

Software VisionApp 360

On Machine Vision Controller MVC (with uniVision 3)



Operating Instructions

Table of Contents

1. Use for Intended Purpose	4
2. Mounting of 2D/3D Profile Sensors	4
3. Electrical Connection of 2D/3D Profile Sensors	5
4. Network Overview	7
5. Device Website of Machine Vision Controller MVC	8
6. Software VisionApp 360	9
6.1 Creating a Couple	9
6.2 Setting up the Master Unit	10
6.3 Setting up the Sub Units	13
6.4 Calibration	16
6.4.1 Calibration Object	16
6.4.2 Draw the Calibration Object	17
6.4.3 Perform the Calibration	19
6.5 Filtering and Sorting	25
6.6 Run couple automatically	26
6.7 Module GigE Vision	26
7. Create Processing Instance on MVC	27
8. Job in uniVision 3	29
8.1 Device VisionApp 360	29
8.1.1 Image Format Control	30
8.1.2 Acquisition Control	30
8.1.3 Transport Layer Control	30
8.1.4 Chunk Data Control	30
8.1.5 Scan 3D Control	31
8.1.6 Device Control	31
8.2 Further uniVision 3 Settings	31
9. VisionApp Overview	32
9.1 Menu Bar	33
9.2 Icons	37
9.3 LIMA Protocol	38

10. Third Party Licenses40

11. Change Index of Operating Instructions40

1. Use for Intended Purpose

The software VisionApp 360 is an intuitive parameterization software to combine the height profiles of up to 16 model-independent 2D/3D Profile Sensors of the weCat3D series to one united height profile. Arrange the 2D/3D Profile Sensors in a circle or next to each other and calibrate them via edges on the calibration object. The software VisionApp 360 runs on the wenglor Machine Vision Controller MVC together with the image-processing software wenglor uniVision 3. The GigE Vision module of the VisionApp 360 sends the combined height profile then to the image-processing software uniVision 3 ([DNNF023](#)). Typical applications are 360° area calculations, 360° roundness measurements or width measurements using several 2D/3D Profile Sensors next to each other.

Supported Machine Vision Device:

- Machine Vision Controller MVC

NOTE!



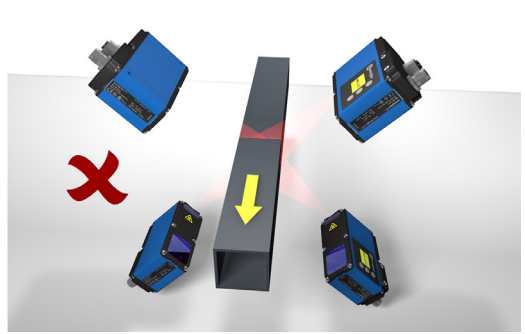
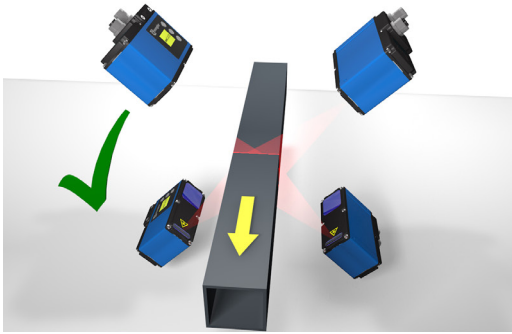
- For details about the Machine Vision Controller MVC, the 2D/3D Profile Sensors of the weCat3D series and the software wenglor uniVision 3 ([DNNF023](#)) check the corresponding operating instructions.
- Using the software VisionApp 360 requires the minimum firmware version 1.2.0 of the Machine Vision Controller and the minimum firmware version 2.3.0 of the 2D/3D Profile Sensors.

2. Mounting of 2D/3D Profile Sensors

Check the product detail page of the weCat3D sensors at www.wenglor.com for different mounting solutions.

Mount the 2D/3D Profile Sensors so that the laser lines and field of views of all sensors are in one plane. Make sure that all sensors have the same orientation so that the measuring object moves towards the direction in which the laser beam is emitted .





NOTE!



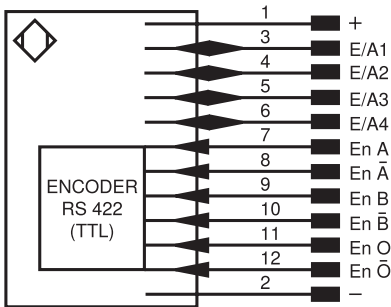
Invert single sensors in the software VisionApp 360 (see section „6. Software VisionApp 360“) if the preferred sensor orientation ist not possible. The software VisionApp 360 displays inverted sensors without the wenglor logo.

3. Electrical Connection of 2D/3D Profile Sensors

Connect port 1 of the 2D/3D Profile Sensor to 18...30 V DC

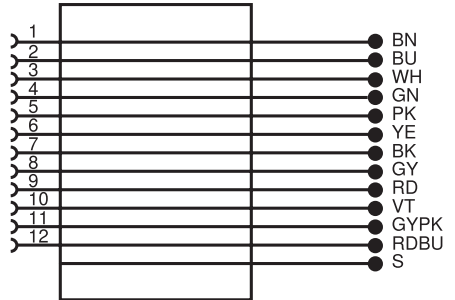
- Pin 1: + (brown with suitable wenglor connection equipment)
- Pin 2: - (blue with suitable wenglor connection equipment)

1034



Connection diagram: port 1 of the 2D/3D profile sensor

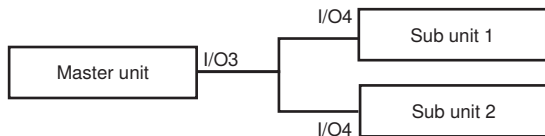
S89



Suitable wenglor connection equipment

Synchronize the 2D/3D Profile Sensors in order to acquire profiles synchronously and to prevent mutual interferences between the sensors. For this purpose, use one 2D/3D Profile Sensor as master unit and all other 2D/3D Profile Sensors as sub units. Setup the trigger mode for the master unit according to the application and forward the trigger signal to all sub units via the synchronization pin.

By default, connect I/O 3 of the master unit to I/O 4 of all sub units.



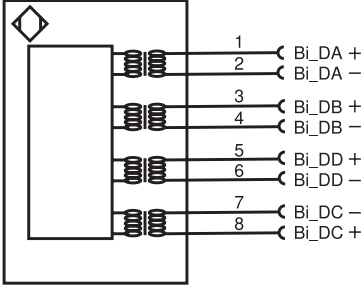
Use the following color decoding for the suitable wenglor connection equipment:

- Master unit: I/O 3 (pin 5) → Pink
- Sub unit: I/O 4 (pin 6) → Yellow

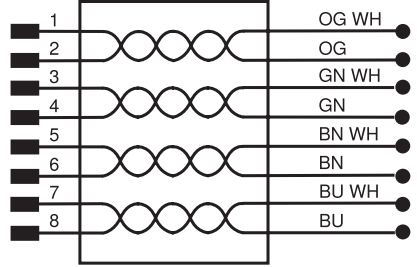
4. Network Overview

Connect port 2 of all 2D/3D Profile Sensors directly to the CAM ports of the Machine Vision Controller MVC or to a switch in case of working with further 2D/3D Profile Sensors. The VisionApp 360 supports maximum 16 2D/3D Profile Sensors and cabling must be capable of 1 GBit/s throughout the entire network.

1022

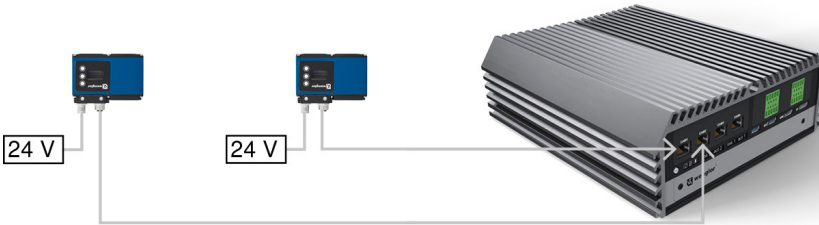


S80



Connection diagram: port 2 of the 2D/3D profile sensor

Suitable wenglor connection equipment



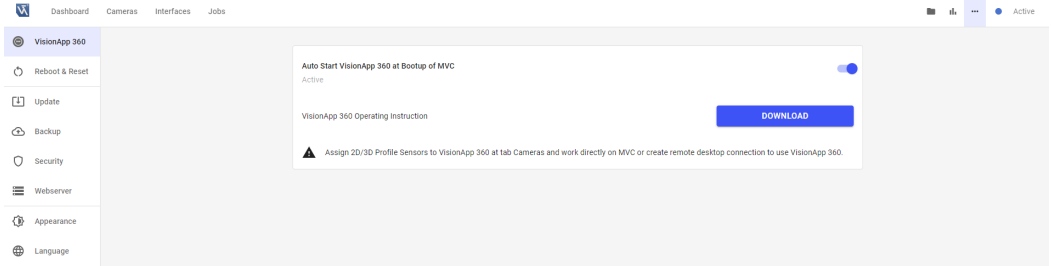
NOTE!

For details about the CAM ports of the Machine Vision Controller, check the operating instruction of the Machine Vision Controller MVC.

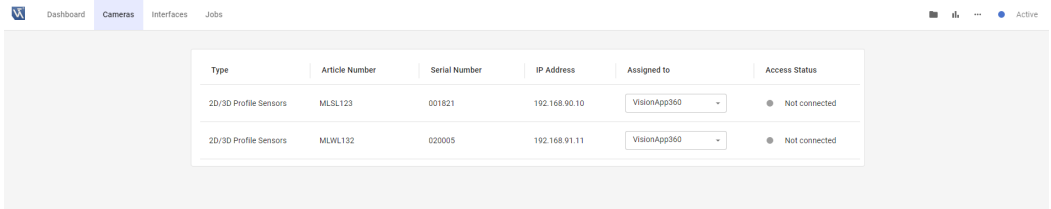
5. Device Website of Machine Vision Controller MVC

Open the device website of the Machine Vision Controller MVC in order to enable the software VisionApp 360. Enter the IP address of the LAN port of the Machine Vision Controller MVC in any supported browser (by default 192.168.100.1) or use the software wenglor Discovery Tool ([DNNF022](#)) to search for the MVC.

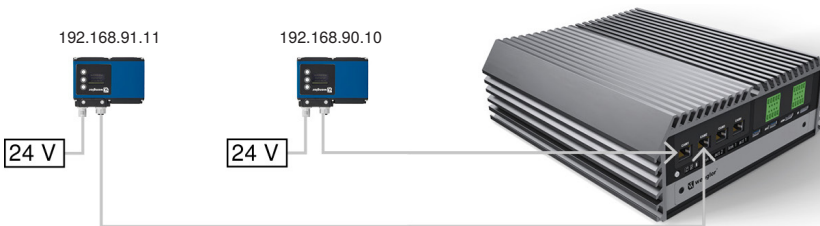
Click on “Settings” -> “VisionApp 360”. Enable “Auto Start VisionApp 360 at Bootup of MVC” to start the VisionApp 360 on the MVC. Work with a monitor, a keyboard and a mouse directly on the Machine Vision Controller or create from the PC via the LAN network a remote desktop connection to the MVC in order to parameterize the VisionApp 360. The firmware of the Machine Vision Controller must be minimum 1.2.0 in order to use the VisionApp 360. For details about the device website of the Machine Vision Controller and the remote desktop connection, check the operating instruction of the MVC.



Open the tab “Cameras” to find all connected 2D/3D Profile Sensors. Select “VisionApp 360” at all relevant 2D/3D Profile Sensors to use the sensors with the VisionApp 360. The VisionApp 360 cannot use sensors assigned to “uniVision”. The supported minimum firmware version of the 2D/3D Profile Sensors is 2.3.0.



The Machine Vision Controller MVC handles the assignment of the network configuration for the 2D/3D Profile Sensors automatically (resulting in reboots of the 2D/3D Profile Sensors in case of network changes). Afterwards, the page shows the IP addresses of all 2D/3D Profile Sensors (use the IP addresses later in the VisionApp 360 when adding sensors, see section [6. Software VisionApp 360](#)). Do not change the network configuration of the 2D/3D Profile Sensors manually (e.g. on the OLED display or on the device website of the 2D/3D Profile Sensor).

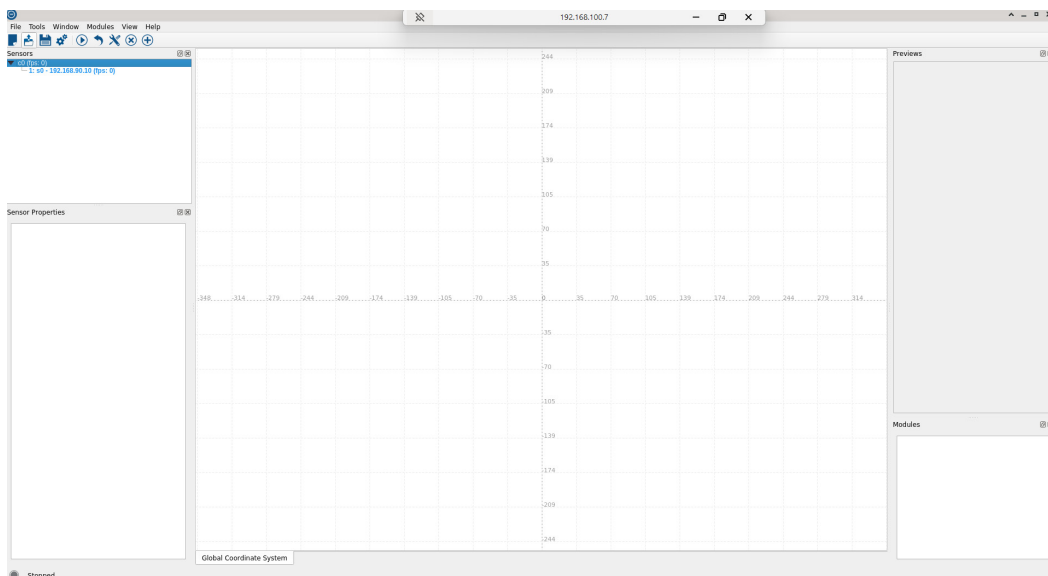


6. Software VisionApp 360

The software VisionApp 360 is only available in English and requires the minimum screen resolution of 1280 x 1024 pixel. Connect monitor, keyboard and mouse directly to the Machine Vision Controller MVC or create a remote desktop connection from the PC via the LAN network to the MVC in order to parameterize the VisionApp 360.

6.1 Creating a Couple

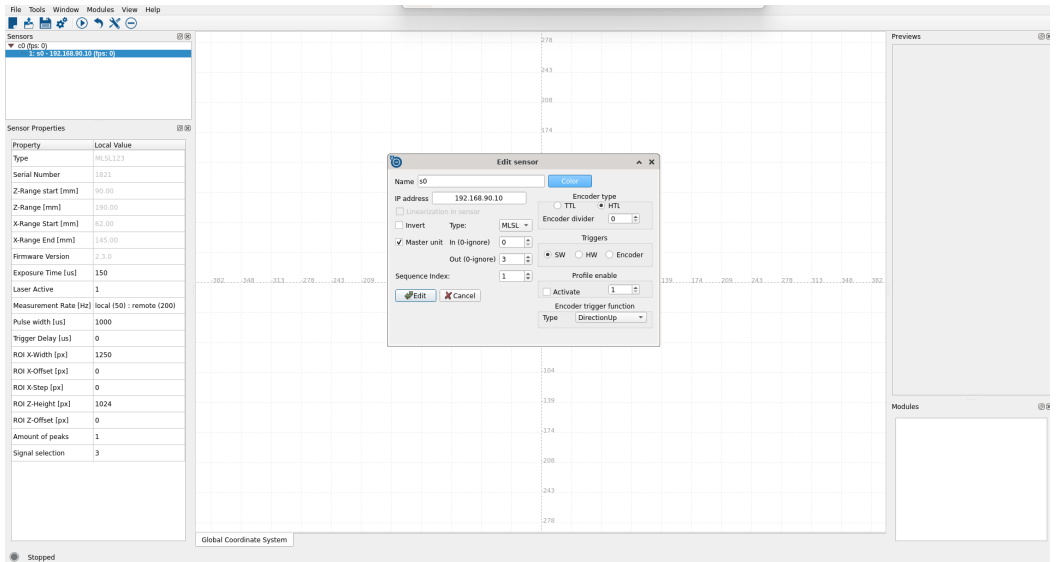
By default, the configuration already contains one couple (c0) with one MSL (s0) as master unit. The VisionApp 360 supports maximum one couple per configuration .



6.2 Setting up the Master Unit

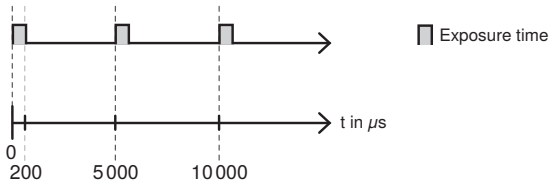
Select the master unit (s0) and click on “Edit”:

- Define the name.
- Enter the IP address of the 2D/3D Profile Sensor (check the tab “Cameras” on the device website of the Machine Vision Controller MVC for the IP address of the sensor, see section „5. Device Website of Machine Vision Controller MVC“).
- Select the sensor type (MLSL or MLWL).
- Select the trigger mode.
- Invert the sensor if the object to be measured is not moving in the direction in which the laser beam is emitted (see section „2. Mounting of 2D/3D Profile Sensors“).

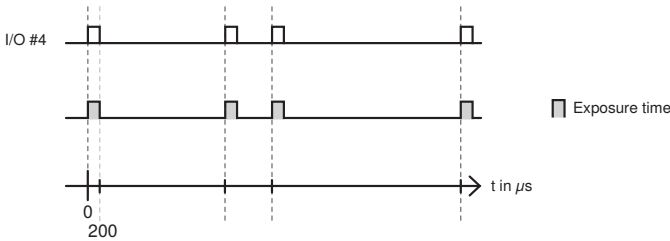


The following trigger settings for the master unit exist:

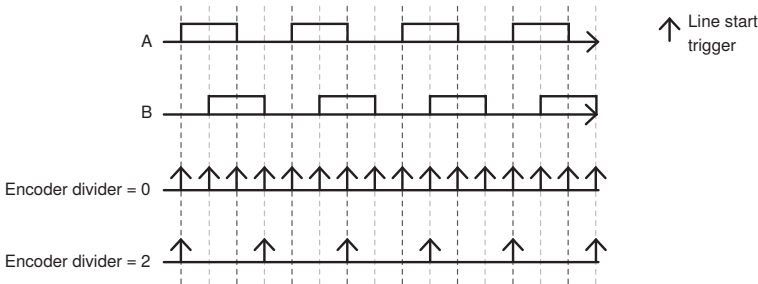
- Software (SW): The master unit acquires height profiles with a fix frequency (e.g. 200 Hz)



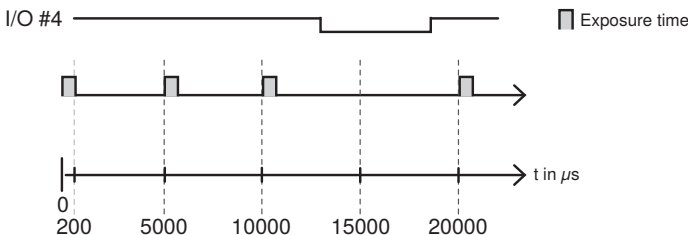
- **Hardware (HW):** Define one pin of the 2D/3D Profile Sensor as trigger input so that one height profile is acquired with every rising edge.



- **Encoder:** Use a HTL or TTL encoder for triggering the master unit so that height profiles are acquired in fix distances (time independent). Increase the value of “Encoder divider” if profiles are acquired too fast because of too high encoder resolutions. The following encoder types are available:
 - » **Direction Up:** Acquires profiles only if the encoder value increases compared to the last encoder value.
 - » **Direction Down:** Acquires profiles only if the encoder value decreases compared to the last encoder value.
 - » **Motion:** Acquires profiles in case of any encoder value change.
 - » **Position Up:** Acquires profiles only if the encoder value increases compared to the last encoder value where profiles were acquired.
 - » **Position Down:** Acquires profiles only if the encoder value decreases compared to the the last encoder value where profiles were acquired .



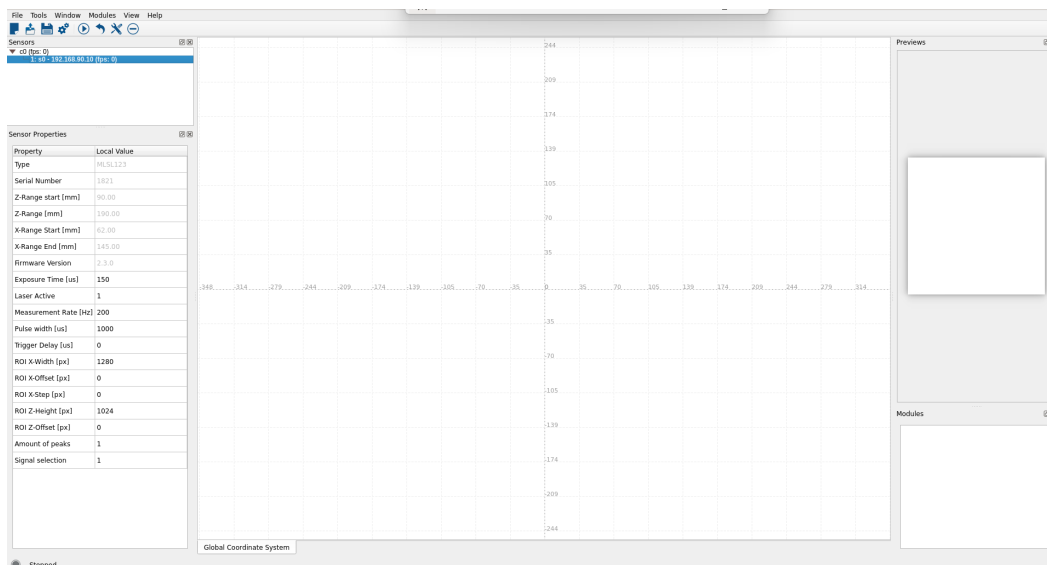
- **Profile enable:** Define one pin of the 2D/3D Profile Sensor as profile enable pin so that height profiles are only acquired if a signal (24 V) is applied to the input pin (e.g. I/O 4). Mostly used together with a fix frequency (e.g. 200 Hz).



Connect one digital output of the master unit (by default I/O 3) to one digital input of all sub units (by default I/O 4) to automatically trigger the sub units by the master unit.

Adjust further settings of the master unit:

- Exposure time
- Measurement Rate [Hz]
- Region of Interest (ROI)
- Amount of peaks
 - » 1 = First signal
 - » 2 = Second signal
 - » 3 = First and second signal
- Signal selection
 - » 0 = First signal in camera column
 - » 1 = Strongest signal in the camera column
 - » 2 = Widest signal in the camera column
 - » 3 = Last signal in the camera column



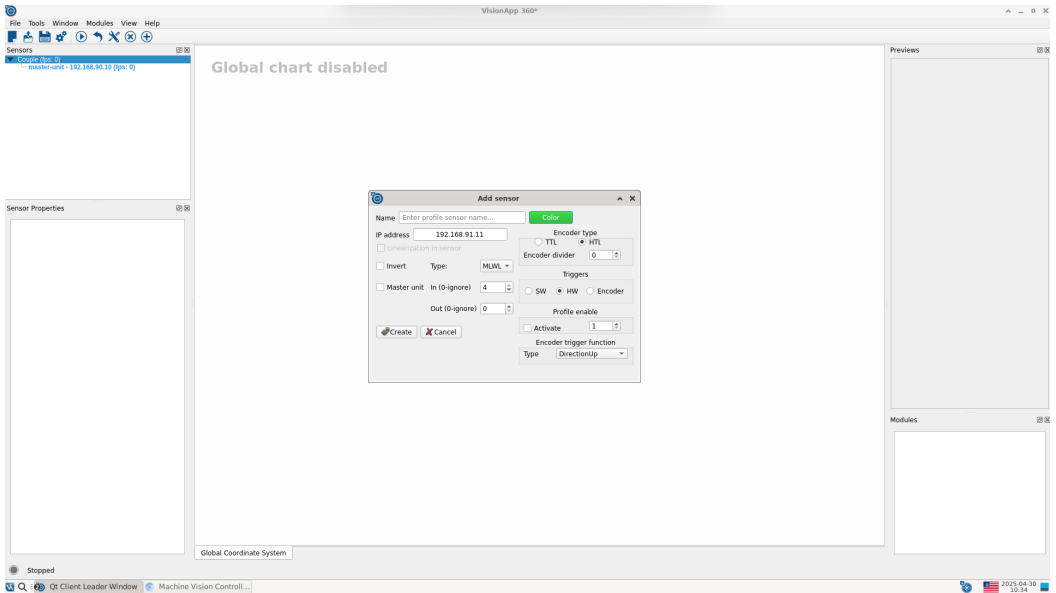
6.3 Setting up the Sub Units

Add the sub units to the couple by selecting the couple and clicking on the “Add new sensor” button. The Machine Vision Controller MVC supports maximum 16 connected input devices. The minimum supported firmware of the 2D/3D Profile Sensors is 2.3.0.

“Add new sensor”

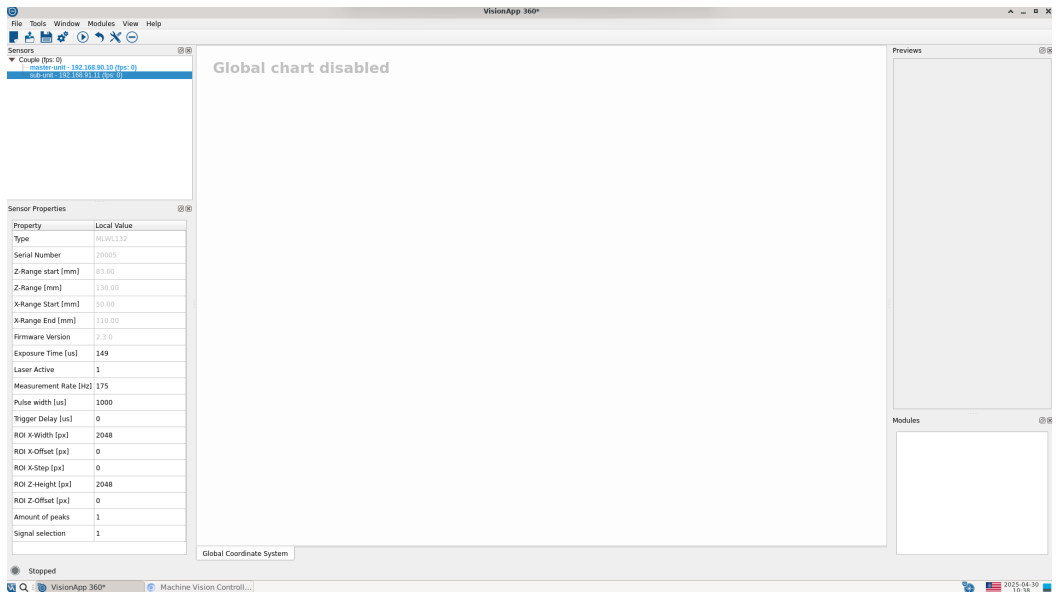
Define the settings of the sub units:

- Define the name.
- Enter the IP address of the 2D/3D Profile Sensor (check tab “Cameras” on the device website of the Machine Vision Controller MVC for the IP addresses of the sensor, see section „5. Device Website of Machine Vision Controller MVC“).
- Select the sensor type (MLSL or MLWL).
- The trigger settings of all sub units must remain on hardware (HW) so that the synchronization signal of the master unit triggers the sub units. By default, the trigger input of the sub units is I/O 4.
- Invert the sensor if the object to be measured is not moving in the direction in which the laser beam is emitted (see section „2. Mounting of 2D/3D Profile Sensors“).



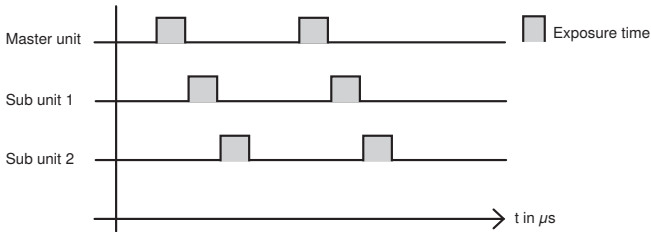
Adjust further settings of the sub units:

- Exposure time
- Measurement Rate [Hz]
- Region of Interest (ROI)
- Amount of peaks
 - » 1 = First signal
 - » 2 = Second signal
 - » 3 = First and second signal
- Signal selection
 - » 0 = First signal in camera column
 - » 1 = Strongest signal in the camera column
 - » 2 = Widest signal in the camera column
 - » 3 = Last signal in the camera column



The following settings for exposure times and trigger delays are possible for example for three 2D/3D Profile Sensors to avoid that several sensors influence each other.

- Master unit:
 - » Exposure time: $150\ \mu\text{s}$
- Sub unit 1:
 - » Trigger delay: $150\ \mu\text{s}$
 - » Exposure time: $200\ \mu\text{s}$
- Sub unit 2:
 - » Trigger delay: $350\ \mu\text{s}$
 - » Exposure time: $200\ \mu\text{s}$



NOTE!



2D/3D Profile Sensors with red and blue light do not influence each other and can acquire profiles at the same time. If mounting red and blue 2D/3D Profile Sensors next to each other, it is possible to acquire height profiles of all sensors at the same time without trigger delays.

6.4 Calibration

Calibrate several 2D/3D Profile Sensors in order to combine the height profiles. Use a precise calibration object that has an angular cross section and is as temperature-independent as possible. Position the calibration object so that each sensor is aligned to one corner of the calibration object. Make sure that the laser lines and measurement fields of all sensors are in the same plane.

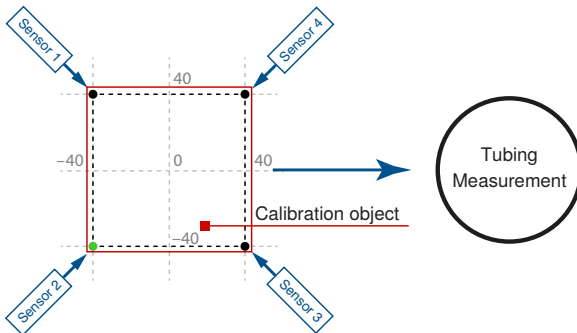
NOTE!



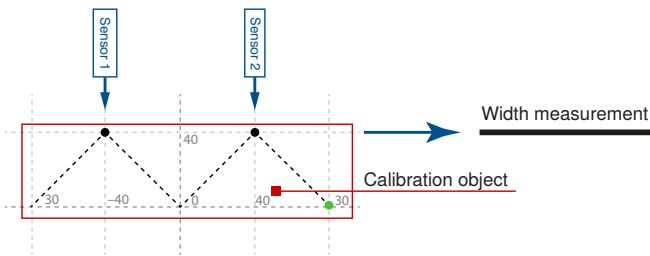
The accuracy of the calibration object is essential for the accuracy of the calibration result. Select precise calibration objects. Mark the calibration object with a line to see if the measuring ranges of all sensors are within the same plane. Before calibrating, wait until the 2D/3D Profile Sensors are warm for best accurate results.

6.4.1 Calibration Object

Use the following calibration object in case of a 360° application (e.g. tubing measurement) with four 2D/3D Profile Sensors .



Use the following calibration object in case of measurements in one level (e.g. width measurement).



6.4.2 Draw the Calibration Object

Draw the edge points of the calibration object in the VisionApp 360 by double clicking with the left mouse button at the position or by selecting “Add new point” in the context menu. After adding all edge points of the calibration object, close the contour of the calibration object by double-clicking on the start point of the calibration object.

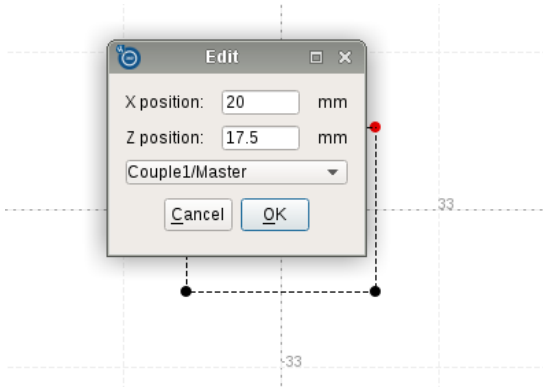


The following example shows a rectangular calibration object with four edges.

The screenshot shows the VisionApp 360 interface. The main window displays a coordinate grid with a rectangular calibration object defined by four points. The interface includes a menu bar (File, Tools, Window, Modules, View, Help), a Sensors panel on the left showing a tree view of sensors (Couple1, Slave1, Slave2, Slave3), a Sensor Properties panel below it with a table of properties, a Global Coordinate System at the bottom, a Previews panel on the right, and a Modules panel at the bottom right. The status bar at the bottom left shows "Stopped".

Property	Local Value
Type	68.9L113
Serial Number	1000
Z-Range start [mm]	90.00
Z-Range [mm]	130.00
X-Range Start [mm]	62.00
X-Range End [mm]	145.00
Firmware Version	1.2.0
Exposure Time [µs]	150
Laser Active	1
Measurement Rate [Hz]	200
Pulse width [µs]	1000
Trigger Delay [µs]	0
ROI X-Width [px]	1280
ROI X-Offset [px]	0
ROI X-Step [px]	0
ROI Z-Height [px]	1024
ROI Z-Offset [px]	0
Amount of peaks	1

Assign all 2D/3D Profile Sensors to the corresponding edge points of the calibration object by selecting “Edit point” in the context menu.



For the rectangular calibration object with four edges, it looks accordingly. Inverted 2D/3D Profile Sensors are shown without the wenglor logo (see section „2. Mounting of 2D/3D Profile Sensors“)

1: Slave2 - 192.168.100.12 (pps: 0)
1: Slave3 - 192.168.100.13 (pps: 0)

Sensor Properties

Property	Local Value
Type	ML SL123
Serial Number	1000
Z-Range start [mm]	90.00
Z-Range [mm]	190.00
X-Range Start [mm]	62.00
X-Range End [mm]	145.00
Firmware Version	1.2.0
Exposure Time [us]	150
Laser Active	1
Measurement Rate [Hz]	200
Pulse width [us]	1000
Trigger Delay [us]	0
POI X-Width [px]	1280
POI X-Offset [px]	0
POI X-Step [px]	0
POI Z-Height [px]	1024
POI Z-Offset [px]	0
Amount of peaks	1

Stopped

6.4.3 Perform the Calibration

Click on “Run” in the menu bar to start the profile acquisition for all 2D/3D Profile Sensors.



The screenshot displays the VisionApp 360 interface during a calibration process. The main window is titled "VisionApp 360 - default" and features a menu bar (File, Tools, Window, Modules, View, Help) and a toolbar. The interface is divided into several panels:

- Sensors:** A list of four sensors is shown:
 - 1: Master - 192.168.100.10 (pps: 100)
 - 2: Slave1 - 192.168.100.11 (pps: 100)
 - 3: Slave2 - 192.168.100.12 (pps: 99)
 - 4: Slave3 - 192.168.100.13 (pps: 100)
- Sensor Properties:** A panel on the left, currently empty.
- Global Coordinate System:** A central 3D plot with a grid. The vertical axis ranges from -400 to 334. A semi-transparent grey plane is visible, and several colored rectangular shapes (red, green, orange, black) are positioned around it, representing sensor profiles.
- Previews:** A panel on the right showing signal strength data for each sensor:
 - Master: Signal strength = 13%
 - Slave1: Signal strength = 7%
 - Slave2: Signal strength = 15%
- Modules:** A panel at the bottom right, currently empty.

A "Running" indicator (a green circle) is located at the bottom left of the interface.

Perform the calibration for the complete couple or for single 2D/3D Profile Sensors. To calibrate the complete couple, select the couple and click on “Perform calibration”.



“Perform calibration”

The screenshot displays the VisionApp 360 - default interface. The main window shows a 3D coordinate system with a grid. A red sensor is positioned at approximately (100, 100, 100), a green sensor at (100, -100, 100), a black sensor at (200, 200, 200), and an orange sensor at (100, 100, -100). A grey semi-transparent plane is visible in the center. The axes are labeled with values: X-axis from -233 to 300, Y-axis from -400 to 334, and Z-axis from -400 to 334. A small red box highlights the origin (0,0,0).

Sensors

- Couple1 (fps: 100)
 - 1: Master - 192.168.100.10 (fps: 100)
 - 2: Slave1 - 192.168.100.11 (fps: 100)
 - 3: Slave2 - 192.168.100.12 (fps: 100)
 - 4: Slave3 - 192.168.100.13 (fps: 100)

Sensor Properties

Previews

- Master: Signal strength = 13%
- Slave1: Signal strength = 7%
- Slave2: Signal strength = 15%

Modules

Global Coordinate System

Running

Perform the calibration for single 2D/3D Profile Sensors and restrict the region of interest to eliminate interferences in the measuring range. Select the 2D/3D Profile Sensor and click on "Define Sensor ROI" in the menu bar. Draw the relevant region around the edge point of the calibration object. Double click to create new points. The points are automatically connected. Double click again on the start point when finishing the region and click on "Finish sensor ROI" in the menu bar.

The screenshot displays the VisionApp 360 interface with the following components:

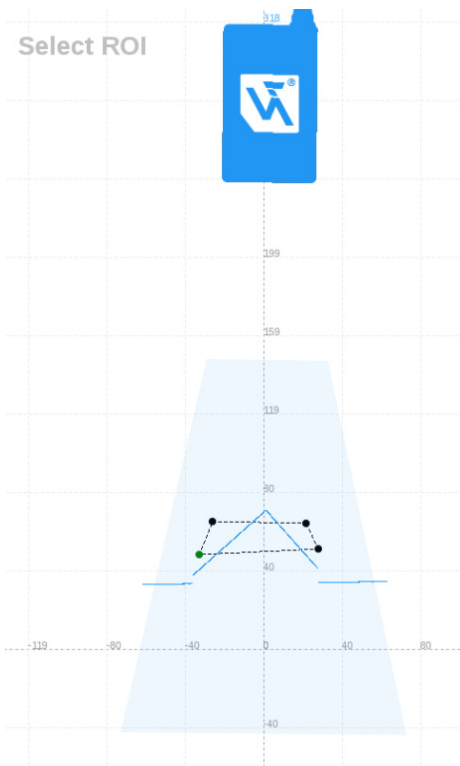
- Sensors Panel:** Lists four sensors:
 - 1: Master - 192.168.100.10 (pps: 101)
 - 2: Slave1 - 192.168.100.11 (pps: 100)
 - 3: Slave2 - 192.168.100.12 (pps: 101)
 - 4: Slave3 - 192.168.100.13 (pps: 100)
- Sensor Properties Table:**

Property	Local Value
Type	MLSL121
Serial Number	1006
Z-Range Start [mm]	72.00
Z-Range [mm]	36.00
X-Range Start [mm]	27.00
X-Range End [mm]	34.00
Firmware Version	1.2.0
Exposure Time [us]	150
Laser Active	1
Measurement Rate [Hz]	200
Pulse width [us]	1000
Trigger Delay [us]	300
POI X-Width [px]	1280
POI X-Offset [px]	0
POI X-Step [px]	0
POI Z-Height [px]	1024
POI Z-Offset [px]	0
Amount of peaks	1
- Main Plot:** A 2D coordinate system with a green rectangular region of interest (ROI) and a smaller green polygonal ROI defined around a specific point. The axes range from -199 to 199 on the X-axis and -232 to 199 on the Y-axis.
- Previews Panel:** Shows signal strength for three sensors:
 - Master: Signal strength = 13%
 - Slave1: Signal strength = 7%
 - Slave2: Signal strength = 15%
- Modules Panel:** Currently empty.
- Status:** A green circle icon indicates the system is "Running".



NOTE!

Use the region also to ignore round edges in order to improve the accuracy of the calibration.



Afterwards, perform the calibration for single 2D/3D Profile Sensor by clicking on “Perform sensor calibration” in the menu bar.

The screenshot displays the VisionApp 360 interface. On the left, the 'Sensors' panel lists a 'Couple1' configuration with one Master and three Slave sensors. Below it, the 'Sensor Properties' table is shown.

Property	Local Value
Type	MLSL121
Serial Number	1006
Z-Range start [mm]	72.00
Z-Range [mm]	36.00
X-Range Start [mm]	27.00
X-Range End [mm]	34.00
Firmware Version	1.2.0
Exposure Time [us]	150
Laser Active	1
Measurement Rate [Hz]	200
Pulse width [us]	1000
Trigger Delay [us]	300
ROI X-Width [px]	1280
ROI X-Offset [px]	0
ROI X-Step [px]	0
ROI Z-Height [px]	1024
ROI Z-Offset [px]	0
Amount of peaks	1

The central area shows a 3D coordinate system with a grid. A red box highlights the origin (0,0,0). Several 3D models of sensors are visible: a red one, a green one, a black one with a white logo, and a brown one with a white logo. A grey semi-transparent plane is also shown.

On the right, the 'Previews' panel shows signal strength graphs for 'Master' (13%), 'Slave1' (7%), and 'Slave2' (15%). The 'Modules' panel at the bottom right is currently empty.

At the bottom left, a green circle indicates the system is 'Running'.

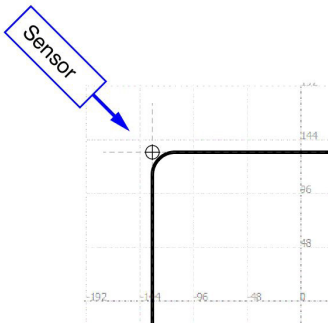
After calibration, the height profile is on top of the drawn calibration object. Check again that the orientation of each sensor is correct or if inverting single sensors is necessary.

The screenshot displays the VisionApp 360 interface. On the left, the 'Sensors' panel lists four sensors: 1. Master - 192.168.100.10 (pps: 100), 2. Slave1 - 192.168.100.11 (pps: 100), 3. Slave2 - 192.168.100.12 (pps: 100), and 4. Slave3 - 192.168.100.13 (pps: 100). Below this is the 'Sensor Properties' table for the selected Master sensor.

Property	Local Value
Type	MLSL121
Serial Number	1008
Z-Range start [mm]	72.00
Z-Range [mm]	36.00
X-Range Start [mm]	27.00
X-Range End [mm]	34.00
Firmware Version	1.2.0
Exposure Time [us]	150
Laser Active	1
Measurement Rate [Hz]	200
Pulse width [us]	1000
Trigger Delay [us]	300
ROI X-Width [px]	1280
ROI X-Offset [px]	0
ROI X-Step [px]	0
ROI Z-Height [px]	1024
ROI Z-Offset [px]	0
Amount of peaks	1

The central workspace shows a 3D coordinate system with a grid. A grey rectangular calibration object is positioned on the grid. Four sensors are represented by colored rectangles: a red one at the top left, a green one at the bottom left, a black one at the top right, and a brown one at the bottom right. A height profile is overlaid on the calibration object, showing a red line with a peak and a blue scatter plot below it. The 'Previews' panel on the right shows three height profiles: Master (Signal strength = 13%), Slave1 (Signal strength = 7%), and Slave2 (Signal strength = 15%). The 'Modules' panel is empty.

The calibration calculates the intersection point of the extended line parts as edge point.



6.5 Filtering and Sorting

Click in the menu bar on “Tools” → “Sorting options...” to open the filtering and sorting options. By default, filtering and sorting is disabled. Filtering is applied on the height profile of the selected 2D/3D Profile Sensor. In case of overlapping height profiles of several 2D/3D Profile Sensors, it is possible to sort the combined profile (e.g. relevant for calculating cross-sectional areas).

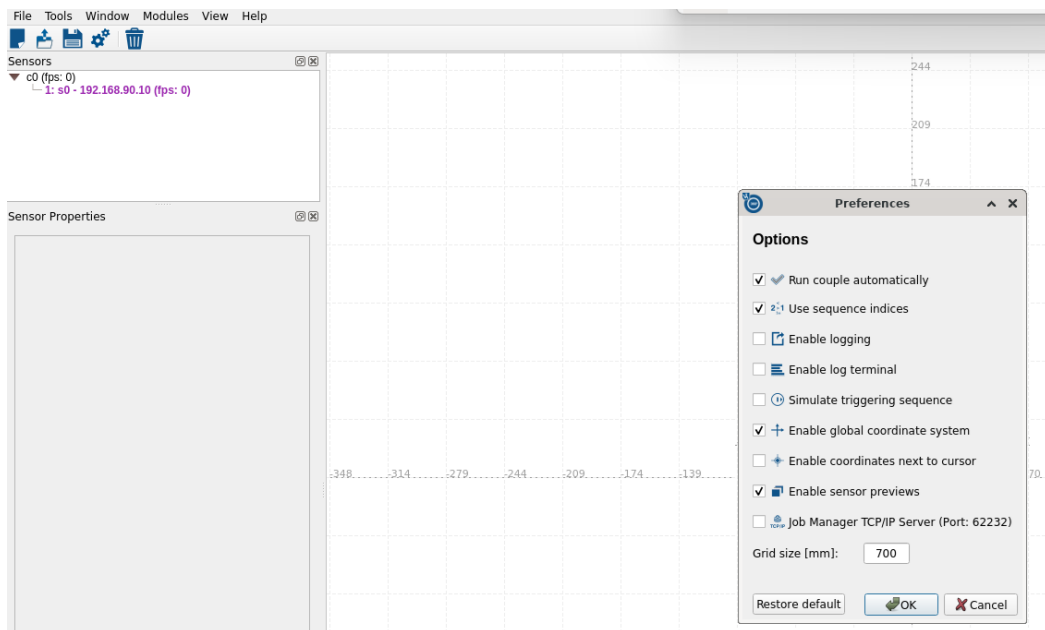
NOTE!



- For details about filtering and sorting, see section „9. VisionApp Overview“.
- Use Module Profile Sorting within the toolbox of uniVision ([DNNF023](#)) in order to combine Module Profile Region, Module Profile Filter and Module Profile Sorting in a flexible way and to see the direct sorting effect in Teachplus or Simulation Mode.

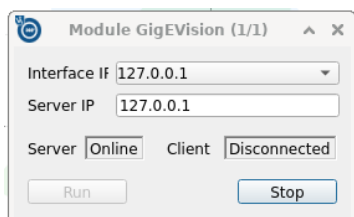
6.6 Run couple automatically

Click in the menu bar on "Tools" → "Preferences..." to open the preferences. Activate "Run couple automatically" to automatically start the measurement of the couple when starting the software VisionApp 360.

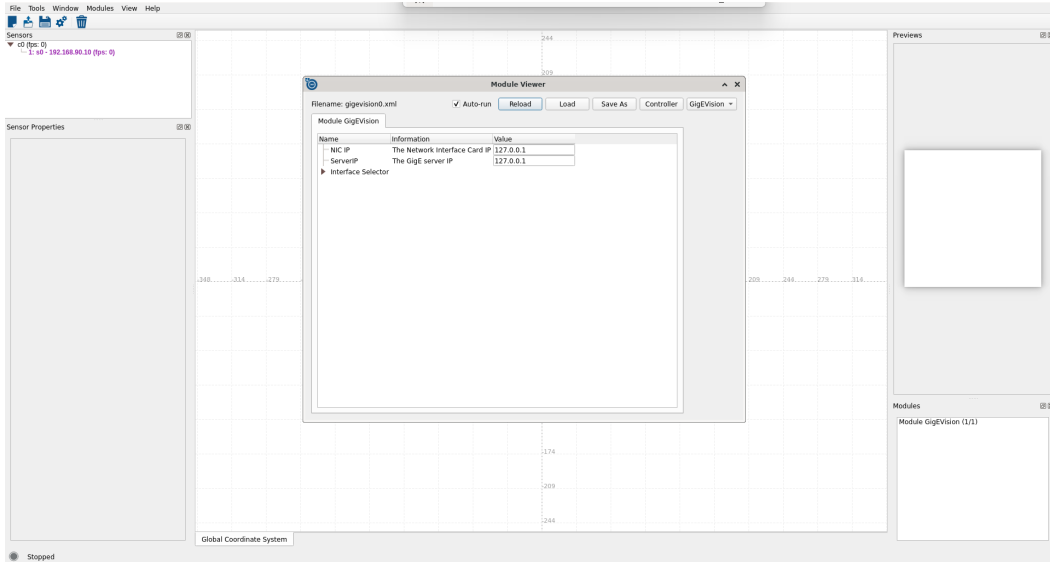


6.7 Module GigEVision

Click in the menu bar on "Modules" → "Module GigEVision" in order to send the combined height profile to the image-processing software uniVision 3. Click on "Run" to start the GigE Vision Server on the local IP address 127.0.0.1.

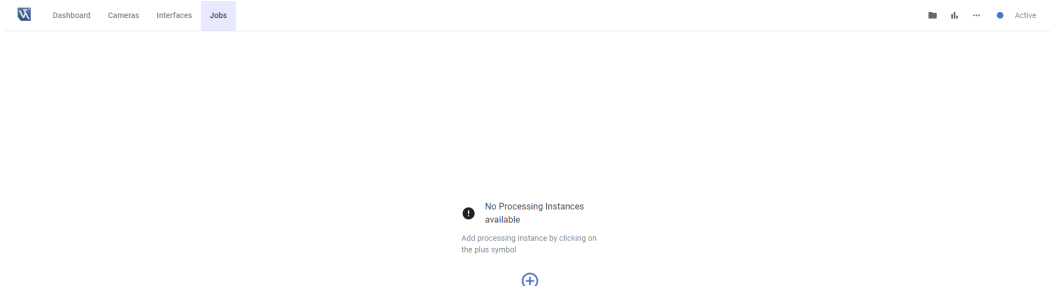


Click in the menu bar on "Modules" -> "Module Viewer" and activate "Auto-run" at the module GigEvision to automatically start the GigEvision server when starting the VisionApp 360.



7. Create Processing Instance on MVC

Open the device website of the Machine Vision Controller MVC. Enter the IP address of the LAN port of the Machine Vision Controller MVC in any supported browser (by default 192.168.100.1) or use the software wengler Discovery Tool ([DNNF022](#)) to search for the MVC. Select the tab "Jobs" and click on the plus symbol .



Select the device “VisionApp 360” and click on “Create” in order to create a new processing instance.

Select Input Device

Type	Article Number	Serial Number	IP Address	MAC Address
VisionApp 360	VisionApp360	000000	127.0.0.1	2C:94:64:06:8B:FD

CANCEL CREATE

Click on “Current Job” in order to connect the software wenglor uniVision 3 to the Processing Instance. Make sure that the suitable version of the software wenglor uniVision 3 is installed on the device ([DNNF023](https://www.wenglor.com/product/DNNF023)).

Dashboard Cameras Interfaces **Jobs**

we_processing_instance_1 Active: Running

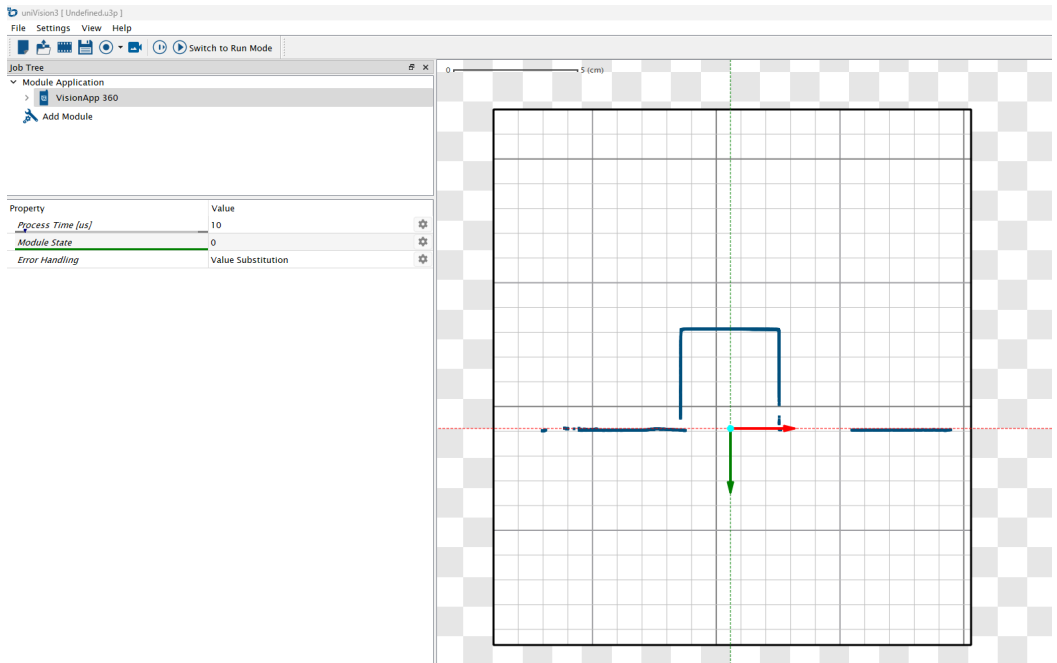
Current Job
No job available

Visualization
No job available

uniVision 3 is required for editing the job. uniVision 3 download: <https://www.wenglor.com/product/DNNF023>

8. Job in uniVision 3

The software uniVision 3 shows an empty job file of the combined height profile .



8.1 Device VisionApp 360


Device VisionApp 360 shows the following settings:

Process Time [μs]	Process time to run the module in μs .
Module State	Shows state of module: <ul style="list-style-type: none">• 0: No error• Different to 0: Error (for error details see operating instructions of DNNF023).
Error Handling	Defines the error handling "Value Substitution" in error case.

8.1.1 Image Format Control

Component ID Value	Shows the ID of the selected component.
Region Selector	Shows Width, Height, Offset X and Offset Y of the region selector "Scan3D Extraction 0".
Component Selector	Select the component to display the settings. <ul style="list-style-type: none">• Range: The pixel format "Coord3D_ABC32f" is enabled (read only).• Intensity: Option to enable or disable the intensity in pixel format "Mono 16" (by default enabled).

8.1.2 Acquisition Control

Acquisition Mode	Shows the only available acquisition mode "Continuous".
Acquisition Start	Sends acquisition start command to the GigE Server of the VisionApp 360.
Acquisition Stop	Sends acquisition stop command to the GigE Server of the VisionApp 360.
Trigger Software	Sends a single software trigger signal to the GigE Server of the VisionApp 360.
Trigger Selector	Defines the settings for the trigger "Line Start": <ul style="list-style-type: none">• Off: Disables the line start trigger.• On: Applies trigger source "Software" to send single software trigger signals to the GigE Server of the VisionApp 360. <p>NOTE!</p> <ul style="list-style-type: none">• Setup further trigger settings directly within the master unit of the software VisionApp 360 (see section „6.2 Setting up the Master Unit“). 

8.1.3 Transport Layer Control

Payload Size	Shows data size in bytes for profile transfer.
--------------	--

8.1.4 Chunk Data Control

Chunk Selector	Defines if specific chunk data are active or not. The following chunk data is available: <ul style="list-style-type: none">• Chunk Encoder: Returns the encoder value of the current height profile.• Chunk Picture Counter: Returns the picture counter of the current height profile.
----------------	--

8.1.5 Scan 3D Control

Scan 3D Output Mode	Shows "CalibratedABC_PointCloud"
Number of Profiles	Defines the number of height profiles sent together as one pointcloud by the GigE Server of the VisionApp 360.
Scan 3D Coordinate Selector	Defines settings for each coordinate: <ul style="list-style-type: none">• Coordinate A: Corresponds to the x value (read-only)• Coordinate B: Corresponds to the y value (option to adjust Scan 3D Coordinate Scale, Offset and Source)• Coordinate C: Corresponds to the z value (read-only)

8.1.6 Device Control

Device Type	Shows "Transmitter"
Device Scan Type	Shows "Linescan3D"
Device Model Name	Shows "visionApp360"
Device Vendor Name	Shows "wenglor sensoric GmbH"
Device Version	Shows version of VisionApp 360
Device Serial Number	Shows "000000"
Device TL Type	Shows "GigEVision"
Device Temperature Selector and Device Temperature	Shows the temperature of the 2D/3D Profile Sensor that is selected in "Device Temperature Selector". The software uniVision 3 is not refreshing the value.

8.2 Further uniVision 3 Settings

Link the output pointcloud of Device VisionApp360 as input pointcloud in further uniVision 3 modules. For details, see the operation instruction of uniVision 3 ([DNNF023](#)).



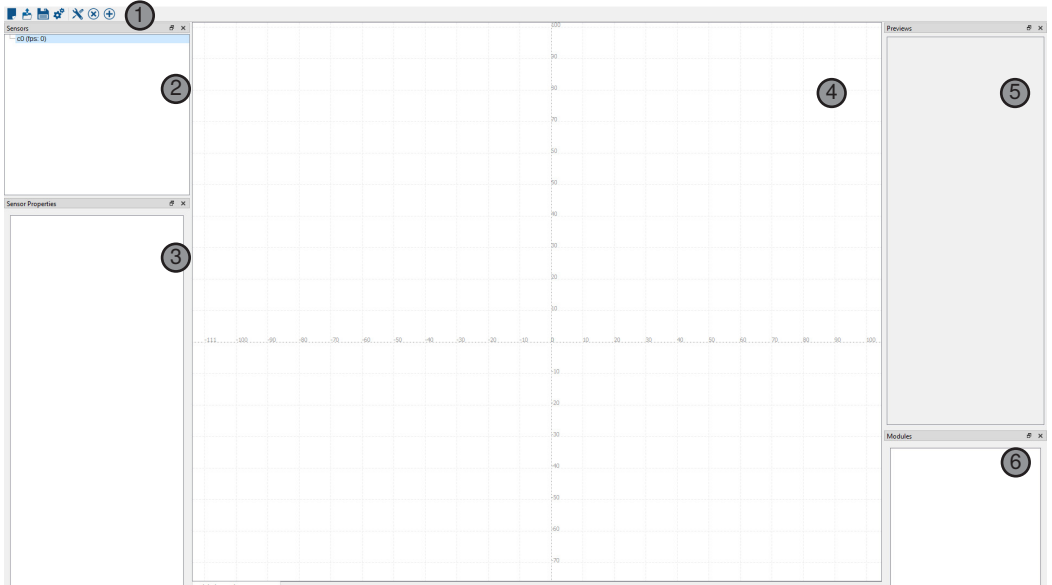
NOTE!

Some modules (e.g. Module Profile Region with the area calculation) require a sorted profile as input pointcloud. Combine Module Profile Filter and Module Profile Sorting for solving such applications.

Save the uniVision jobs and make sure that the startup policy on the device website of the Machine Vision Controller MVC (at tab "Jobs") fits to the application.

9. VisionApp Overview

The software VisionApp 360 contains the following parts.



- ① = Menu bar and icons
- ② = Sensors: Shows couple and sensors
- ③ = Sensor Properties: Shows the settings of the selected 2D/3D Profile Sensor
- ④ = Global Coordinate System: Shows main window with global coordinate system
- ⑤ = Previews: Shows preview of the profile and the intensity of each 2D/3D Profile Sensor
- ⑥ = Modules: Shows active modules (e.g. Module GigEVision)

9.1 Menu Bar

The menu bar “File” contains the following options:

Open	Open another configuration. Stop the GigE Vision Server and the measurement before opening another configuration.
Save	Save current configuration. The VisionApp 360 starts automatically with the last loaded configuration.
Exit	Close the software VisionApp 360.

The menu bar “Tools” contains the following options:

Undo chart	Undo the last operation within the global coordinate system.																				
Redo chart	Redo the last operation within the global coordinate system.																				
Preferences	Opens the following options: <table border="1"><tr><td>Run couple automatically</td><td>Defines to automatically start or stop the couple after starting the software VisionApp 360. Activate the setting after calibration in order to start the VisionApp 360 automatically after booting the Machine Vision Controller MVC.</td></tr><tr><td>Use sequence indices</td><td>Defines if sequence indices are displayed or not.</td></tr><tr><td>Enable login</td><td>Enable or disable logging. The log files are stored on the Machine Vision Controller in <code>/var/opt/wenglor/VisionApp360/resources</code>.</td></tr><tr><td>Enable log terminal</td><td>Enable or disable the log terminal. Open it in the menu bar “Window” → “Log terminal”.</td></tr><tr><td>Simulate triggering sequence</td><td>Defines if trigger sequences are simulated or not.</td></tr><tr><td>Enable global coordinate system</td><td>Enable or disable the global coordinate system in the chart.</td></tr><tr><td>Enable coordinates next to cursor</td><td>Enable or disable coordinates next to the mouse cursor in the chart.</td></tr><tr><td>Enable sensor previews</td><td>Enable or disable previews of the 2D/3D Profile Sensors. To show the preview, open the menu bar “View” -> “Preview”.</td></tr><tr><td>Job Manager TCP/IP Server (Port: 62232)</td><td>Enable or disable the TCP/IP Server on port 62232. For details about the supported commands, see section „9.3 LIMA Protocol”.</td></tr><tr><td>Grid size [mm]</td><td>Defines the x size in mm for the global coordinate system of the chart (zoom level).</td></tr></table>	Run couple automatically	Defines to automatically start or stop the couple after starting the software VisionApp 360. Activate the setting after calibration in order to start the VisionApp 360 automatically after booting the Machine Vision Controller MVC.	Use sequence indices	Defines if sequence indices are displayed or not.	Enable login	Enable or disable logging. The log files are stored on the Machine Vision Controller in <code>/var/opt/wenglor/VisionApp360/resources</code> .	Enable log terminal	Enable or disable the log terminal. Open it in the menu bar “Window” → “Log terminal”.	Simulate triggering sequence	Defines if trigger sequences are simulated or not.	Enable global coordinate system	Enable or disable the global coordinate system in the chart.	Enable coordinates next to cursor	Enable or disable coordinates next to the mouse cursor in the chart.	Enable sensor previews	Enable or disable previews of the 2D/3D Profile Sensors. To show the preview, open the menu bar “View” -> “Preview”.	Job Manager TCP/IP Server (Port: 62232)	Enable or disable the TCP/IP Server on port 62232. For details about the supported commands, see section „9.3 LIMA Protocol”.	Grid size [mm]	Defines the x size in mm for the global coordinate system of the chart (zoom level).
Run couple automatically	Defines to automatically start or stop the couple after starting the software VisionApp 360. Activate the setting after calibration in order to start the VisionApp 360 automatically after booting the Machine Vision Controller MVC.																				
Use sequence indices	Defines if sequence indices are displayed or not.																				
Enable login	Enable or disable logging. The log files are stored on the Machine Vision Controller in <code>/var/opt/wenglor/VisionApp360/resources</code> .																				
Enable log terminal	Enable or disable the log terminal. Open it in the menu bar “Window” → “Log terminal”.																				
Simulate triggering sequence	Defines if trigger sequences are simulated or not.																				
Enable global coordinate system	Enable or disable the global coordinate system in the chart.																				
Enable coordinates next to cursor	Enable or disable coordinates next to the mouse cursor in the chart.																				
Enable sensor previews	Enable or disable previews of the 2D/3D Profile Sensors. To show the preview, open the menu bar “View” -> “Preview”.																				
Job Manager TCP/IP Server (Port: 62232)	Enable or disable the TCP/IP Server on port 62232. For details about the supported commands, see section „9.3 LIMA Protocol”.																				
Grid size [mm]	Defines the x size in mm for the global coordinate system of the chart (zoom level).																				

Sorting options

Open the sorting and filtering options.



NOTE!

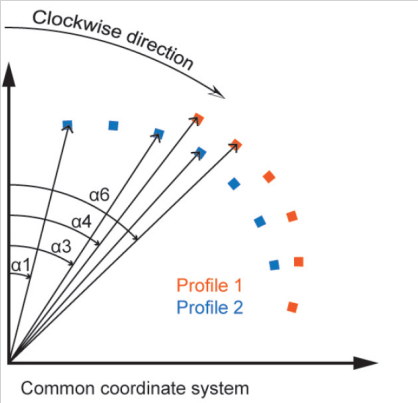
Use Module Profile Filter and Module Profile Sorting in the image-processing software uniVision 3 for more flexible combination of modules and easy debugging (see [DNNF023](#)).

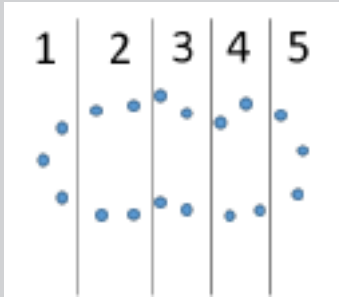
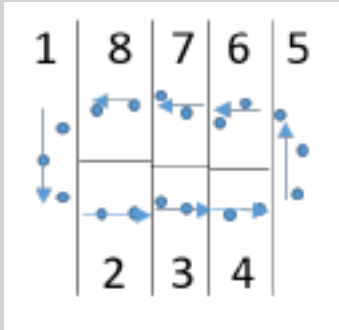
The filter is applied for the selected 2D/3D Profile Sensor. Make sure to adjust the filter settings for each 2D/3D Profile Sensor separately.

Median filter	Applies median filter on the profile (with adjustable size of median).
Segmentation filter	<p>Applies segmentation filter that divides the profile into segments. It removes segments with points less than the parameter "Min size of contour". The filter separates segments if the distance between measurement points is smaller than the parameter "Min distance between points (mm)".</p> <p>Remove double contour: Removes overlapping contours.</p> <p>Noise filter: Uses the "Recognition Level" (angle between 1 and 180°) to determine which maximum angle value between 3 measuring points is accepted. If the angle is larger, point B is removed.</p>

Sorting options

Apply the sorting of the combined height profile in case of using algorithms that require a sorted profile (e.g. area calculation in Module Profile Region).

Disable	Disables sorting for best performance (default). The profiles of all sensors are sent one after each other.
Angle sorting (fast)	<p>Applies angle sorting for round and closed 360° contours (remove unwanted measurement points before applying the sorting). Sorts the profile from the center of gravity of the combined profile in clockwise direction.</p>  <p>Common coordinate system</p>
Square sorting (slow)	<p>Sorts the profile via squares and is suitable for all kinds of shapes, e.g. also for profiles with big width (expects a closed profile without gaps and without unwanted measurement points).</p> <p>The algorithm creates squares defined by the parameter "Size of search rectangle (mm)" and scans the combined height profile following the orientation of the profile starting at the point with the lowest x value. Make sure that the parameter "Size of search rectangle (mm)" is at least ten time bigger than the sensor resolution.</p>

Sorting options	Segmented sorting	<p>Applies sorting for round and closed 360° contours by creating five segments with uniform width (x value). Remove unwanted measurement points before applying the sorting.</p>  <p>The segments two to four are split into upper and lower segments by calculating the center of the z values for each segment. The segments one and five remain undivided. Consequently, the algorithm creates eight new segments that are sorted according to the arrows (e.g. segment two is sorted from the left to the right).</p> 
Export sensor data	Exports sensor data	
Disable features	Enables or disables the password protection to prevent unwanted changes.	
Change password...	Change the password to protect the software from unwanted changes.	

The menu bar "Window" contains the following options:

Full screen	Enables or disables full screen mode.
Log terminal	Opens log terminal window.

The menu bar “Modules” contains the following options:

Module Viewer	Opens Module Viewer
Module GigEVision	Opens Module GigEVision (see section „6.7 Module GigEVision“).

The menu bar “View” contains the following options:

Sensors	Shows or hides sensors.
Sensor Properties	Shows or hides sensor properties.
Previews	Shows or hides sensor previews.
Modules	Shows or hides modules.

The menu bar “Help” contains the following options:

Licensing	Opens the licensing window.
Third Party Licenses	Opens the third party licenses.
Manual	Opens the operating instruction of the VisionApp 360.
About	Shows the current version of the software VisionApp 360.

9.2 Icons

The following icons are available:

New	Creates a new configuration.
Open	Opens another configuration.
Save	Saves the configuration.
Preferences	Opens the preferences (see section „9.1 Menu Bar“).
Run/Stop	Runs or stops the measurement.
Reset and Reset All	Resets one or all 2D/3D Profile Sensors.
Rename and Edit	Renames the couple or edits the sensor.
Remove and Remove Sensor	Removes the couple or the sensor.
Add New Sensor	Adds new sensor to the couple.
Delete (sensor) calibration parameters	Deletes the calibration parameters for one sensor or for all sensors.
Disable (sensor) calibration	Disables the calibration for one sensor or for all sensors.
Define Sensor ROI and Perform (Sensor) Calibration	Defines the sensor ROI and performs the calibration for one sensor or the complete couple.

9.3 LIMA Protocol

LIMA is an open wenglor network protocol based on XML in order to communicate with the software VisionApp 360. Use it to send open configuration commands from the communication partner (e.g. PLC or PC program) to the software VisionApp 360.

Establish a TCP/IP connection from the communication partner to the VisionApp 360:

- IP address of LAN port of Machine Vision Controller MVC (default 192.168.100.1)
- Port 62232 (fix)

NOTE!

- Activate "Job Manager TCP/IP Server" at "Tools" -> "Preferences" to enable the TCP/IP Server.
- Make sure to send LIMA commands sequentially.
- Send the commands in the correct order in order to load another configuration. Make sure to stop the Module GigEVision first, then to stop the measurement and afterwards to load the configuration. Then start measurement again and afterwards start the Module GigEVision.



Stop the Module GigEVision

Command	<code><LIMA CMD="Module_SetNode" DIR="Request" MODULENAME="GigEVision" PATH="Start" VALUE="0" /></code>
Description	Stops the Module GigEVision.

Stop Measurement

Command	<code><LIMA CMD="Module_SetNode" DIR="Request" MODULENAME="couple_name" PATH="Start" VALUE="0" /></code>
Parameter	Couple_name: Name of the couple
Description	Stops the measurement of the couple. Make sure to stop the Module GigEVision before stopping the measurement. Example with couple name "couple": <code><LIMA CMD="Module_SetNode" DIR="Request" MODULENAME="couple" PATH="Start" VALUE="0" /></code>

Load Configuration

Command	<code><LIMA CMD="Module_SetNode" DIR="Request" MODULENAME="PROJECT" PATH="SetFile" VALUE="Path to file name" /></code>
Parameter	Path to file name: File path on the Machine Vision Controller MVC where the VisionApp 360 configuration is located.
Description	<p>Loads a VisionApp 360 configuration. Make sure to stop Module GigEVision and measurement before loading another configuration.</p> <p>Example with file path "/var/opt/wenglor/VisionApp360/resources/default.vcfg": <LIMA CMD="Module_SetNode" DIR="Request" MODULENAME="PROJECT" PATH="SetFile" VALUE="Path to file name" /></p>

Start Measurement

Command	<code><LIMA CMD="Module_SetNode" DIR="Request" MODULENAME="couple_name" PATH="Start" VALUE="1" /></code>
Parameter	Couple_name: Name of the couple
Description	<p>Starts the measurement of the couple.</p> <p>Example with couple name "couple": <LIMA CMD="Module_SetNode" DIR="Request" MODULENAME="couple" PATH="Start" VALUE="1" /></p>

Start Module GigEVision

Command	<code><LIMA CMD="Module_SetNode" DIR="Request" MODULENAME="GigEVision" PATH="Start" VALUE="1" /></code>
Description	Starts the Module GigEVision. Make sure to start the measurement before starting the Module GigEVision.

10. Third Party Licenses

The third party license information is available in the Software VisionApp 360 in the menu bar “Help” → “Third Party Licenses” or on the wenglor website:

<https://www.wenglor.com/License/s/License>

11. Change Index of Operating Instructions

Version	Date	Description	Associated software version
1.0.0	15.05.2025	Initial version	Software VisionApp 360 1.5.0 (included in Firmware MVC 1.2.0)