differ.

The settings allow the user to adapt the function to different use cases and environmental situations.

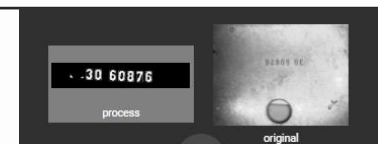


LOOK HOW IT WORKS

Image processing workflow

Code	Quality	Result
3060876	70,93,81,86,84,82,78	true

Results



evoviu - it's visible

evoviu_10002/connections/5de5fa54-cde8-4135-bf29-9be241979700

evoviu

Connections

Home

Image source

Custom routine

Connections

Use dark mode

Log

Settings

Power

Current stream

Stream type

Custom routine

Configuration

TK-Stamp

30 60876

Camera: DAA4200-30

Connection configuration

Connection type: Network

Network protocol: FTP / SFTP

FTP / SFTP configuration

User name: evoviu

Password: *****

Port: 21

IP address type: IPv4

IP address: 192.168.4.10

Setup your connections

Create, duplicate and delete

Settings

FTP settings

iQPress

Snap7

Profinet

Modbus TCP

TCP / IP

evoTrQ

Docker settings

IO-Link

EtherCAT



it's possible!
evopro



LOOK HOW
IT WORKS

Servers

/

Authentication

- POST

/api/v1/authentication/sessions/start
- GET

/api/v1/authentication/sessions/current/info
- POST

/api/v1/authentication/sessions/current/requestActiveStatus
- POST

/api/v1/authentication/sessions/current/releaseActiveStatus

Basic data

- GET

/api/v1/basicData

Configuration

- GET

/api/v1/configData
- POST

/api/v1/configData/connections
- POST

/api/v1/configData/customRoutines
- POST

/api/v1/configData/imageSources
- DELETE

/api/v1/configData/connections/{connectionId}

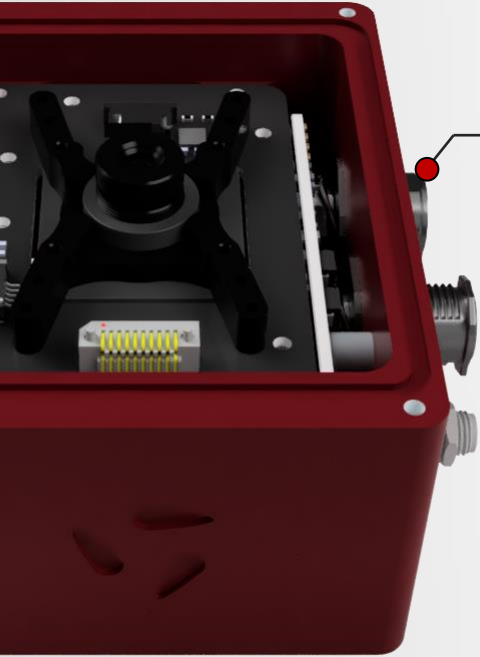


VIU:VISIONAPI

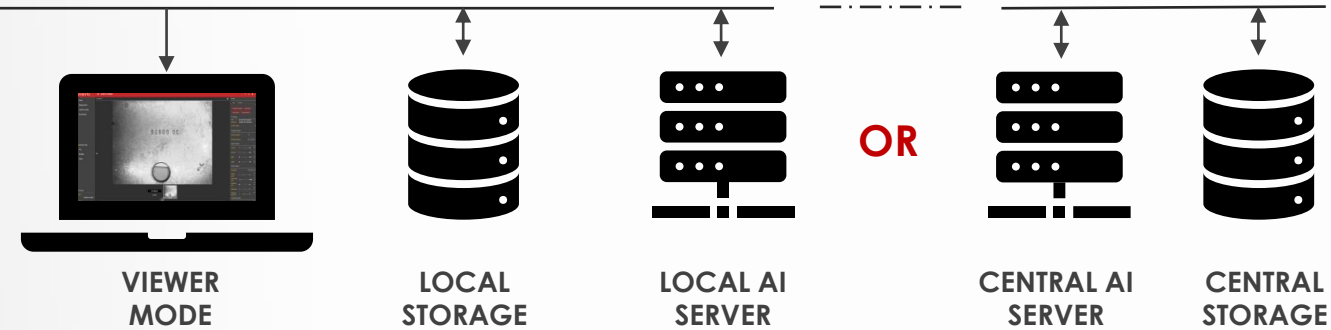
 Control light, lense, and system from anywhere



LOOK HOW
IT WORKS



API-Connection to evoVIU



■ Live view at display panel
in office and at working
space

■ Save images and
training sets

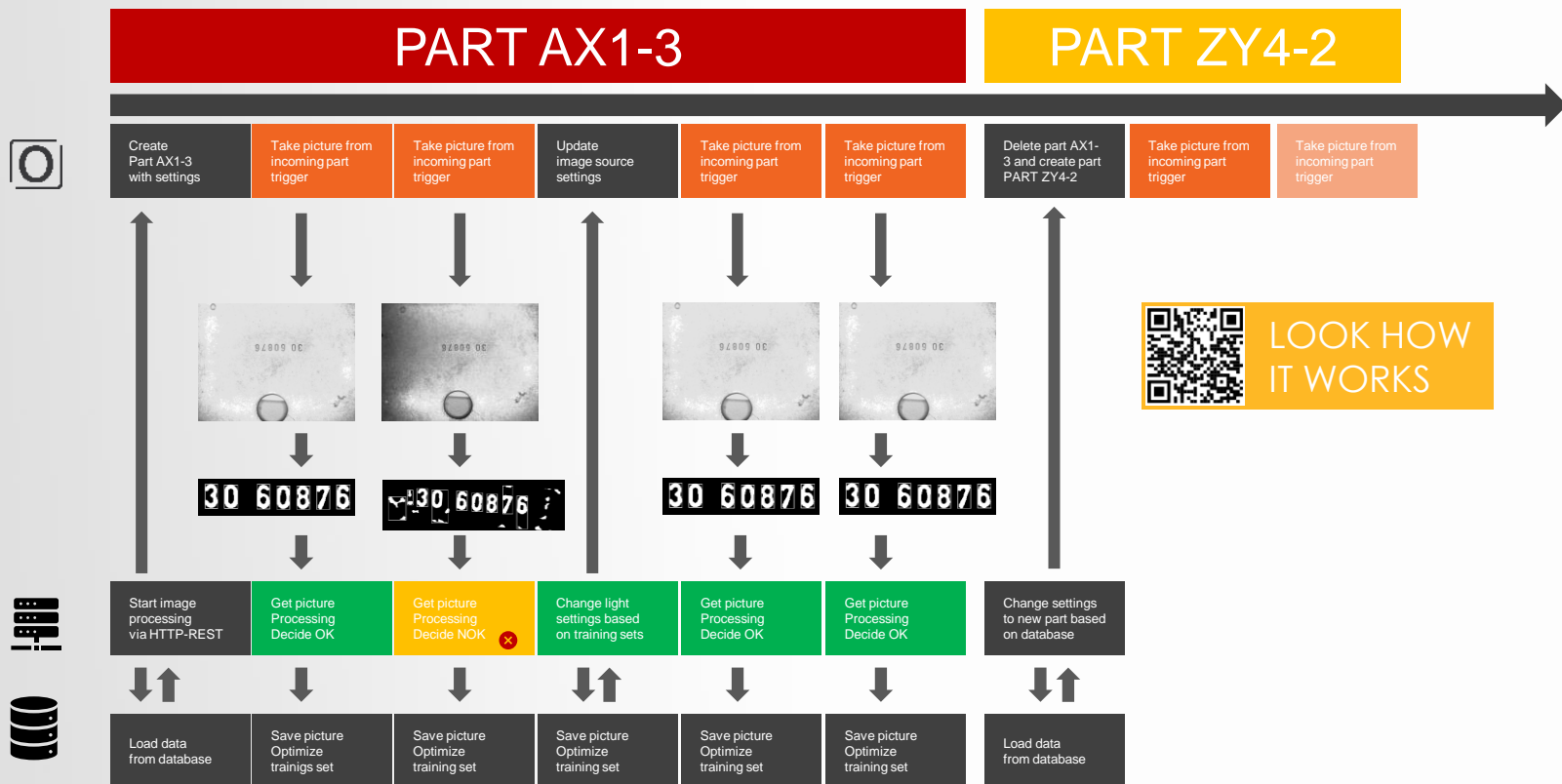
■ Control evoVIU via
TCP/IP – HTTP REST

■ Image processing

■ Teach and create
training sets with AI

■ React on environment and
system changes with AI

WORKFLOW EXAMPLE



SIMPLE COOPERATION



Production worker

INSTALLATION

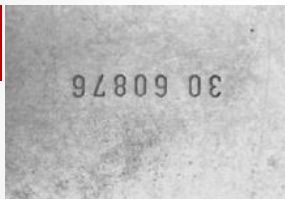
Exact positioning of evoVIU

Use evoVIU setup assistant

Configure image source, save UUID

visible x +
evoVIU_10002/image-source/d2adf92b-117e-4e62-925e-8650f2b667e

IMPLEMENTATION



```
GET /api/v1/configData
POST /api/v1/configData/connections
POST /api/v1/configData/customRoutines
POST /api/v1/configData/imageSources
```



AI programmer

Get UUID for used PART from worker

Code testing and programming in TRYOUT area

Finalize evoVIU implementation



Save picture
Optimize training set



START WORKING

Create, update and activate image source

Take picture from incoming part trigger

Take picture from incoming part trigger

Take picture from incoming part trigger



30 60876

30 60876

30 60876

Start evoVIU at production begin

Get picture Processing Decide OK

Get picture Processing Decide OK

Get picture Processing Decide OK

Save picture
Optimize training set

Save picture
Optimize training set

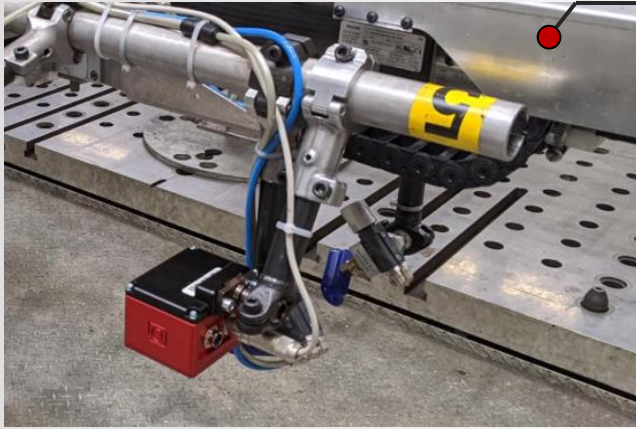
Save picture
Optimize training set



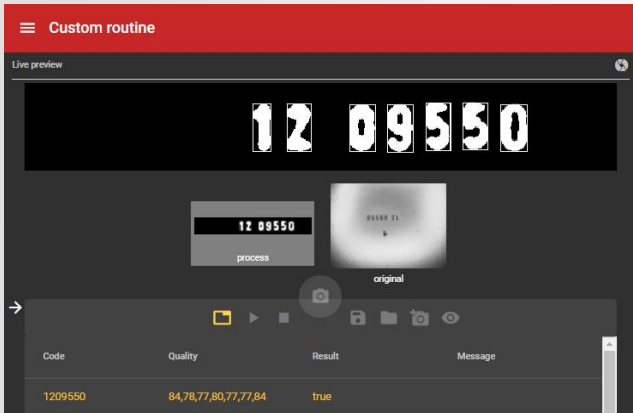
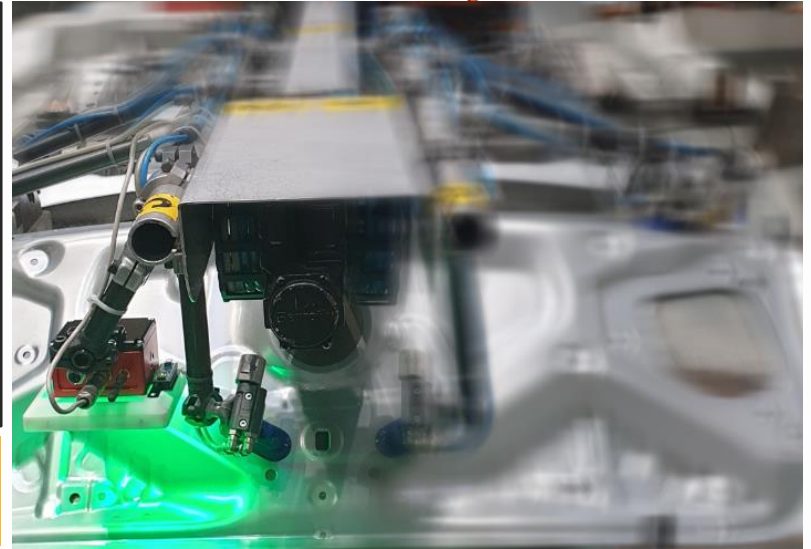
VIU:INTEGRATION

 Use cases

TK-STAMP | OCR



- Cycletime: 1.5 s
- Different capture strategies such as Image Fusion
- Readout of individual production part data
- Linking code identifier with values in database
- Save logs and images on FTP server
- Live view via VISIONWEB



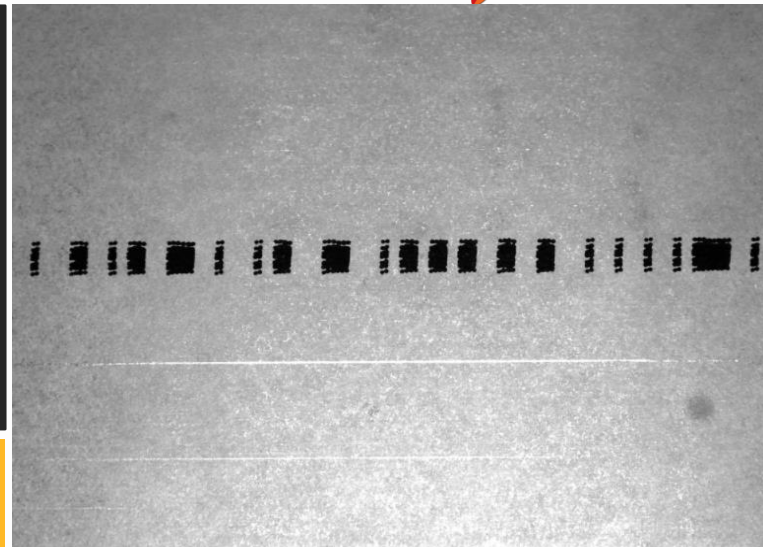
By reading the TK stamp during the production process, additional process data on the component can already be documented and assigned in real time. In this way, quality patterns or cracks can be identified more easily and quickly during production.

The wireless transmission technology allows evoVIU to fly along specific components at various stages and toolings in any number and orientation. Additionally, battery solutions can assist in locations where no power supply is available.

DESCRIPTION

BARCODE LABEL

- Short readout-time
- Reading of different barcode types
- Data transmission via wireless interfaces on defined terminals
- Save label images on cloud server
- Label quality check
- Live view via VISIONWEB



To optimize logistics within the ongoing production network, evoVIU cameras can accompany documentation on the position and transport route of various pallets and containers. Labels of goods are attached to various camera gates and mobile transport machines.

Thanks to the modular lighting system, it doesn't matter what material the code is printed on.

DESCRIPTION

