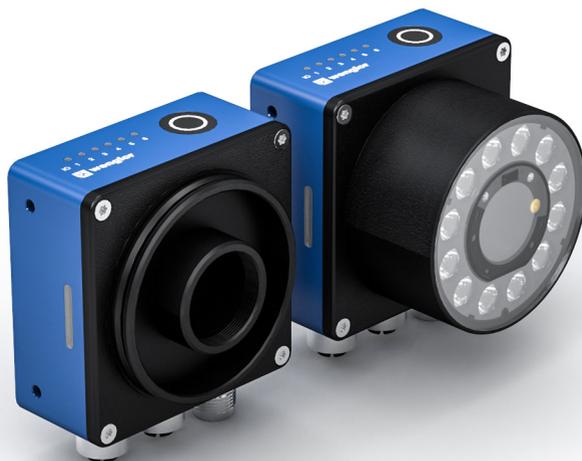


# B60xxx

Smart Cameras and Vision Sensors



## Operating Instructions

Original operating instructions  
Subject to change without notice  
Available as PDF file only  
Revision level: 06.03.2023  
Version 1.2.0  
[www.wenglor.com](http://www.wenglor.com)

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# 1. General

## 1.1 Information Concerning these Instructions

- These instructions enable safe and efficient use of B60 Smart Cameras.
- These instructions are an integral part of the product and must be kept on hand for the entire duration of its service life.
- Local accident prevention regulations and national work safety regulations must be complied with as well.
- The product is subject to further technical development, and thus the information contained in these operating instructions may also be subject to change. The current version can be found at [www.wenglor.com](http://www.wenglor.com) in the product's separate download area.



### NOTE!

The operating instructions must be read carefully before using the product and must be kept on hand for later reference.

## 1.2 Explanations of Symbols

- Safety precautions and warnings are emphasized by means of symbols and attention-getting words.
- Safe use of the product is only possible if these safety precautions and warnings are adhered to.

The safety precautions and warnings are laid out in accordance with the following principle:



### ATTENTION-GETTING WORD!

#### Type and Source of Danger!

Possible consequences in the event that the hazard is disregarded.

- Measures for averting the hazard.

The meanings of the attention-getting words, as well as the scope of the associated hazards, are listed below:



### DANGER!

This word indicates a hazard with a high degree of risk which, if not avoided, results in death or severe injury.



### Warning!

This word indicates a hazard with a medium degree of risk which, if not avoided, may result in death or severe injury.



### CAUTION!

This word indicates a hazard with a low degree of risk which, if not avoided, may result in minor or moderate injury.



### ATTENTION!

This word draws attention to a potentially hazardous situation which, if not avoided, may result in property damage.



### NOTE!

A note draws attention to useful tips and suggestions, as well as information regarding efficient, error-free use.

### 1.3 Limitation of Liability

- The product has been developed taking into account the state of the art as well as the applicable standards and guidelines.
- We reserve the right to make technical changes.
- A valid declaration of conformity can be found at [www.wenglor.com](http://www.wenglor.com) in the download area of the product.
- wenglor sensoric elektronische Geräte GmbH (hereinafter „wenglor“) accepts no liability for:
  - » Failure to observe the operating manual,
  - » Unsuitable or improper use of the product,
  - » Excessive use, incorrect or negligent treatment of the product,
  - » Incorrect installation or commissioning,
  - » Use of untrained personnel,
  - » Use of unauthorized spare parts or
  - » Improper or unauthorized changes, modifications or repair work to the products.
- This operating manual does not contain any guarantees/warrantees from wenglor with regard to the processes described or certain product properties.
- wenglor assumes no liability with regard to printing errors or other inaccuracies contained in this operating manual, unless it can be proven that wenglor was aware of the errors at the time the operating manual was created.

### 1.4 Copyrights

- The contents of these instructions are protected by copyright law.
- All rights are reserved by wenglor.
- Commercial reproduction or any other commercial use of the provided content and information, in particular graphics and images, is not permitted without previous written consent from wenglor.

## 2. For Your Safety

### 2.1 Use for Intended Purpose

This wenglor product is intended for use in accordance with the following functional principle:

The Smart Camera B60 is an industrial image capture and processing sensor used for non-contact inspection of specific objects. The Smart Camera combines image acquisition and evaluation in one housing and operates with a CMOS color or monochrome image sensor.

With the wenglor uniVision image processing software [DNNF023](#) (version 3.0.0 or higher) and a PC or laptop, the image processing functions of the corresponding uniVision license package can be configured. Typical applications are reading, 1D codes, 2D codes or OCR, presence check of best before date or checking the correct assembly at automatic manufacturing processes.

These image processing functions can be executed in trigger mode as well as in continuous monitoring mode, where objects can be detected regardless of their position thanks to tracking. Six general purpose I/Os are available, which can be used as input or output as required.

The product is primarily designed for use in industrial and logistic areas and meets the requirements for industrial robustness, interfaces as well as data processing.

### 2.2 Use for Other than the Intended Purpose

- The product is not a safety component in accordance with the EC Machinery Directive.
- The product is not suitable for use in potentially explosive atmospheres.
- The product may be used only with accessories supplied or approved by wenglor, or in combination with approved products. A list of approved accessories and combination products can be found at [www.wenglor.com](http://www.wenglor.com) on the product detail page.



#### **Warning!**

#### **Risk of personal injury or property damage in case of use for other than the intended purpose!**

Use for other than the intended purpose may lead to hazardous situations.

- Instructions regarding use for intended purpose must be observed.
- 

### 2.3 Personnel Qualifications

- Suitable technical training is a prerequisite.
- In-house electronics training is required.
- Trained personnel who use the product must have (uninterrupted) access to the operating instructions.



#### **DANGER!**

#### **Risk of personal injury or property damage in case of incorrect initial start-up and maintenance!**

Personal injury and damage to equipment may occur.

- Adequate training and qualification of personnel.
-

## 2.4 LED/Laser Warnings

Observe the safety and warning instructions listed here to avoid dangerous situations and reduce health hazards.

Operation with external lighting can lead to the risks described here being exceeded and must be considered by the user on a case-by-case basis.

For more details see operating instructions of the external lighting.

### 2.4.1 LED Radiation of Illumination Modules

(not included in scope of delivery)

---

#### CAUTION!



#### Optical radiation LED risk group 1, visible radiation, 400...780 nm.

Possible eye hazard if not used as intended.

- Do not look directly into the light source during operation.
  - Observe applicable national regulations on the photobiological safety of lamps and lamp systems
- 

#### CAUTION!



#### Optical radiation LED risk group 1, invisible radiation, 850 nm.

Possible eye hazard if not used as intended.

- Do not look directly into the light source during operation.
  - Observe applicable national regulations on the photobiological safety of lamps and lamp systems
- 

### 2.4.2 Laser Radiation of the visual field marking (Laser Pattern)

**LASER CLASS 1**  
EN 60825-1:2007

**Laser class 1 (EN 60825-1)**

Applicable standards and safety regulations must be observed.

---

## 2.5 Modification of Products

---

#### DANGER!



#### Risk of personal injury or property damage if the product is modified!

Personal injury and damage to equipment may occur. Non-observance may result in loss of the CE and/or UKCA mark and the guarantee may be rendered null and void.

- Modification of the product is impermissible.
  - Unauthorized opening of the device is not permitted.
- 

## 2.6 Repair

Trained and authorized wenglor personnel may only carry out repairs to the device. Interventions and modifications to the device by the customer will void the warranty claim against wenglor.

---

## 2.7 General Safety Precautions

### NOTE!



- These instructions are an integral part of the product and must be kept on hand for the entire duration of its service life.
- In the event of possible changes, the respectively current version of the operating instructions can be accessed at [www.wenglor.com](http://www.wenglor.com) in the product's separate download area.
- Read the operating instructions carefully before using the product.
- The Smart Camera must be protected against contamination and mechanical influences.



### DANGER!

**Danger due to possibly dangerous optical or infrared radiation of the illumination (not included in the scope of delivery)!**

Damage to the eyes possible.

- Do not look directly into the illumination during operation.



### CAUTION!

**Danger of burns under specific conditions (e.g. high ambient temperature)!**

Do not touch the housing while the device is running or shortly after switching it off, as it remains very hot.

## 2.8 Conditions for specified Degree of Protection

To maintain the specified degree of protection of the device during operation, the following specifications apply. In case of non-compliance, the device does not comply with any specified degree of protection.

- The connected cables at the electrical connections are screwed.
- Any unused electrical connections are sealed with a screwed-on protective cap.
- The protective tube is screwed tightly to the device.



### ATTENTION!

**Risk of damage to the product if the conditions are not complied with**

In case of non-compliance, the device does not comply with any specified protection class.

## 2.9 Approvals



## 3. Technical Data

### 3.1 General Data

The B60 is available in 3 different software packages:

- B60Mxxx: uniVision
- B60Exxx: uniVision Extended
- B60Pxxx: uniVision Script

All currently associated software modules can be found at:

[Product Highlights of uniVision 3](#)

#### 3.1.1 B60 C Mount

Order No.	B60x103	B60x113	B60x203	B60x213
<b>Technical Data</b>				
<b>Optical Data</b>				
Lens thread	C-Mount			
Resolution	1440 x 1080 Pixel		2448 x 2048 Pixel	
Resolution	1,6 MP		5 MP	
Image Chip	monochrome	color	monochrome	color
Image chip size	1/2,9"		1/1,8"	
Pixel size	3,45 x 3,45 µm		2,74 x 2,74 µm	
Light source	External lighting			
Frame rate	≤ 40 fps <sup>1</sup>			
<b>Environmental conditions</b>				
Temperature range	0...40 °C <sup>2</sup>			
Storage temperature	0...70 °C			
Atmospheric humidity	5...95 %, non-condensing			
Shock resistance (DIN IEC 68-2-27)	30 g / 11 ms			
Vibration resistance (DIN EN 60068-2-64)	6 g (10...55 Hz)			
<b>Electrical Data</b>				
Supply Voltage	24 VDC			
Current Consumption (U <sub>b</sub> = 24 V)	< 500 mA			
Inputs/outputs	6			
Switching Output Voltage Drop	< 2,5 V			
Switching Output/Switching Current	100 mA			
Short circuit protection	yes			
Reverse polarity protection	yes			
Interface	Ethernet			
Industry protocols	PROFINET Class B			
General protocols	FTP, sFTP, TCP/IP, UDP			
Baud rate Ethernet	1 Gbit/s			
Baud rate PROFINET	100 Mbit/s			
Protection class	III			
RAM	2 GB <sup>3</sup>			
Storage Capacity	16 GB <sup>4</sup>			
PoE Class	0			

<b>Mechanical Data</b>	
Housing material	Aluminium, anodised
Optic cover	Glass
Degree of protection	IP67
Connection	M12 x 1; 12-pin
Type of connection Ethernet	M12 x 1; 8-pin, X-coded (2x)
<b>General Data</b>	
Web server	yes
<b>Output</b>	
PNP NO	yes
<b>Adjustable Parameters</b>	
Output	Push-Pull, NPN, PNP
Circuit	NC/NO, NC, NO

Descriptions of the text passages marked with an annotation number can be found in section [3.1.3](#).

### 3.1.2 B60 AF (Auto-focus) wide

Order No.	B60x101	B60x111	B60x201	B60x211
<b>Technical Data</b>				
<b>Optical Data</b>				
Range	> 50 mm			
Resolution	1440 x 1080 Pixel		2448 x 2048 Pixel	
Resolution	1,6 MP		5 MP	
Focal distance	6 mm		7 mm	
Image Chip	monochrome	color	monochrome	color
Image chip size	1/2,9"		1/1,8"	
Pixel size	3,45 x 3,45 µm		2,74 x 2,74 µm	
Light source	Z60F Illumination module			
Frame rate	≤ 40 fps <sup>1</sup>			
<b>Environmental conditions</b>				
Temperature range	0...40 °C <sup>2</sup>			
Storage temperature	0...70 °C			
Atmospheric humidity	5...95 %, non-condensing			
Shock resistance (DIN IEC 68-2-27)	30 g / 11 ms			
Vibration resistance (DIN EN 60068-2-64)	6 g (10...55 Hz)			
<b>Electrical Data</b>				
Supply Voltage	24 VDC			
Current Consumption (U <sub>b</sub> = 24 V)	< 500 mA			
Inputs/outputs	6			
Switching Output Voltage Drop	< 2,5 V			
Switching Output/Switching Current	100 mA			
Short circuit protection	yes			
Reverse polarity protection	yes			
Interface	Ethernet			
Industry protocols	PROFINET Class B			
General protocols	FTP, sFTP, TCP/IP, UDP			
Baud rate Ethernet	1 Gbit/s			

Baud rate PROFINET	100 Mbit/s
Protection class	III
RAM	2 GB <sup>3</sup>
Storage Capacity	16 GB <sup>4</sup>
PoE Class	0
<b>Mechanical Data</b>	
Minimum object distance	50 mm
Housing material	Aluminium, anodised
Optic cover	Plastic, PMMA
Degree of protection	IP67
Connection	M12 x 1; 12-pin
Type of connection Ethernet	M12 x 1; 8-pin, X-coded (2x)
<b>General Data</b>	
Web server	yes
<b>Output</b>	
PNP NO	yes
<b>Adjustable Parameters</b>	
Output	Push-Pull, NPN, PNP
Circuit	NC/NO, NC, NO

Descriptions of the text passages marked with an annotation number can be found in section 3.1.3.

### 3.1.3 B60 AF (Auto-focus) narrow

Order No.	B60x102	B60x112	B60x202	B60x212
<b>Technical Data</b>				
<b>Optical Data</b>				
Range	> 100 mm			
Resolution	1440 x 1080 Pixel		2448 x 2048 Pixel	
Resolution	1,6 MP		5 MP	
Focal distance	12 mm		17,5 mm	
Image Chip	monochrome	color	monochrome	color
Image chip size	1/2,9"		1/1,8"	
Pixel size	3,45 x 3,45 µm		2,74 x 2,74 µm	
Light source	Z60F Illumination module			
Frame rate	≤ 40 fps <sup>1</sup>			
<b>Environmental conditions</b>				
Temperature range	0...40 °C <sup>2</sup>			
Storage temperature	0...70 °C			
Atmospheric humidity	5...95 %, non-condensing			
Shock resistance (DIN IEC 68-2-27)	30 g / 11 ms			
Vibration resistance (DIN EN 60068-2-64)	6 g (10...55 Hz)			
<b>Electrical Data</b>				
Supply Voltage	24 VDC			
Current Consumption (U <sub>b</sub> = 24 V)	< 500 mA			
Inputs/outputs	6			
Switching Output Voltage Drop	< 2,5 V			
Switching Output/Switching Current	100 mA			
Short circuit protection	yes			

Reverse polarity protection	yes
Interface	Ethernet
Industry protocols	PROFINET Class B
General protocols	FTP, sFTP, TCP/IP, UDP
Baud rate Ethernet	1 Gbit/s
Baud rate PROFINET	100 Mbit/s
Protection class	III
RAM	2 GB <sup>3</sup>
Storage Capacity	16 GB <sup>4</sup>
PoE Class	0
<b>Mechanical Data</b>	
Minimum object distance	100 mm
Housing material	Aluminium, anodised
Optic cover	Plastic, PMMA
Degree of protection	IP67
Connection	M12 x 1; 12-pin
Type of connection Ethernet	M12 x 1; 8-pin, X-coded (2x)
<b>General Data</b>	
Web server	yes
<b>Output</b>	
PNP NO	yes
<b>Adjustable Parameters</b>	
Output	Push-Pull, NPN, PNP
Circuit	NC/NO, NC, NO

<sup>1</sup> Frame rate: Maximum fps adjustable in software if Trigger Mode is set to Off. Recommended maximum frequencies (e.g. to avoid data overflow) are:

- 35 Hz for B60 1.6 MP monochrome
- 30 Hz for B60 1.6 MP color
- 30 Hz for B60 5 MP monochrome
- 20 Hz for B60 5 MP color

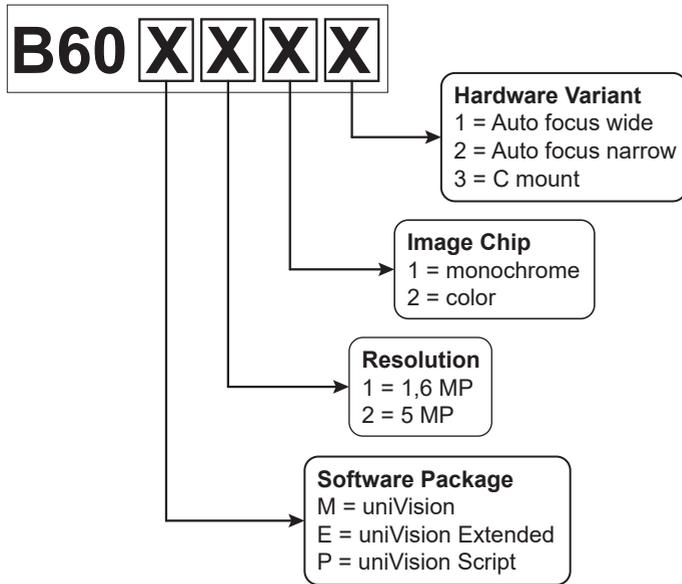
Please also consider the trigger prohibited time (see following section) and that the processing time in uniVi- sion is short enough to handle the required trigger frequency. In case of data overflow the error handling of the device takes care of a defined behavior (see operating instructions of software wenglor uniVision 3 [DNNF023](#)).

<sup>2</sup> Temperature range: The internal temperature is approx. 10...30° C above the ambient temperature. Use in areas with ambient temperatures above the specified ones may result in CPU throttling (depending on the computing intensity). Use the sensor only in the specified temperature range to avoid damage and shortening of the service life.

<sup>3</sup> Available (volatile) working memory (relevant for the currently loaded project, among other things)

<sup>4</sup> Of which freely available memory: approx. 2 GB (e.g. for saving data under /media/card)

### 3.1.4 Order Number



### 3.1.5 Illumination Modules Z60F

(not included in scope of delivery)

Order No.	Z60F001	Z60F002	Z60F003	Z60F004	Z60F005
<b>Technical Data</b>					
<b>Optical Data</b>					
Light source	White Light	IR	RGBW	White Light	IR
Color temperature	5800 K			5800 K	
Wavelength		850 nm			850 nm
Beam angle	92°	92°	120°	32°	32°
<b>Electrical Data</b>					
Current consumption continuous mode (U <sub>b</sub> = 24 V)	< 200 mA				
Current consumption strobe mode (U <sub>b</sub> = 24 V)	1,1 A				
Flash duration	0,05...65 ms <sup>1</sup>				
Duty cycle	0,1				
Protection class	III				
Dimming	Software wenglor uniVision 3 <sup>2</sup>				
Overdrive	yes				
<b>Mechanical Data</b>					
Weight	60 g				
<b>General Data</b>					
Scope of delivery	1 x Illumination module, 1 x Angle Changer	1 x Illumination module, 1 x Angle Changer	1 x Illumination module	1 x Illumination module	1 x Illumination module
<b>Function</b>					
Operating modes	Continuous, Strobe				

- <sup>1</sup>
- Relevant for the Strobe Overdrive lighting mode.
  - Flash duration depends on the exposure time.
  - If the specified maximum flash duration is exceeded, the lighting switches off automatically.

- <sup>2</sup> The brightness of the lighting can be set in the wenglor uniVision 3 software.

#### Product Service Life

The service life of LEDs can generally be increased by using flash mode. Flashing the light or switching the illumination on and off allows the LED chip to heat up less. The chip temperature of the LED correlates directly with the service life of the LED chip.



#### NOTE!

Information on the construction and assembly of the illumination modules can be found in the sections „3.6.3 Illumination Module“ and „5.2.4 Assembly of Illumination Modules“.



#### NOTE!

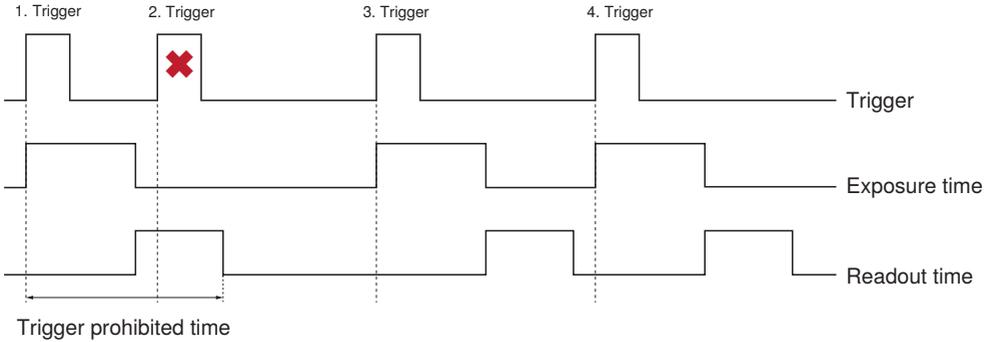
Information on handling LED radiation can be found in section „2.4.1 LED Radiation of Illumination Modules“.

### 3.1.6 Trigger prohibited time

Please consider that trigger signals while exposing and while reading out the image chip must be prevented as they are ignored by the software. The prohibited time after a trigger signal is

- for B60 1.6 MP:  
Exposure time + 17 ms readout time = trigger prohibited time
- for B60 5 MP:  
Exposure time + 15 ms readout time = trigger prohibited time

Example: In the following illustration, the second trigger will be ignored. Triggers 3 and 4 are outside the prohibited time and are taken into account.

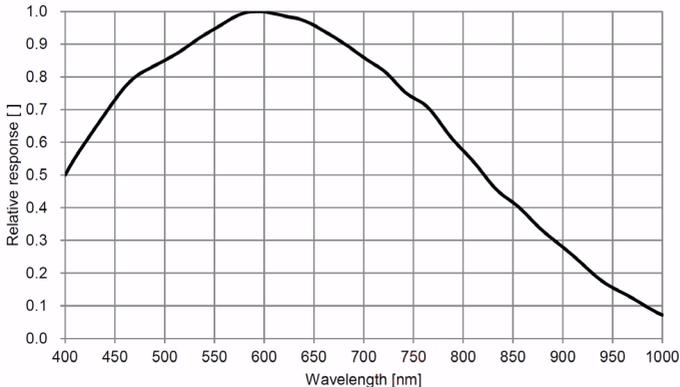


Evaluate “Missed Trigger Counter” at Chunk Data Control of Device Smart Camera to check for too fast trigger signals. For details, see uniVision operating instructions ([DNNF023](#)).

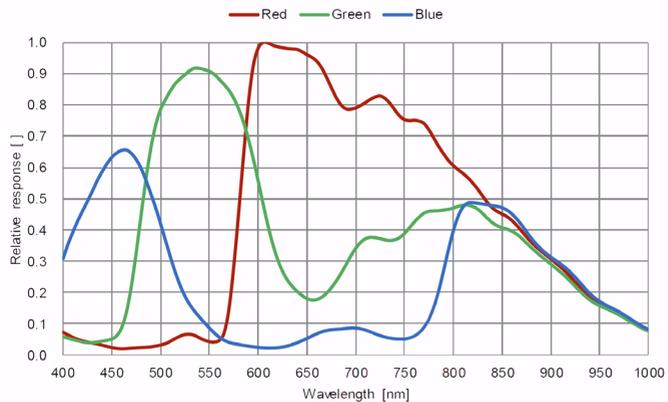
### 3.1.7 Spectral sensitivity characteristics of the image chips

(Lens and light source characteristics excluded)

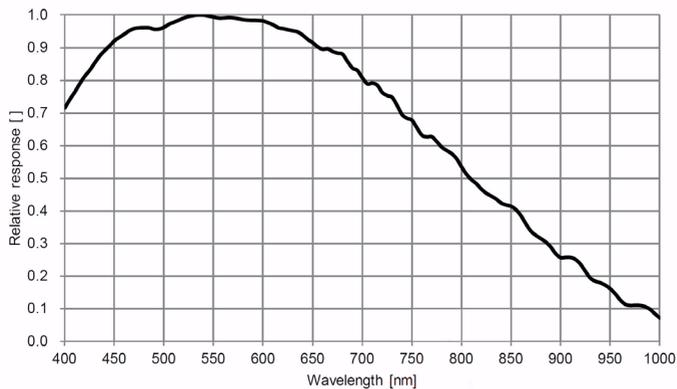
#### 1,6 MP mono



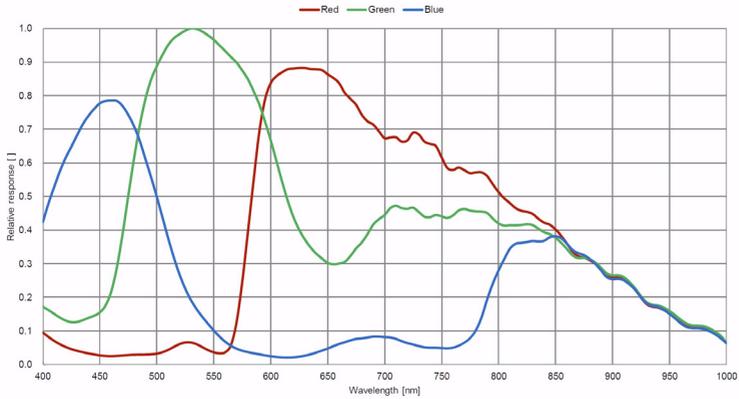
## 1,6 MP color



## 5 MP mono



## 5 MP color



### NOTE!



The following points must be observed when using external illumination:

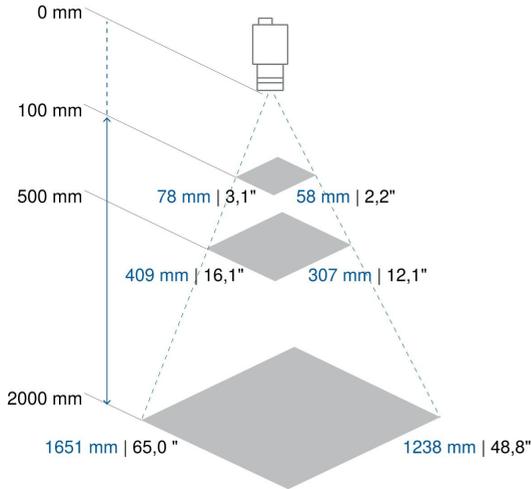
- For color cameras, always use white light illumination.
- For mono cameras, visible or IR light illumination can be used.

## 3.2 Fields of View

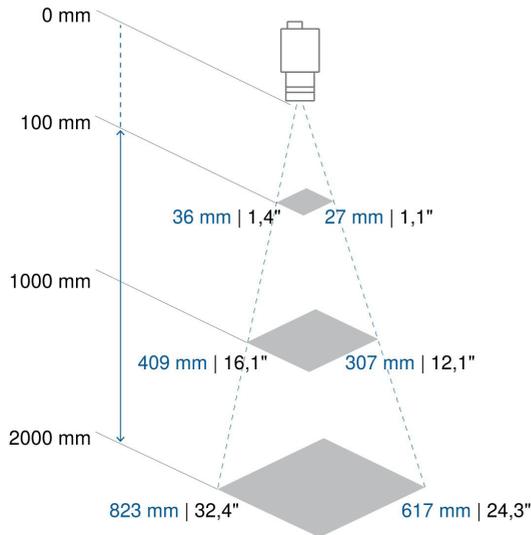
The field of view of C Mount cameras depends on the mounted lens. The online Vision Calculator helps you to select the right lens or auto-focus variant.

<https://www.wenglor.com/en/Vision-Calculator/s/Vision+Calculator>

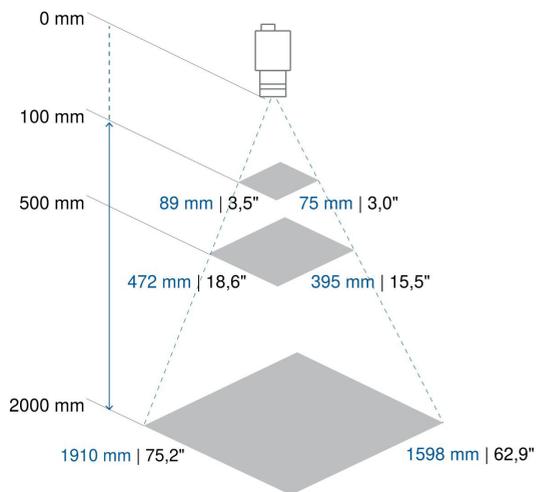
### B60x1x1 (B60 AF wide, 1,6 MP)



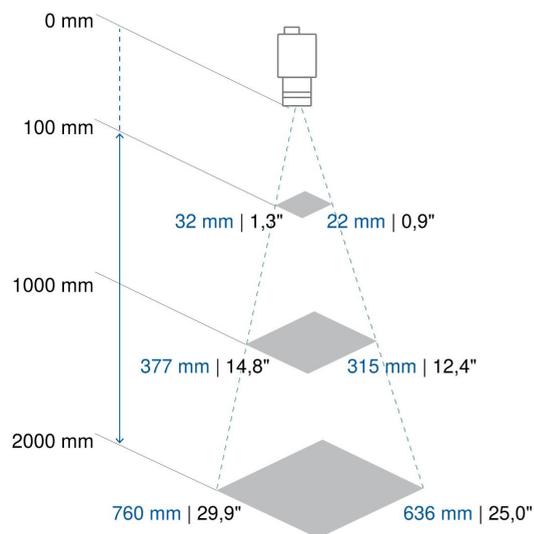
### B60x1x2 (B60 AF narrow, 1,6 MP)



### B60x2x1 (B60 AF wide, 5 MP)

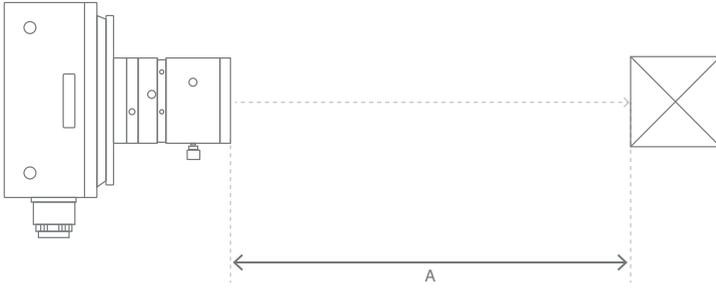


### B60x2x2 (B60 AF narrow, 5 MP)

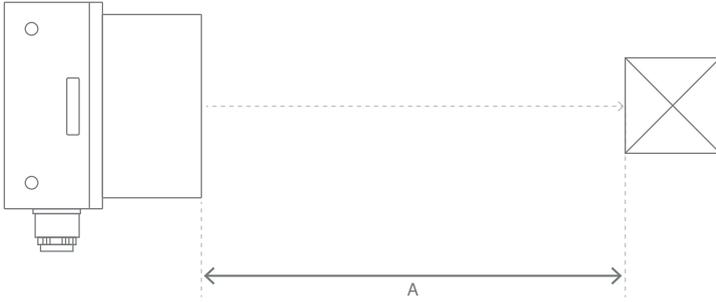


The following diagrams show the definition of the working distance A graphically.

**B60 C-Mount**



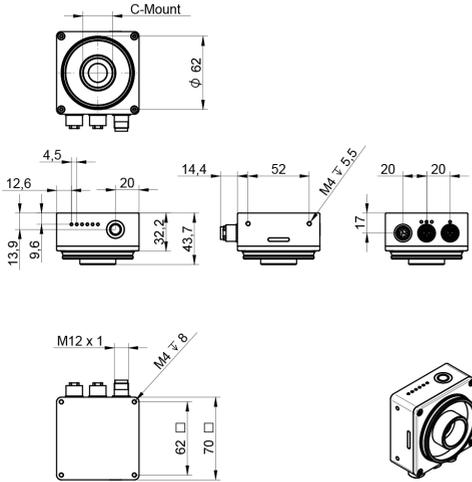
**B60 AF**



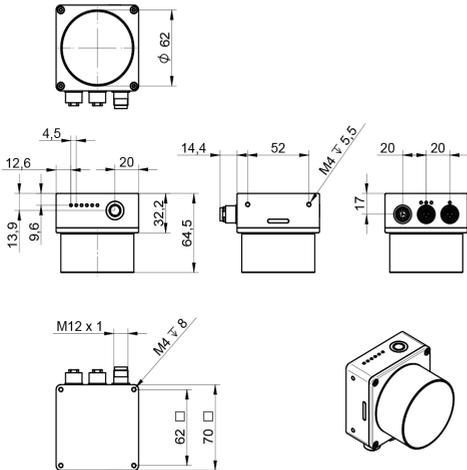
### 3.3 Dimensional Drawing

All dimensions specified in mm (1 mm = 0.03937")

#### B60 C-Mount

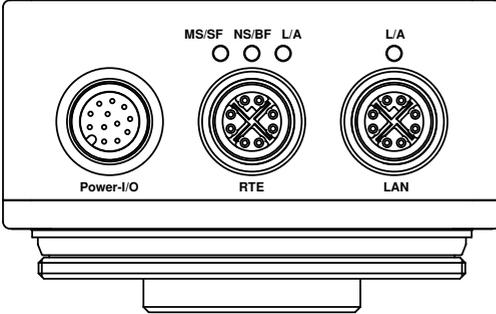


#### B60 AF



### 3.4 Connection Diagram

The Smart Camera B60 has 3 separate connectors for parameterization and process data. Power over Ethernet (PoE) is supported via the LAN connector. When using PoE, the digital I/Os are not supported. When using the LAN and Power-I/O connectors at the same time, note that power is supplied via the Power-I/O connector while PoE is disabled.

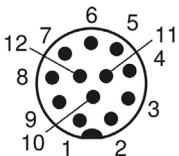
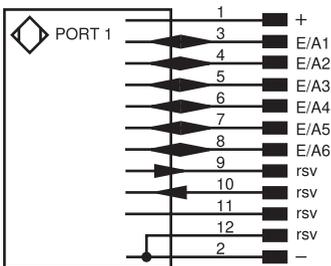


- **Power-I/O** for power supply and digital inputs/outputs  
Connection cable with connection diagram no. 1044  
M12; 12-pin (A-coded)
- **RTE** for Industrial Ethernet  
Connection cable with connection diagram no. 002  
M12; 8-pin (X-coded)
- **LAN** for 1Gbit Ethernet (optional: PoE)  
Connection cable Connection diagram no. 008  
M12; 8-pin (X-coded)

#### M12; 12-pin (Power-I/O)

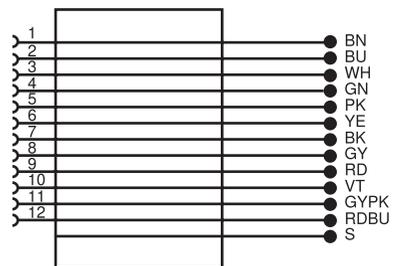
Connection Diagram

1044



Wire color

S89



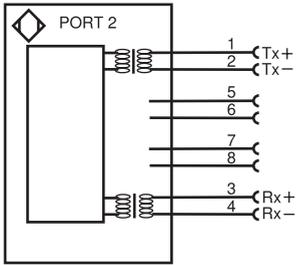
## Default settings

Pin	Symbol	default
3	E/A1	Output (PNP, not inverted)
4	E/A2	Output (PNP, not inverted)
5	E/A3	Output (PNP, not inverted)
6	E/A4	Output (PNP, not inverted)
7	E/A5	Output (PNP, not inverted)
8	E/A6	Output (PNP, not inverted)

## M12; 8-polig (RTE)

Connection diagram

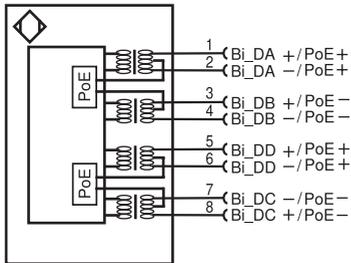
002



## M12; 8-pin (LAN)

Connection diagram

008



Legend					
+	Supply Voltage +	nc	Not connected	ENBR <sub>S422</sub>	Encoder B/B̄ (TTL)
-	Supply Voltage 0 V	U	Test Input	EN <sub>A</sub>	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	EN <sub>B</sub>	Encoder B
A	Switching Output (NO)	W	Trigger Input	AM <sub>IN</sub>	Digital output MIN
Ā	Switching Output (NC)	W-	Ground for the Trigger Input	AM <sub>AX</sub>	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	A <sub>OK</sub>	Digital output OK
Ṽ	Contamination/Error Output (NC)	O-	Ground for the Analog Output	SY <sub>IN</sub>	Synchronization In
E	Input (analog or digital)	BZ	Block Discharge	SY <sub>OUT</sub>	Synchronization OUT
T	Teach Input	AM <sub>V</sub>	Valve Output	OL <sub>T</sub>	Brightness output
Z	Time Delay (activation)	a	Valve Control Output +	M	Maintenance
S	Shielding	b	Valve Control Output 0 V	rsv	Reserved
RxD	Interface Receive Path	SY	Synchronization	Wire Colors according to DIN IEC 60757	
TxD	Interface Send Path	SY-	Ground for the Synchronization	BK	Black
RDY	Ready	E+	Receiver-Line	BN	Brown
GND	Ground	S+	Emitter-Line	RD	Red
CL	Clock	⊕	Grounding	OG	Orange
E/A	Output/Input programmable	SnR	Switching Distance Reduction	YE	Yellow
 IO-Link		Rx+/-	Ethernet Receive Path	GN	Green
PoE	Power over Ethernet	Tx+/-	Ethernet Send Path	BU	Blue
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)	VT	Violet
OSSD	Safety Output	La	Emitted Light disengageable	GY	Grey
Signal	Signal Output	Mag	Magnet activation	WH	White
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	PK	Pink
EN <sub>0</sub> RS422	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contacting Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	EN <sub>A</sub> RS422	Encoder A/Ā (TTL)		

### NOTE!

- When connected properly the device status LED pulsates in blue while the smart camera boots. As soon as the smart camera is booted up, the device status LED lights up blue (see section „3.7.3 Device Status LEDs“).
- Switched I/Os are indicated via the I/O-Status LEDs (see section „3.7.1 I/O-Status LEDs“).
- The connection status is indicated via the connector LEDs (see section „3.7.4 Connector LEDs“).



## 3.5 Complementary Products

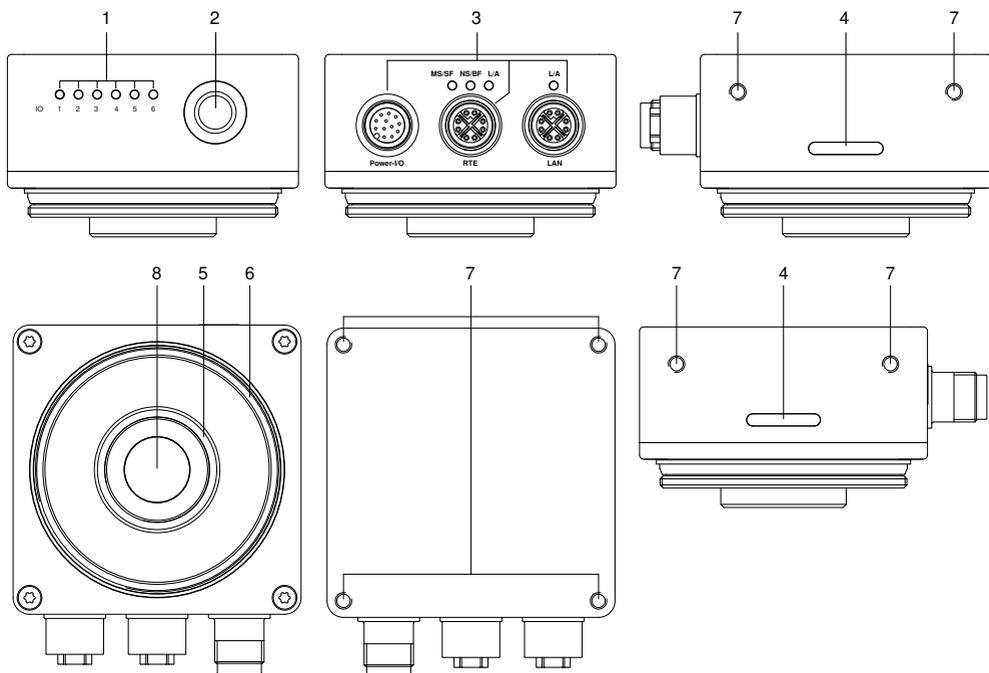
You can reach the product page of the B60 Smart Cameras via the link below. From there, navigate to the desired product and the corresponding system components

- Complementary products
- Spare Parts
- Illumination Technology
- Mounting technology
- Connection equipment
- Software

[www.wenglor.com/B60](http://www.wenglor.com/B60)

## 3.6 Construction

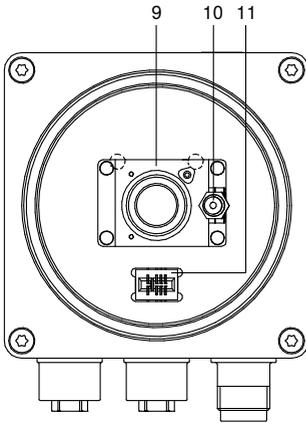
### 3.6.1 B60 C Mount



- 1 = I/O-Status LEDs
- 2 = Button
- 3 = Connection plugs
- 4 = Device status LEDs
- 5 = C Mount thread
- 6 = Protective tube thread
- 7 = Mounting holes
- 8 = Image chip

### 3.6.2 B60 AF

Deviations from B60 C Mount

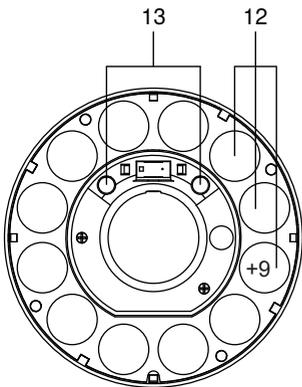


9 = AF module

10 = Laser Pattern

11 = Connector for illumination module

### 3.6.3 Illumination Module

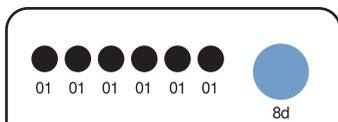


12 = High-Power LEDs

13 = Test object status LEDs green, red (for further information see section „[3.7.5 Test Object Status LEDs](#)“)

## 3.7 Control Panel / Button / Indicator elements

B5



01: LED (I/O Status)

8d: Button

### 3.7.1 I/O-Status LEDs

LED	State	Function
01	On	I/O HIGH
	Off	I/O LOW



#### NOTE!

The LED indicates whether the I/O is switched, regardless of Line Format (e.g. PNP, NPN, Pushpull).

### 3.7.2 Button

The Smart Camera has a button. If you press and release the button on the Smart Camera B60 within the following time period, the following functions are activated. The preview of the device status LED shows which time window is currently active.

Duration	Function	LED State
< 1 second	Triggers data acquisition <sup>1</sup>	-
1...3 seconds	No function	-
3...6 seconds	Activate / Deactivate Localize-Function <sup>2</sup>	Preview of Localize (blue blinking slow) or Active (blue on)
6...10 seconds	No function	-
10...15 seconds	Network reset of LAN Interface	Blue blinking fast
> 15 seconds	No function	-

<sup>1</sup> Make sure that the trigger mode is enabled and the trigger source is set to software (see operating instructions of [DNNF023](#)).

<sup>2</sup> When the Localize function is activated, the corresponding device is highlighted in the Software wenglor Discovery Tool (see operating instructions of [DNNF022](#) and on the device website (see section „7.7 Device Status“) in order to ensure clear assignment in the case of multiple devices in the network. The corresponding device emits a visual signal (device status LEDs blink blue on both sides). Deactivate Localize via pressing again the button on the device. Activating and deactivating Localize is also possible via the software wenglor Discovery Tool. At B60 Smart Cameras with auto-focus, the laser pattern is shown additionally if localize is active.

**NOTE!**

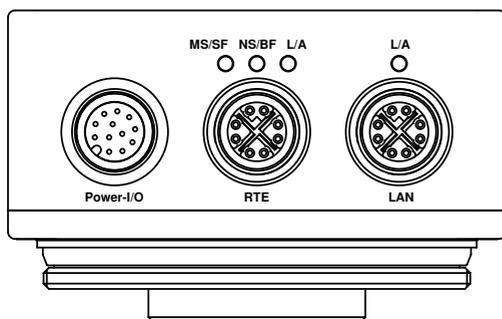
The functionality of the button can be disabled on the device website so that unwanted actions triggered by the button are avoided (see section „7.6.1 Button“).

**3.7.3 Device Status LEDs**

The Smart Camera has (two) LED strips on both sides to display the current device status. The device status is additionally displayed in the software wenglor Discovery Tool and on the device website (see section „7.7 Device Status“).

Status options:

LED color	State	Function status
Blue	On Blinking Pulsating	Active (Running) Localize active Booting
Yellow	On	Warning (e.g. too big changes in position)
Red	Blinking	Error (e.g. crashed software service or blocked autofocus module)

**3.7.4 Connector LEDs**

LED	Color	State	Function status
L/A	Orange	On Blinking Off	Ethernet connection available Smart Camera sends/receives Ethernet frames No Ethernet connection available

**NOTE!**

For details about the LEDs at the RTE connector, check the separate interface protocol for Industrial Ethernet ([DNNF023](#))

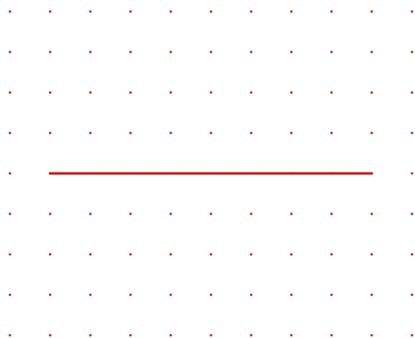
### 3.7.5 Test Object Status LEDs

The test object status LEDs (green/red) can be configured in the wenglor uniVision software and linked to e.g. good/bad results (only available for auto-focus devices if the illumination module is used).

### 3.7.6 Visual Field Marking (Laser Pattern)

The visual field marking (only available for auto-focus devices) is used for initial alignment during installation. The marking can be activated/deactivated using the button (see section „3.7.2 Button“) and provides an indication of the camera's field of view in the following areas:

- B60 AF wide (B60xxx1): 100...1000 mm / exact image center at 200 mm
- B60 AF narrow (B60xxx2): 200...1000 mm / exact image center at 400 mm



#### NOTE!



- The laser points cover approximately 2/3 of the real field of view at the specified distances, so that the test object is safely within the field of view in the specified areas.
- Observe the warnings (see section „2.4 LED/Laser Warnings“).

## 3.8 Scope of Delivery

C Mount devices:

- B60 in ordered variant; Depending on the license package, corresponding licenses are active
- Commissioning Instructions
- General Safety Precautions

AF devices:

- B60 in ordered variant; Depending on the license package, corresponding licenses are active
- Commissioning Instructions
- General Safety Precautions
- Protective tube IP67

**NOTE!**

- All currently associated software modules can be found at
  - » [Product Highlights of uniVision 3](#)
- Mounting screws are not included in the scope of delivery.
- Z60K heat sinks and Z60 illumination modules are not included in the scope of delivery and must be ordered separately.

## 4. Transport and Storage

### 4.1 Transport

Upon receipt of shipment, the goods must be inspected for damage in transit. The manufacturer must be informed without delay concerning damage to the package. When returning the package, clear indication of transport damage must be attached.

### 4.2 Storage

The following points must be taken into consideration with regard to storage:

- Do not store the product outdoors.
- Store the product in a dry, dust-free place.
- Protect the product against mechanical impacts.
- Protect the product against exposure to direct sunlight.
- Observe storage temperature.

**ATTENTION!****Risk of material damage if not stored properly!**

Damage to the product possible.

- Observe storage regulations.
-

## 5. Installation and Electrical Connection

### 5.1 System overview

The current system overview is located at [B60 System Overviews](#)

### 5.2 Mounting and General Installation Instructions



#### **ATTENTION!**

#### **Danger of material damage in case of improper installation!**

Damage to the product possible.

- Observe mounting instructions.
- 



#### **CAUTION!**

#### **Risk of personal injury and damage to property during installation!**

Damage to personnel and product possible.

- Ensure a safe installation environment.
- 

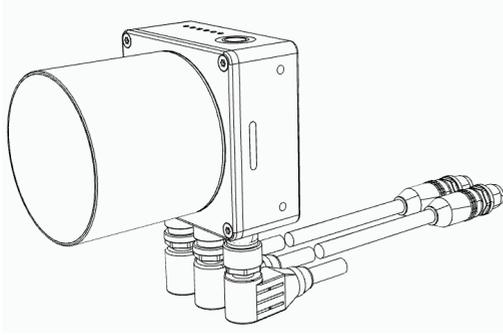
- Protect the product from contamination during assembly.
- Observe electrical and mechanical regulations, standards, and safety rules.
- Make sure that the Smart Camera is mounted firmly and securely.
- The Smart Camera must be protected against mechanical influences.
- The Smart Camera should not be subjected any vibration because this could influence image acquisition.
- The power supply should be connected directly and it should be as short as possible:
  - » max. cable length Power-I/O: 30 m
  - » max. cable length RTE/LAN: 30 m
- Torques must be observed (see section „3.1 General Data“)
- Adequate heat dissipation must be assured for the device. This can be accomplished, for example, by means of a metallic connection between the Smart Camera housing and the mounting base.
- The Smart Camera needs approx. 60 sec. to boot.

Use only standard accessories for mounting the products (see product detail page).

Use mounting adapters for illuminations to attach the B60 directly to external illuminations and aluminium profiles.

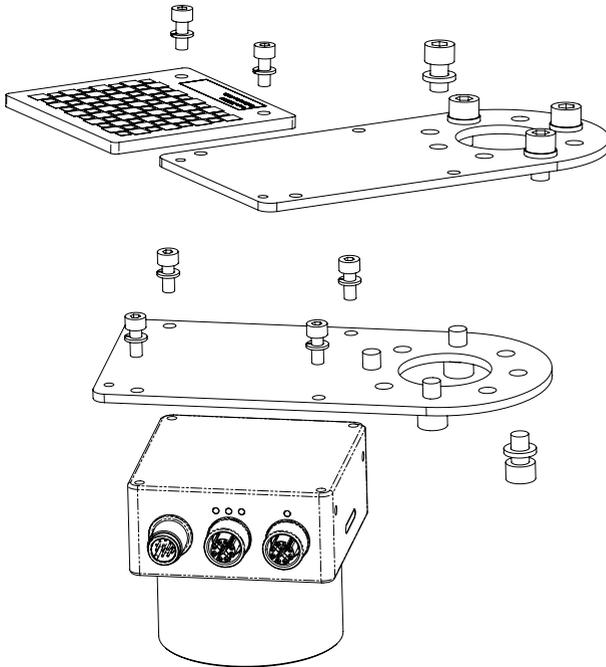
## 5.2.1 Cable Outlet with Angled Plugs

The following diagram shows the cable outlet on the Smart Camera when using angled wenglor connection cables:



## 5.2.2 Mounting option for Robot Vision with Universal Robots (UR)

To attach the B60 to a Universal Robot, use ZVZC001. For camera and robot calibration, this adapter is also used to attach a ZVZJ\* calibration plate to the robot.

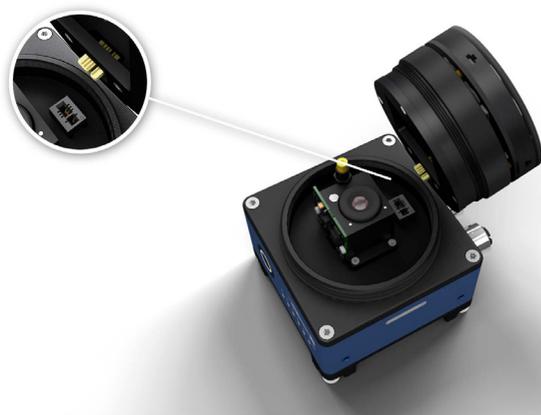


### 5.2.3 Tightening Torques

The following table defines the tightening torques of the connectors and mounting options to ensure compliant and fault-free operation:

Connection type / mounting holes	Tightening torque in (Nm)
M12, 12-pin	0,6
M12, 8-pin	0,4
Mounting holes	1

### 5.2.4 Assembly of Illumination Modules



- Unscrew the protective tube
- Screw on the illumination module hand-tight (make sure that the plug is correctly aligned, see illustration above)
- Attach optional magnetic filters
- Screw the protective tube back on hand-tight to maintain degree of protection.



#### NOTE!

The illumination brightness can be adjusted in the wenglor uniVision software (see operation instructions of [DNNF023](#)).



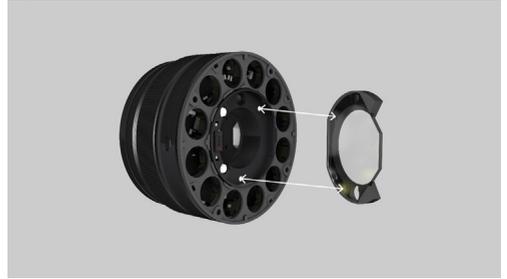
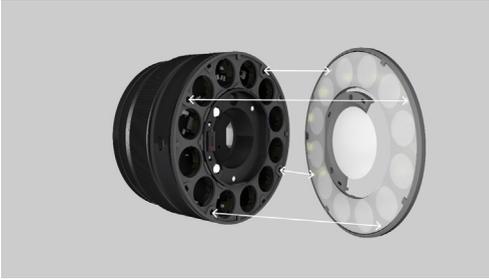
#### ATTENTION!

##### **Danger of material damage due to improper installation.**

Damage to the product possible.

- Only install/dismantle lighting modules when they are deenergized
- Only the illumination modules intended by wenglor for this product may be used.

## 5.2.5 Assembly of Filters on Illumination Modules



### HINWEIS!



- Filters for B60 autofocus adhere magnetically to the lighting module.
- Place carefully (using tweezers if necessary).
- Take care not to contaminate the filter foil during installation.
- In the event of contamination, cleaning with a microfiber cloth is recommended.

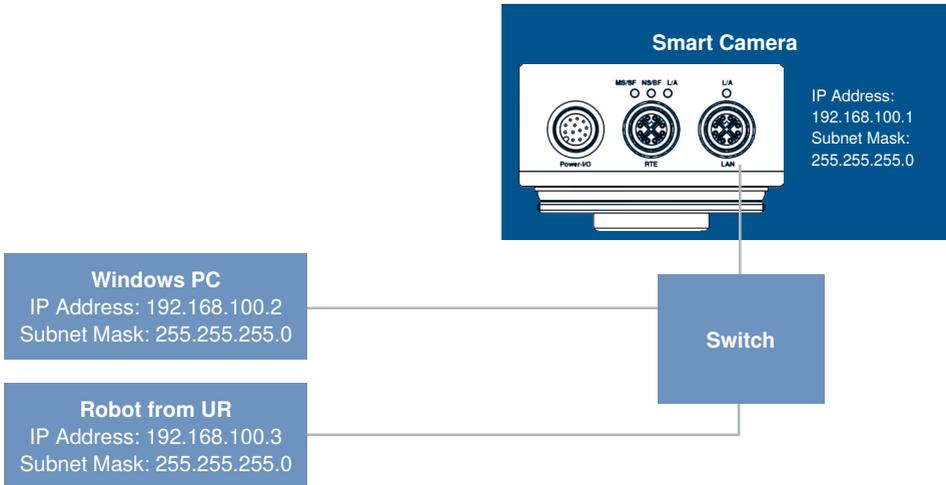
### 5.3 Electrical Connection

Depending on the usage only one or two connections are needed. Connect the Smart Camera to 24 V DC ( $\pm 10\%$ ). Alternatively, PoE functionality can be used via the LAN connector (e.g. using a PoE switch) (see section „3.4 Connection Diagram“).

Connect the connection cable (network cable) of the LAN port to your PC for configuration via the uniVision software or to a switch to merge multiple devices (e.g. robots from UR).

The Smart Camera can also be powered directly from the robot's I/Os.

Network overview example:



 Mandatory device       Optional device



#### NOTE!

Suitable connection lines and connection cables can be found on the product details page.



#### DANGER!

##### **Risk of personal injury or property damage due to electric current.**

Voltage-carrying parts may cause damage to personnel and equipment.

- Appropriately, qualified personnel may only connect the electrical device.



#### ATTENTION!

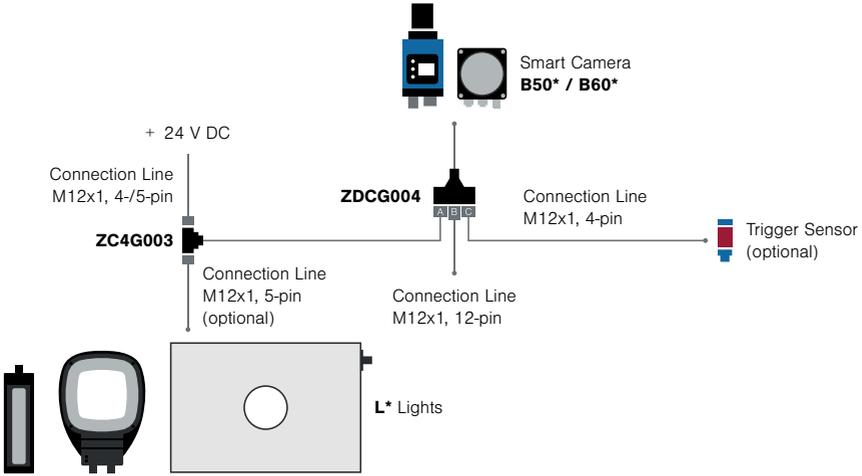
##### **Malfunctions in operation and defects in the device or the system due to improper wiring**

Improper wiring can lead to malfunctions during operation and to defects.

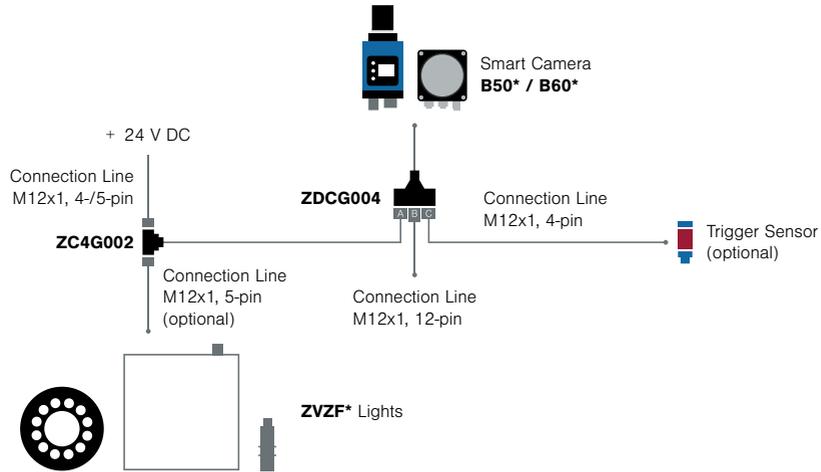
- Follow the wiring instructions exactly.

## 5.4 Connection to External Illumination and Trigger Sensor

For L\* Lights:



For ZVZF\* Lights:



**How to set up:**

- Connect as described above
- Parameter settings in the software wenglor uniVision (**changes to default**):

Module Application	Property	Value
Smart Camera - Digital I/O control (visible only in Extended View)	Line Selector	<b>Line 6</b>
	Line Mode	Output
	Line Inverter	<input checked="" type="checkbox"/>
	Line Format	<b>Push Pull</b>
	Line Source	<b>Exposure Active</b>

- If the optional trigger sensor is also used, please also note the following parameter settings in uniVision (**changes to default**):

Module Application	Property	Value
Smart Camera - Acquisition Control	Trigger Selector	Exposure Start
	Trigger Mode	<b>On</b>
	Trigger Source	<b>Line 5</b>

**NOTE!**

By setting e.g. "Line 5" as trigger source, automatically the corresponding Line Mode in Digital I/O Control is set to "Input".

## 5.5 Adjusting LAN Network Settings

In TCP/IP networks the devices must be in the same network to communicate. It can be that either the Smart Camera or the customer PC must be configured to ensure this.



### NOTE!

Use the software wenglor Discovery Tool (see section „6. Software wenglor Discovery Tool“) to adjust the network settings of the B60 Smart Camera.

### 5.5.1 Manual LAN Network Settings

Upon shipment from the factory, the default LAN network settings of the Smart Camera are:

- IP address: 192.168.100.1
- Subnet mask: 255.255.255.0
- Gateway: 0.0.0.0

In order to be able to connect the Smart Camera to your PC, you have to make sure that the Smart Camera and your PC are both within the same IP address range.

Address format for IP addresses (IPv4)

	Network part	Device part (host part)
IP address	192.168.100.	<b>001</b>
Subnet mask	255.255.255.	<b>000</b>

The network part of the Smart Camera's IP address must coincide with the network part of PC's IP address, but the device part of the address must be different for the Smart Camera and the PC. By default, the IP address of the network adapter card in the PC is set to dynamic (automatic allocation). Change the setting to "static". The IP address must differ from the Smart Camera IP and must be unique in the network, e.g. 192.168.100.100.



### NOTE!

See the manual of your operating system for more information on how to adjust the IP address.

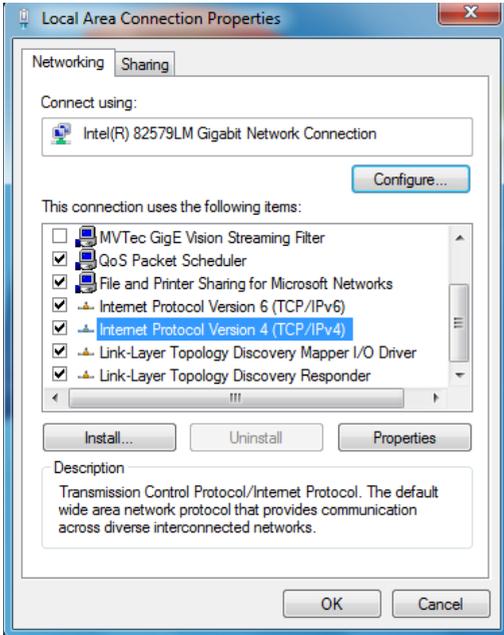


Fig. 1: Local connection properties

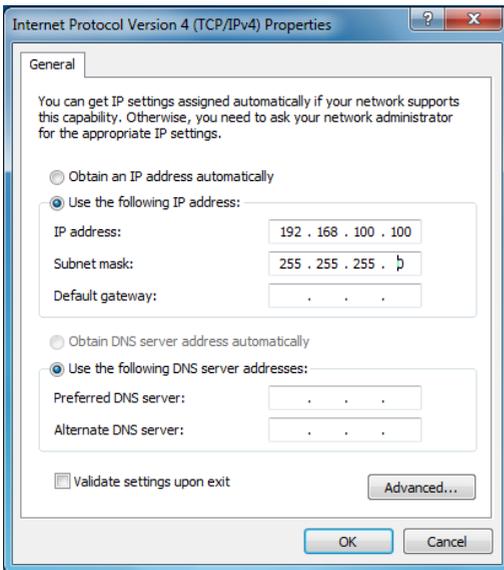


Fig. 2: Properties of internet protocol

The integrated web server can then be accessed containing all global device settings (see section „7. Device Website“).

### 5.5.2 Test Connection between Smart Camera and PC

To test the connection between Smart Camera and PC following should be done:

- Ensure that power and LAN connection is available and wait until booting as been finished completely.
- Check LEDs
  - » Device status LEDs → blue on
  - » L/A LED → on or blinking
- Open browser and type the Smart Camera IP address (factory settings 192.168.100.1) into the browser address field. The web page should be available. If the web page is not reachable check all settings and retry.

## 6. Software wenglor Discovery Tool

The software wenglor Discovery Tool can be installed on any Windows 10 (22H2) and 11 (22H2) PC for finding B60 Smart Cameras, for setting up the network configuration of B60 Smart Cameras and for accessing the device website. For more information, see: <https://www.wenglor.com/p/DNNF022>

## 7. Device Website

Access the device website via entering directly the IP address of the device in any supported browser (default address: 192.168.100.1).



### NOTE!

- Make sure that the network settings of the B60 Smart Camera and the PC fit together.
- Use the software wenglor Discovery Tool to find B60 Smart Cameras, to adjust the network settings and to access the device website. For details, check the operating instructions of the software wenglor Discovery Tool ([DNNF022](#)).

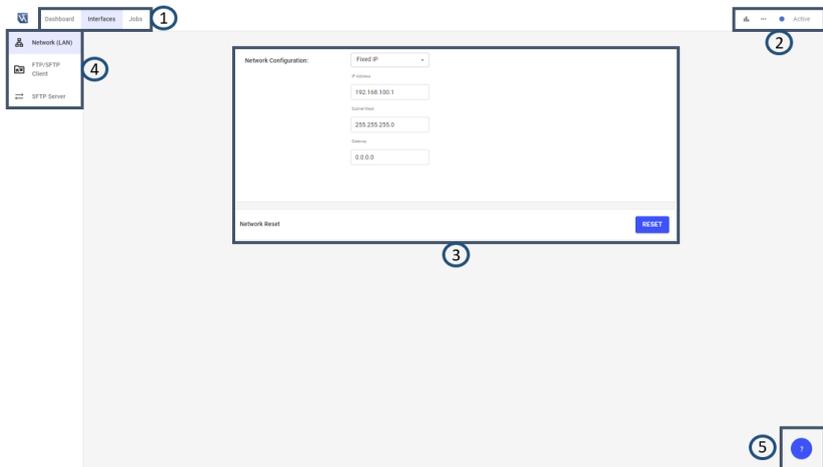
Supported minimum browser versions (tested on Windows 10 (22H2) and Windows 11 (22H2) PCs):

- Chrome 108
- Firefox 108
- Microsoft Edge 108
- Chromium 111

### 7.1 Structure of Device Website

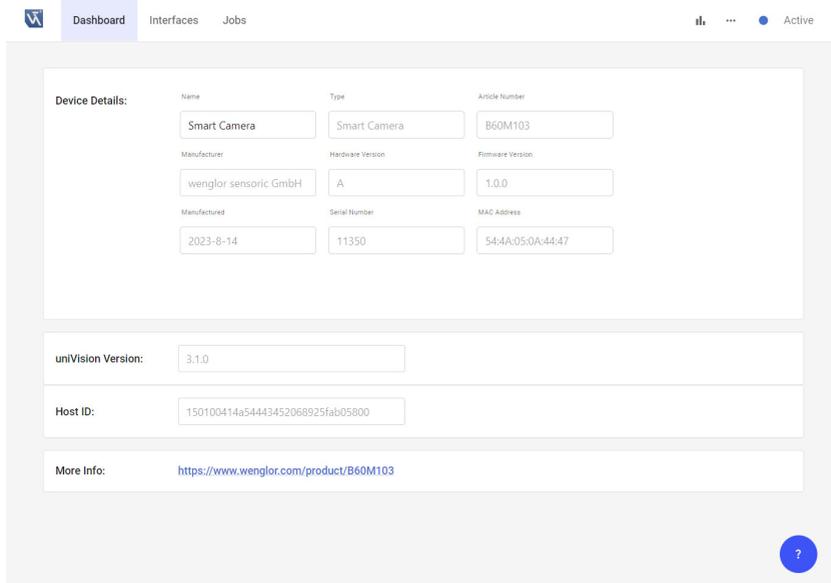
The device website is divided into several areas:

- (1) Tabs
- (2) Icon menu bar
- (3) Workspace
- (4) Side navigation
- (5) Help button (see section „7.8 Help Button“)



## 7.2 Dashboard

By default, the tab “Dashboard” shows the details of the B60 Smart Camera.



The screenshot shows a web interface for the B60 Smart Camera. At the top, there is a navigation bar with 'Dashboard' selected, and other tabs for 'Interfaces' and 'Jobs'. On the right, there are icons for a list, a search, and a status indicator labeled 'Active'. The main content area is titled 'Device Details:' and contains a grid of input fields for various device parameters:

Name	Type	Article Number
Smart Camera	Smart Camera	B60M103
Manufacturer	Hardware Version	Firmware Version
wenglor sensoric GmbH	A	1.0.0
Manufactured	Serial Number	MAC Address
2023-8-14	11350	54:4A:05:0A:44:47

Below the grid, there are three separate input fields:

- uniVision Version: 3.1.0
- Host ID: 150100414a54443452068925fab05800
- More Info: <https://www.wenglor.com/product/B60M103>

A blue circular help icon with a question mark is located in the bottom right corner of the dashboard area.

Adjust the name, if needed (limited to 63 characters).

The uniVision version of the device shows which version of the software wenglor uniVision 3 on the PC can connect to the device.

### NOTE!



- The first two digits of the uniVision version of the device and the software wenglor uniVision 3 on the PC must fit together in order to connect (e.g. uniVision version 3.0.0 on B60 is compatible with software wenglor uniVision 3.0.0 on PC).
- For details about compatibility between firmware and uniVision version, see the release notes and the operating instructions of the software wenglor uniVision 3 ([DNNF023](#)).

The device ID is a device specific identifier. It is helpful for HALCON script users in order to execute a HALCON script only on one specific device (for individual licensing). For details, see uniVision operating instructions ([DNNF023](#) → Module HALCON Script).

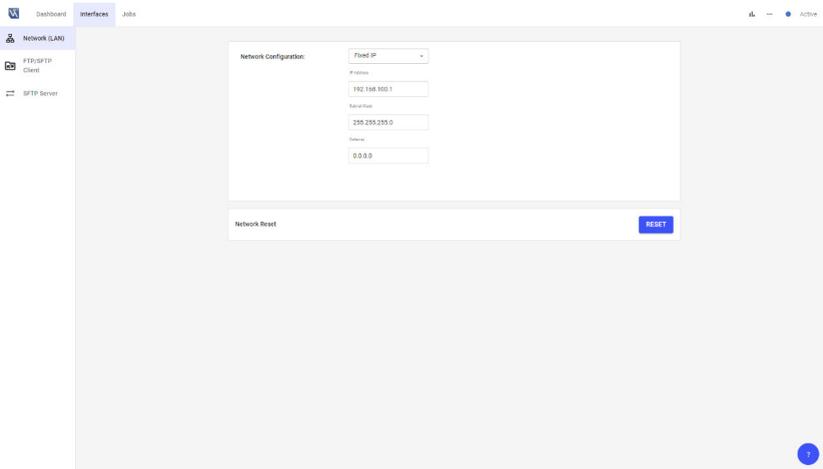
“More info” opens a new tab in the browser with the product detail page on the wenglor website (only available with internet access).

## 7.3 Interfaces

Open the tab “Interfaces” to see and edit all interface settings.

### 7.3.1 Network (LAN)

In the side navigation “Network (LAN)” it is possible to adjust the LAN network configuration of the B60 Smart Camera.



Configuration for LAN network:

- Fixed IP: Set fix IP address, subnet mask and gateway of the B60 Smart Camera.
- Obtain IP: DHCP server in the network can assign network settings automatically to the B60 Smart Camera

#### NOTE!

- Confirm the reboot info to start the network change. During the network change, a software reboot is done automatically.
- If there is no DHCP server in the network, the B60 Smart Camera will start after a certain time with a backup network configuration.
- After network changes, enter the new IP address in the browser or open the software wenglor Discovery Tool in order to find the device again (for details, see operating instruction of software wenglor Discovery Tool [DNNF022](#)).



“Network reset” resets the network configuration of the device to its defaults:

- IP address: 192.168.100.1
- Subnet mask: 255.255.255.0
- Gateway: 0.0.0.0

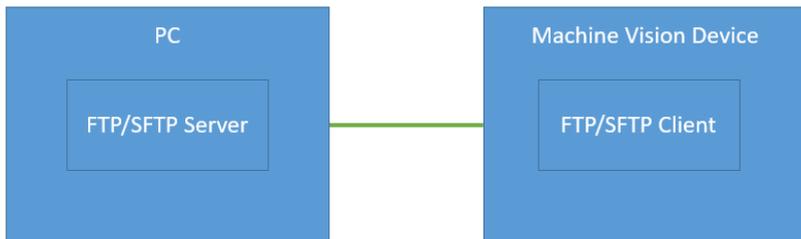


#### NOTE!

Confirm the reboot info to start the network reset. During the network reset, a software reboot is done automatically.

## 7.3.2 FTP/SFTP Client

Adjust the side navigation "FTP/SFTP Client" to store data of Device FTP on an external FTP or SFTP server in the network (e.g. on the PC).



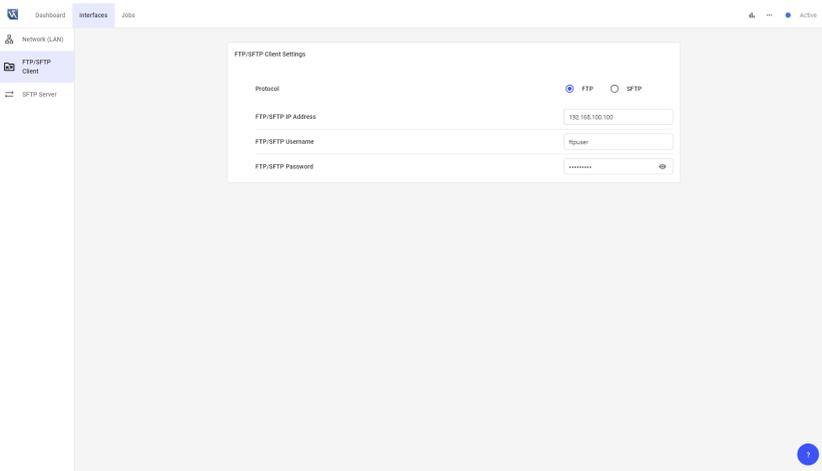
Settings:

- Select the protocol FTP or SFTP
- Enter the IP address of the device where the FTP/SFTP server is running on (e.g. the PC)
- Enter the username and password of the FTP/SFTP server

### NOTE!

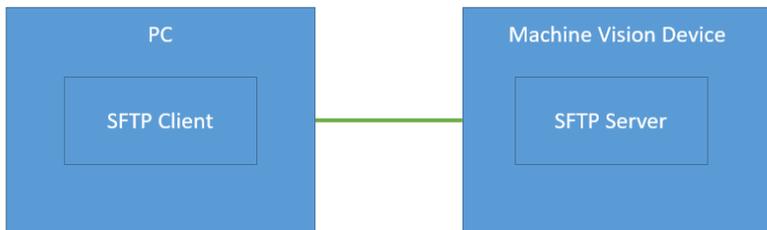


- Password is only visible if authentication is deactivated or, in case of activated authentication, if user of user group admin or admin (default) is logged in.
- For details about process data via Device FTP, see operating instruction of the software wenglor uniVision 3 [DNNF023](#).



### 7.3.3 SFTP Server

The side navigation “SFTP Server” shows the relevant info about the SFTP server that is running on the B60 Smart Camera. Use it to exchange files (e.g. jobs) via network between PC and B60 Smart Camera.

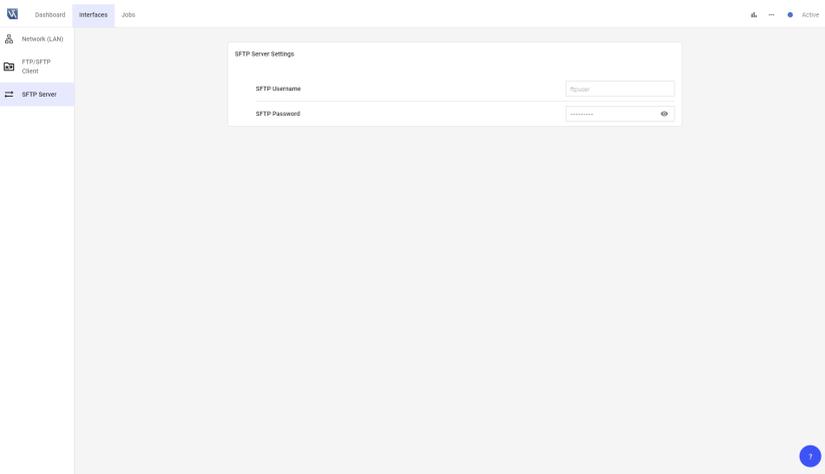


It is not possible to edit username or password of the SFTP server on the B60 Smart Camera.

#### NOTE!

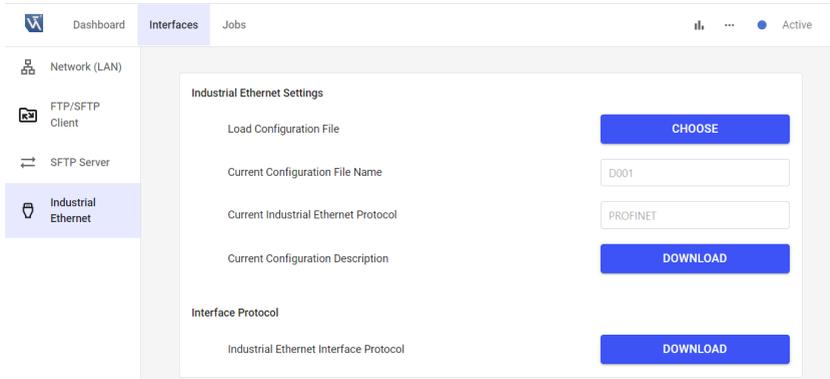


- Password is only visible if authentication is deactivated or, in case of activated authentication, if user of user group admin or admin (default) is logged in.
- For details about file exchange between B60 Smart Camera and PC, see operating instruction of the software wenglor uniVision 3 [DNNF023](#).



### 7.3.4 Industrial Ethernet

Adjust the side navigation “Industrial Ethernet” in order to communicate via Industrial Ethernet (e.g. PROFINET) to communication partners via the RTE connector of the Machine Vision Device.



The following options are available:

- Load Configuration File: Enables to load a different configuration file for the user-defined process data.
- Current Configuration File Name: Shows the current name of the configuration file.
- Current Industrial Ethernet Protocol: Shows the current Industrial Ethernet protocol (e.g. PROFINET).
- Current Configuration Description: Opens a separate tab with the description of the current configuration.
- Industrial Ethernet Interface Protocol: Open a separate tab with the interface protocol for Industrial Ethernet.

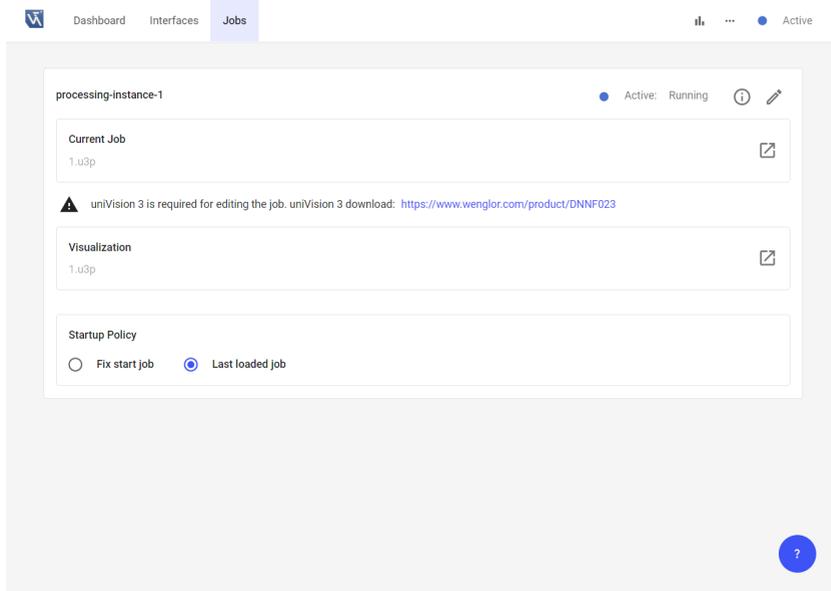


**NOTE!**

For details, see interface protocol [DNNF023](#).

## 7.4 Jobs

Open the tab “Jobs” in order to see and edit the uniVision job settings.



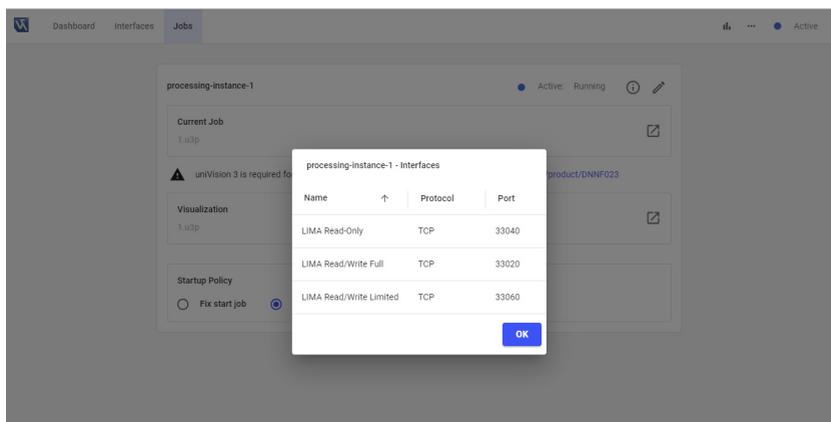
The screenshot shows the 'Jobs' tab in the software interface. The main content area displays settings for a job named 'processing-instance-1'. At the top right, the job status is 'Active: Running'. Below this, there are three sections: 'Current Job' with the value '1.u3p', 'Visualization' with the value '1.u3p', and 'Startup Policy' with two radio buttons: 'Fix start job' (unselected) and 'Last loaded job' (selected). A warning icon and text indicate that 'uniVision 3 is required for editing the job' and provide a download link: <https://www.wenglor.com/product/DNNF023>. A blue question mark icon is visible in the bottom right corner of the job settings panel.

It is possible to edit the name of the processing instance and to show the available network ports.



### NOTE!

For details about the different ports, see operating instruction of software wenglor uniVision 3 [DNNF023](https://www.wenglor.com/product/DNNF023).



The screenshot shows the 'Jobs' tab with a modal window open over the job settings. The modal window is titled 'processing-instance-1 - Interfaces' and contains a table with the following data:

Name	↑	Protocol	Port
LIMA Read-Only		TCP	33040
LIMA Read/Write Full		TCP	33020
LIMA Read/Write Limited		TCP	33060

An 'OK' button is located at the bottom right of the modal window.

By default, the Smart Camera boots with the last loaded job. If no job is available, it boots with an empty (undefined) job. It is also possible to select one specific fix start job of the project folder on the device.

The screenshot displays the 'Jobs' tab in the uniVision software interface. The main content area is titled 'processing-instance-1' and shows the following configuration options:

- Active:** Running (indicated by a blue dot and a refresh icon).
- Current Job:** 1.u3p (with an external link icon).
- Warning:** uniVision 3 is required for editing the job. uniVision 3 download: <https://www.wenglor.com/product/DNNF023>
- Visualization:** 1.u3p (with an external link icon).
- Startup Policy:**  Fix start job  Last loaded job
- Start Job:** No file selected (with a blue 'CHOOSE' button).

Click on “Edit job” in the section “Current job” in order to open the uniVision software for editing the uniVision job.

**NOTE!**

- Make sure that the suitable version of the software wenglor uniVision 3 is installed on the PC.
- For details about the suitable version of the software wenglor uniVision 3, check the uniVision version of the device at the tab “Dashboard” (see section „7.2 Dashboard”).
- Click on the link to open the product detail page of the software wenglor uniVision 3 ([DNNF023](#)) in order to download the suitable software version at “Downloads” -> “Soft and Firmware” (only available with internet access).
- The uniVision software is described in detail in the operating instruction of the software wenglor uniVision 3 [DNNF023](#).



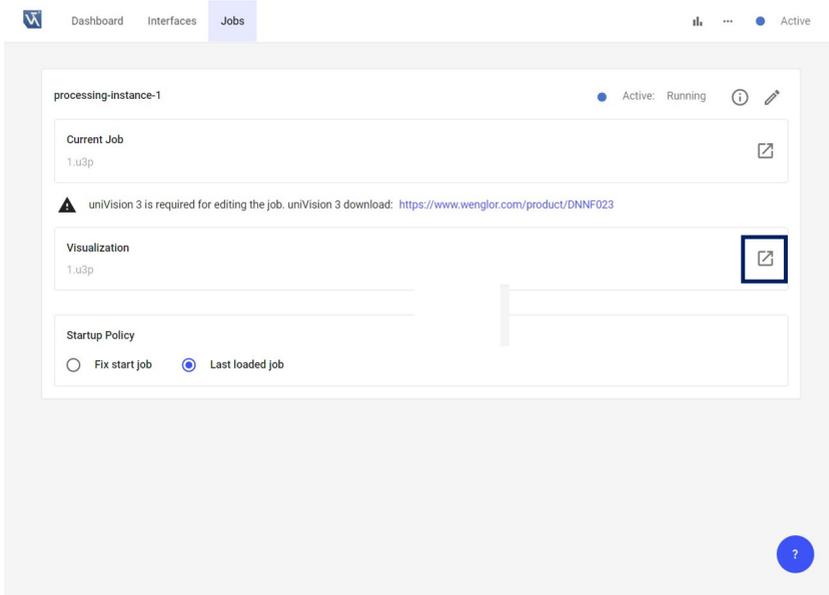
The screenshot shows the 'Jobs' tab in the uniVision software interface. At the top, there are navigation tabs for 'Dashboard', 'Interfaces', and 'Jobs'. The 'Jobs' tab is active. The main content area displays a job instance named 'processing-instance-1' with a status of 'Active: Running'. Below this, there are three sections: 'Current Job' (1.u3p), 'Visualization' (1.u3p), and 'Startup Policy' (with radio buttons for 'Fix start job' and 'Last loaded job'). A blue box highlights the 'Edit' icon (a square with a pencil) in the 'Current Job' section. A warning message states 'uniVision 3 is required for editing the job. uniVision 3 download: https://www.wenglor.com/product/DNNF023'. A blue question mark icon is visible in the bottom right corner of the interface.

Click on visualization opens the webbased job visualization in a separate tab of the browser.



**NOTE!**

The webbased visualization is described in the operating instruction of the software wenglor uniVision 3 [DNNF023](https://www.wenglor.com/product/DNNF023).



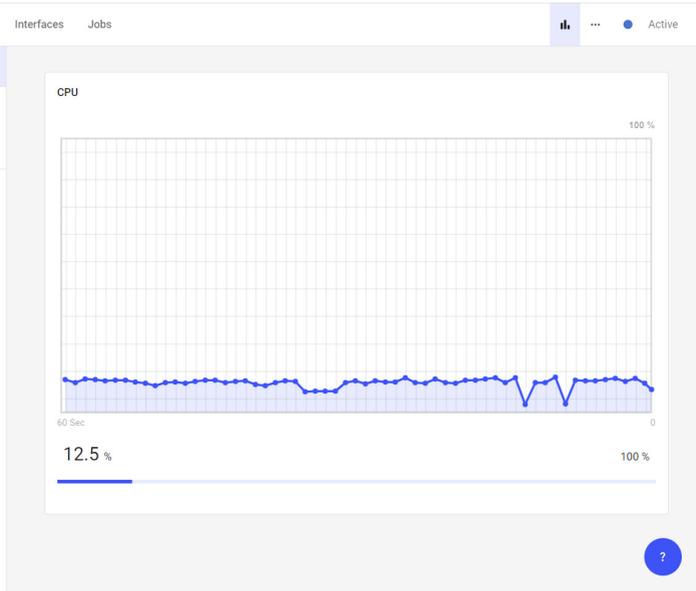
The screenshot shows a web-based interface for job management. At the top, there is a navigation bar with 'Dashboard', 'Interfaces', and 'Jobs' (the active tab). On the right, there are icons for a bar chart, a list, and a status indicator 'Active'. The main content area displays details for 'processing-instance-1', which is currently 'Active: Running'. It includes sections for 'Current Job' (1.u3p), a warning message about uniVision 3 requirements, a 'Visualization' section (1.u3p) with a blue-bordered icon for opening a separate tab, and a 'Startup Policy' section with radio buttons for 'Fix start job' and 'Last loaded job' (which is selected). A blue help icon is located in the bottom right corner.

## 7.5 Diagnosis

Click in the icon menu bar on the “Diagnosis” icon in order to get further diagnosis info.

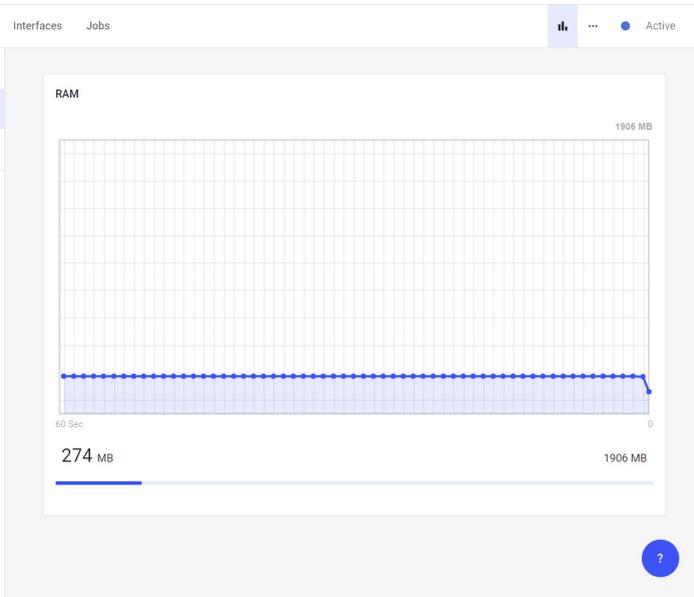
### 7.5.1 CPU

The side navigation “CPU” shows the CPU load of the Machine Vision Device for a maximum of the last 60 seconds.



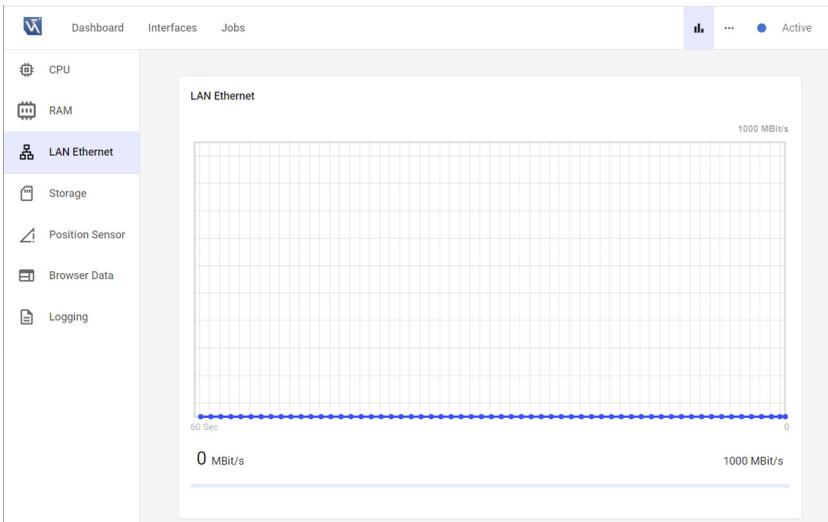
## 7.5.2 RAM

The side navigation “RAM” shows the RAM usage of the Machine Vision Device for a maximum of the last 60 seconds.



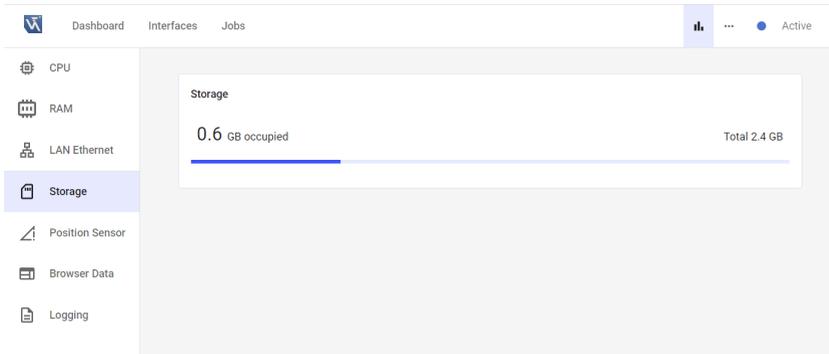
## 7.5.3 LAN Ethernet

The side navigation “LAN Ethernet” shows the network load at the LAN connector of the Machine Vision Device for a maximum of the last 60 seconds.



## 7.5.4 Storage

The side navigation “Storage” shows the currently occupied and the complete available user storage of the Machine Vision Device.



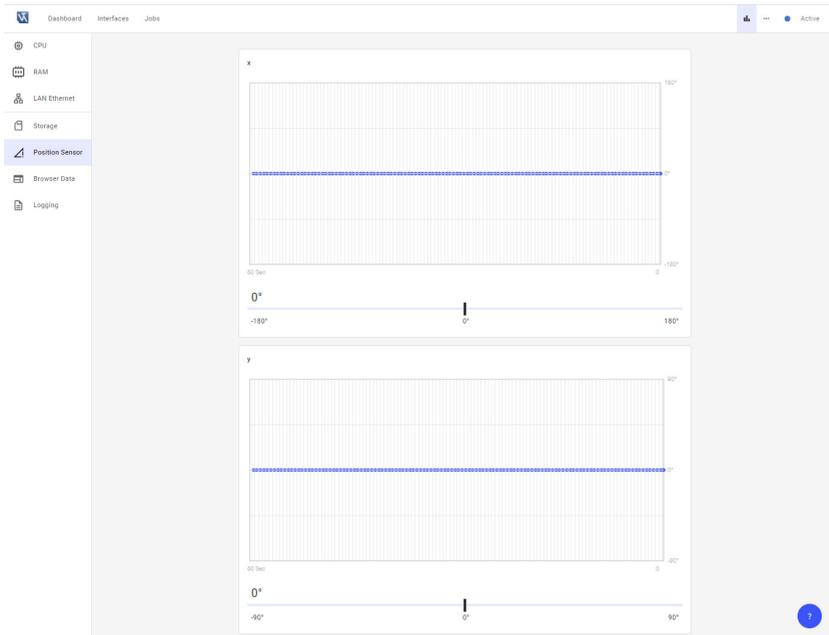
## 7.5.5 Position Sensor

The side navigation “Position Sensor” shows the angles of x and y of the internal position sensor that is part of the Machine Vision Device.



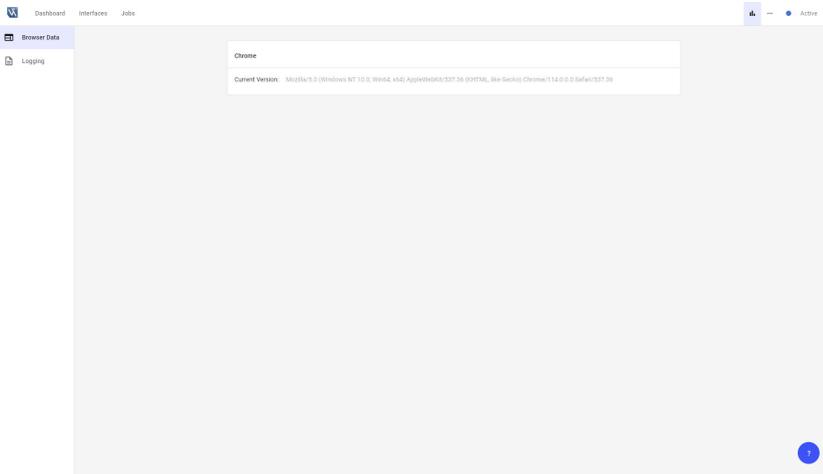
### NOTE!

For details, see section „7.6.2 Position Sensor“.



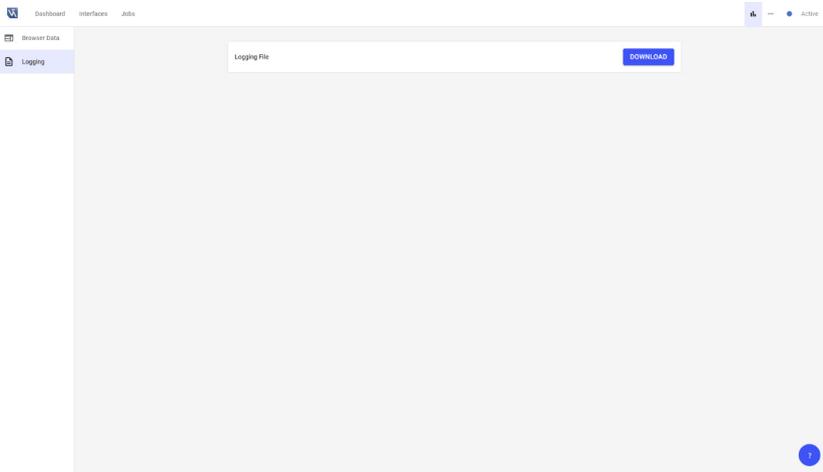
## 7.5.6 Browser Data

The side navigation “Browser Data” shows the version of the currently used browser.



## 7.5.7 Logging

The side navigation “Logging” allows to download logging info for all services of the device in one zip file for the wenglor support and development team.

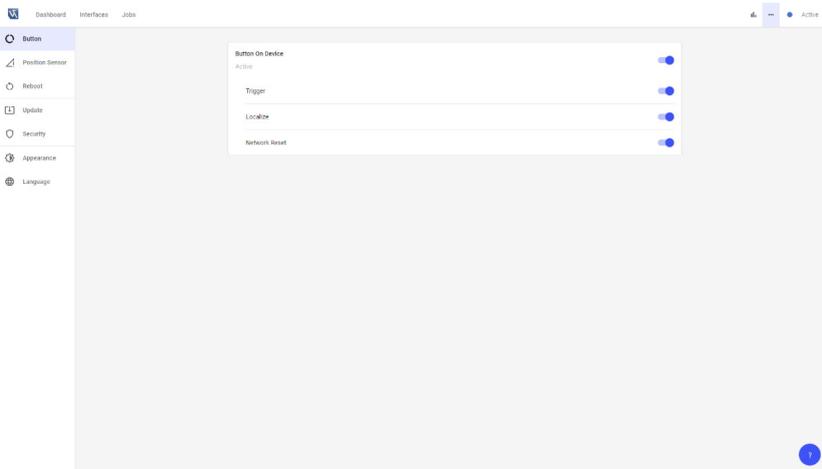


## 7.6 Settings

Click in the icon menu bar on the “Settings” icon for further device settings.

### 7.6.1 Button

The side navigation “Button” allows to activate or deactivate the functionality for the button on the device so that it is protected from unwanted changes, if needed. It is possible to activate or deactivate the complete button functionality or only single options (trigger, localize, network reset). By default, the button functionality is active. For details about the button functionality, see section „3.7.2 Button”.

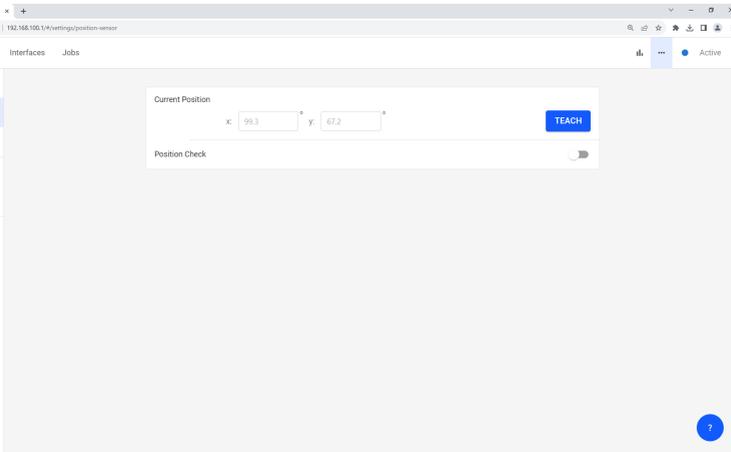


### 7.6.2 Position Sensor

The side navigation “Position Sensor” shows the current position values of the device.

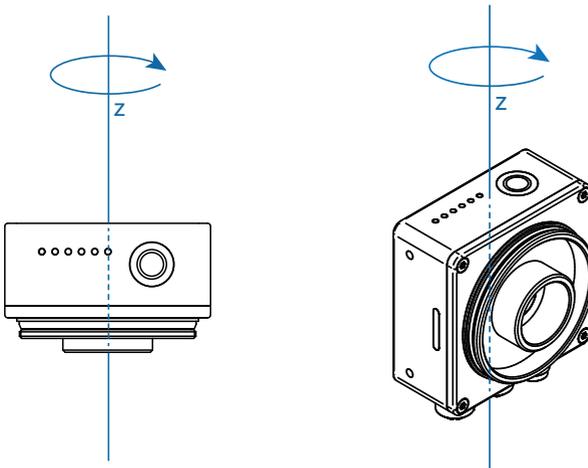
The following angle values are possible for x and y axis:

- X axis: Angle from -180 to 180°.
- Y axis: Angle from 0 to 90 to 0 to -90 to 0°. If y is bigger than 70° or smaller than -70° the gimbal lock effect leads to big changes on x values.

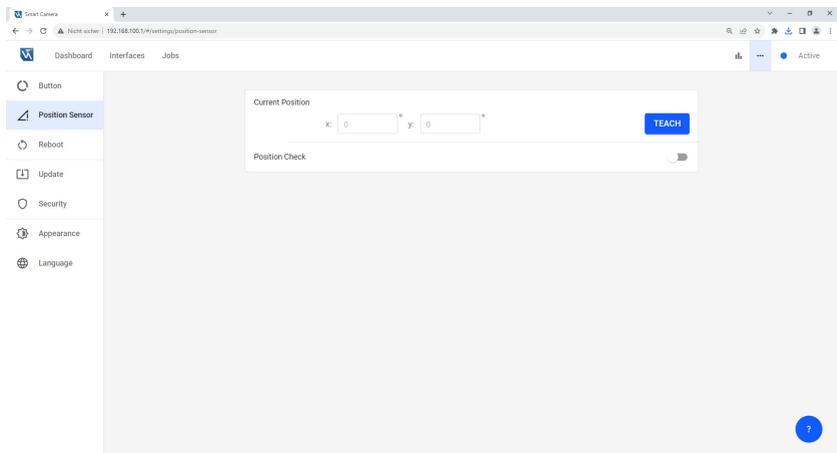


### NOTE!

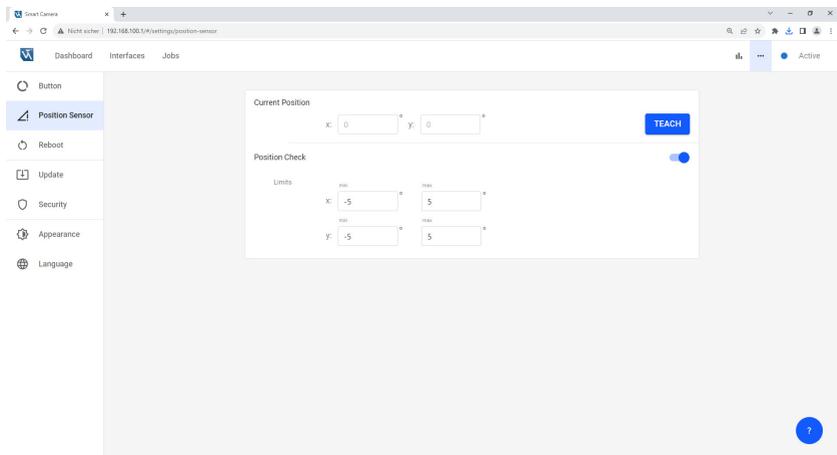
- Even when the device is switched off, position changes in x and y are detected and shown when the device is switched on again.
- Changes around z axis (gravitation axis) cannot be detected. Make sure when mounting the device, that unwanted position changes can be detected by the software via changes around x and y axis.
- The angles of x and y axis are long-term stable with tolerances of  $\pm 2^\circ$



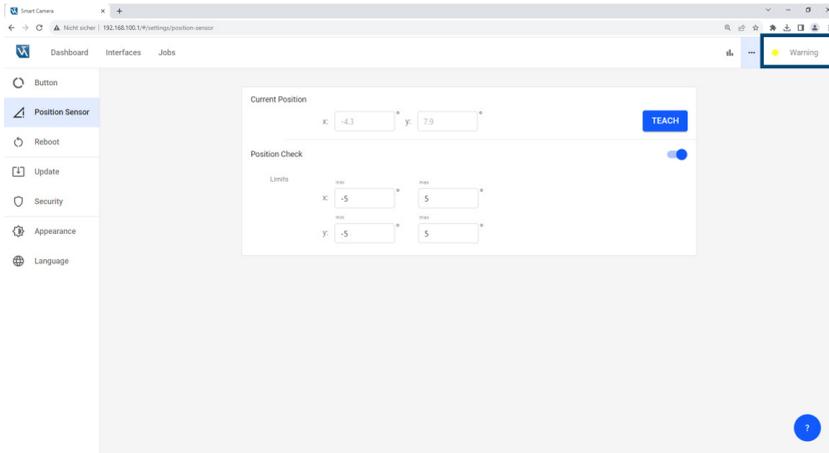
Click on Teach in order to set the current position as new reference. The current position of x and y will then display 0°.



Activate the "Position Check" (default: deactivated), in order to detect unwanted position changes with the device status LED.

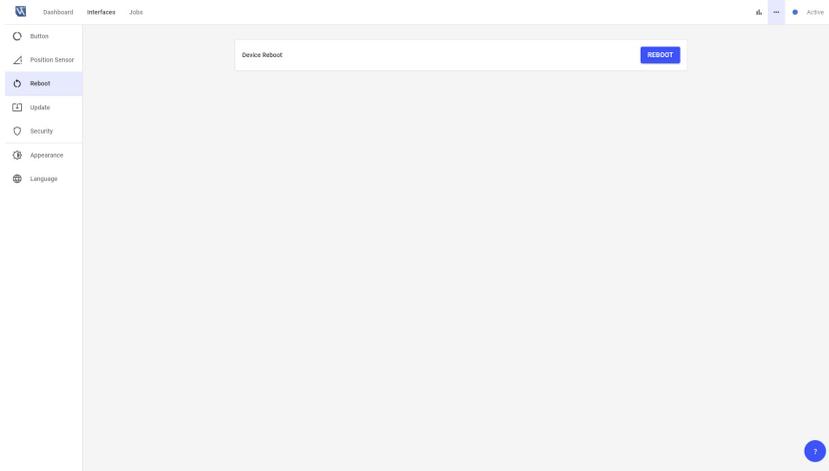


If the current position is out of the limits, the device status LEDs on the device and the device website show a warning info (see section „7.7 Device Status“).



### 7.6.3 Reboot

The side navigation “Reboot” allows to perform a software reboot of the device.

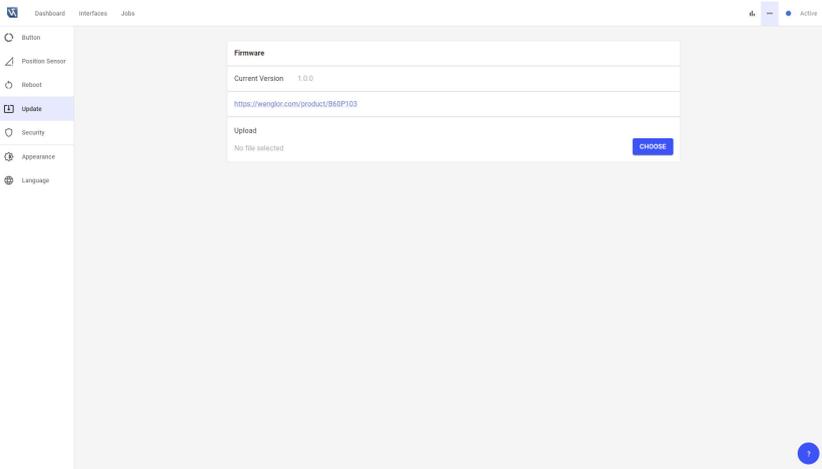


## 7.6.4 Update

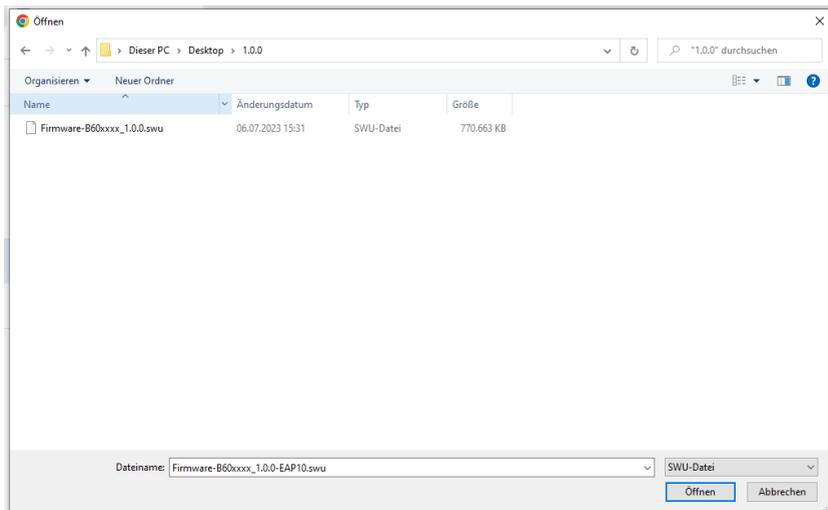
The side navigation “Update” shows the current firmware version and allows to update the firmware of the device.

“Current version” shows the current firmware version.

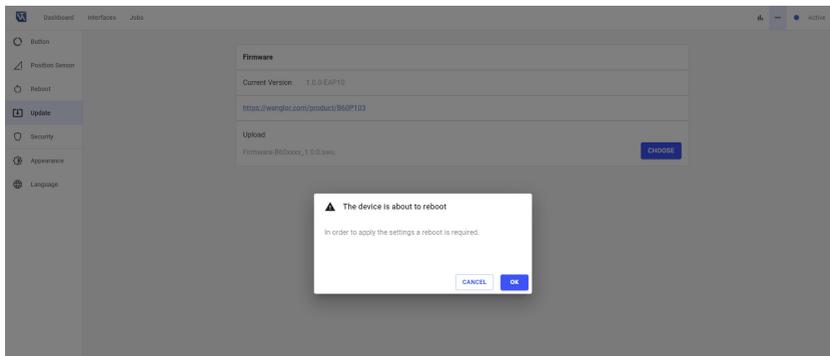
Clicking on the link opens a new tab in the browser to the product detail page on the wenglor website. The latest firmware version is available at “Downloads” → “Soft and Firmware” (only available with internet access).



Click on “Choose” and select the \*.swu firmware update file.



Click on OK to start the firmware update. During the firmware update, a software reboot is automatically done.



## Firmware Compatibility

The firmware version number consists of three digits (e.g. Firmware B60 1.0.0).

- Major release: The first digit is changed (no compatibility).
- Feature release: The second digit is changed.
- Bugfix release: The third digit is changed.

The following applies with regard to the compatibility of the device website:

- At a bugfix release, the settings of the device website are unchanged.
- At a feature release upgrade (second digit increases), the settings of the device website remain. At a feature release downgrade (second digit decreases), the settings of the device website are set back to default.

### NOTE!

- A backup of the device settings for the device website is done when the device settings change at a firmware update or downgrade (contains maximum one backup file).
- Contact the wenglor support team (email to [support@wenglor.com](mailto:support@wenglor.com)) in case of activating again the settings of the device website on a compatible firmware version.
- The following table shows the relation between firmware version and configuration version:
  - » Firmware B60 1.0 → Configuration version 1.6
  - » Firmware B60 1.1 → Configuration version 1.7



## 7.6.5 Security

The side navigation “Security” allows to activate authentication in order to protect the device from unwanted changes. After activating authentication, the button “Login” appears at the icon menu bar. The following table shows the rights for each user group.

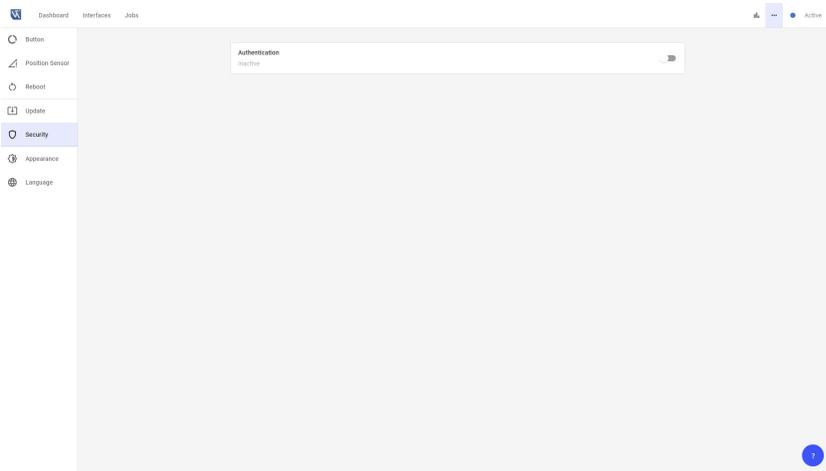
Functionality	Admin or admin (default)	Setter	Worker	Logged off
Software wenglor Discovery Tool: <ul style="list-style-type: none"> <li>Find devices</li> <li>Open devices extended view</li> <li>Access device website</li> </ul>	Yes	Yes	Yes	Yes
Software wenglor Discovery Tool: <ul style="list-style-type: none"> <li>Start/stop localizing</li> <li>Edit name and network settings</li> </ul>	Yes	No	No	No
Device website: See properties	Yes	Yes	Yes	Yes
Device website: Edit properties	Yes	No	No	No
Access and edit job configuration via software wenglor uniVision 3	Yes	Yes	No	No
Access and see webbased visualization	Yes	Yes	Yes	Yes
Interact in Run Mode on webbased visualization (via buttons trigger, load job, freeze/unfreeze)	Yes	Yes	Yes	No
Edit webbased visualization	Yes	Yes	No	No



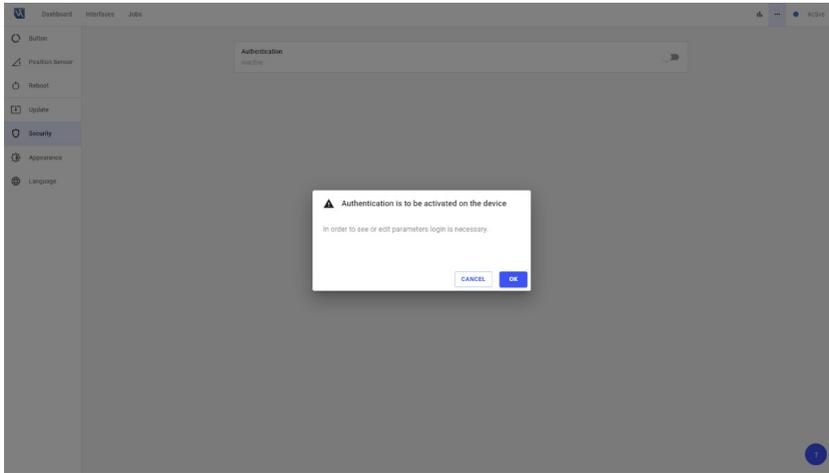
### NOTE!

Remember usernames and passwords! In case of lost passwords, contact [support@wenglor.com](mailto:support@wenglor.com)

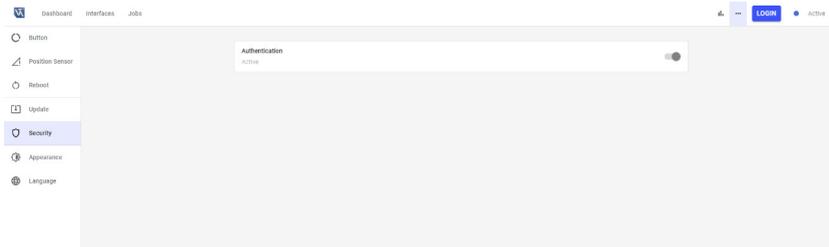
By default, authentication is deactivated.



Enable authentication and click on OK.

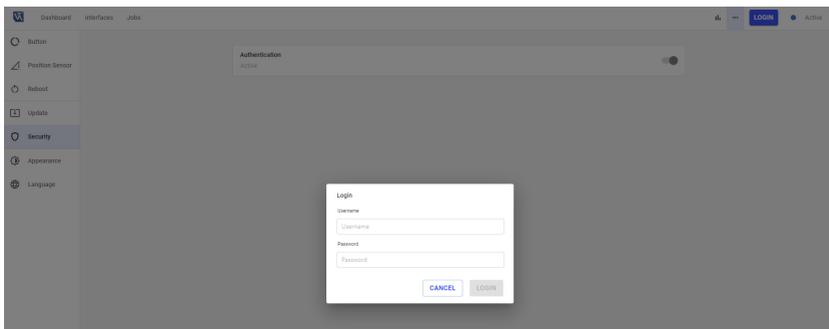


If authentication is active, the button “Login” appears in the icon menu bar.



Enter username and login. Use admin (default) to login for the first time.

- Username: admin
- Password: admin

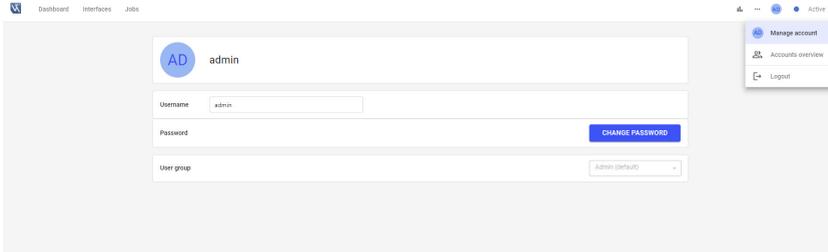


Edit username or password of admin (default) via clicking on “Manage account”.

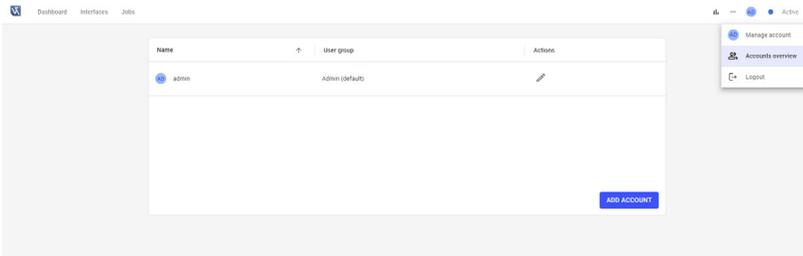


**NOTE!**

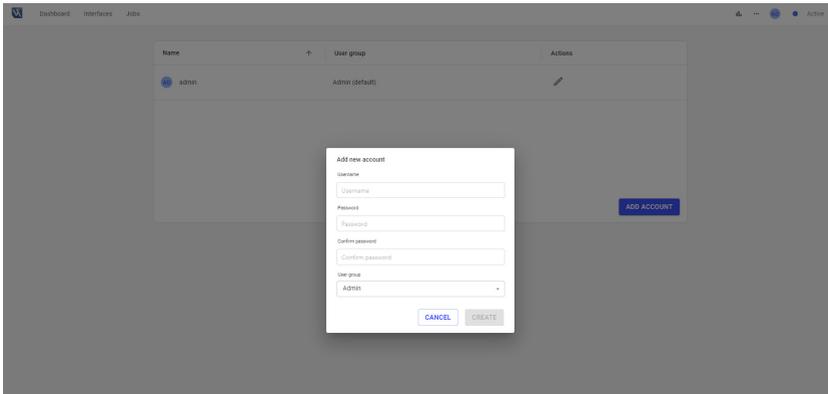
- Change the password of admin (default) to prevent unwanted access on the device.
- The admin (default) account cannot be deleted and it is not possible to change the user group.



Admins and admin (default) can create new accounts, edit and delete other accounts. Setter and Worker can only change the own username or password.



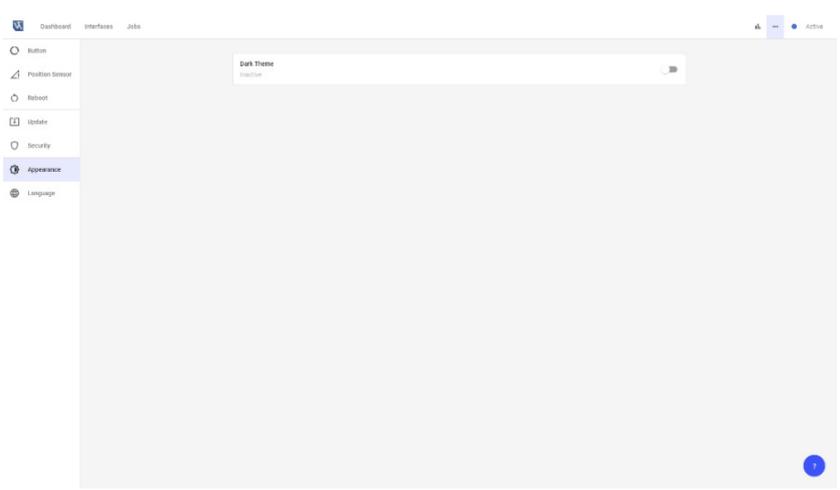
Enter username, password and user group when creating new accounts.



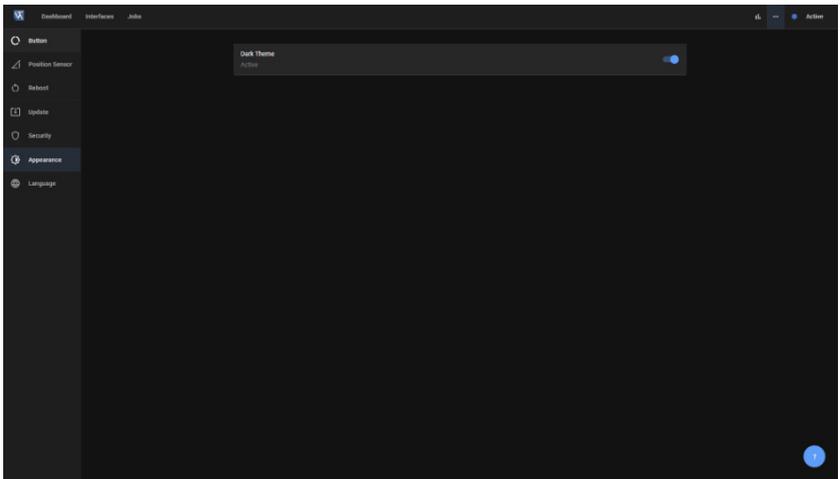
## 7.6.6 Appearance

The side navigation “Appearance”, allows to activate or deactivate dark theme. By default, dark theme is deactivated.

Bright Theme

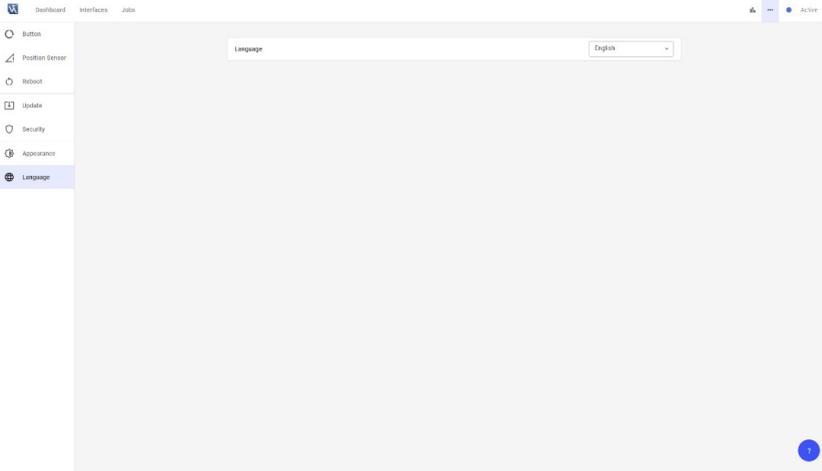


Dark Theme



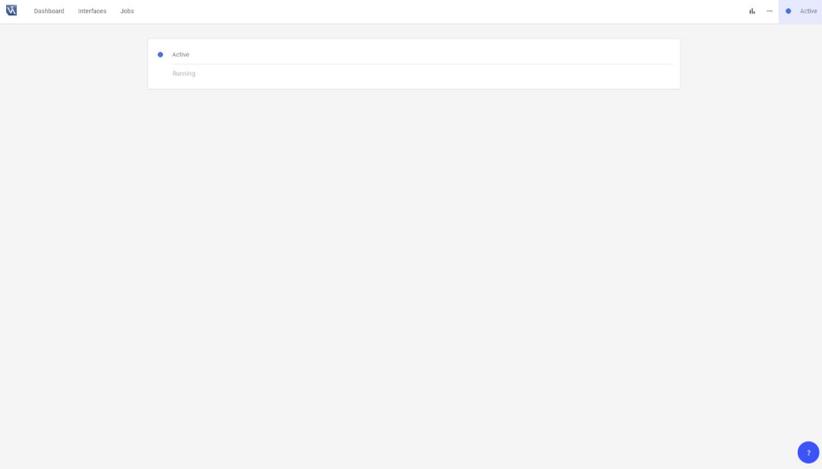
## 7.6.7 Language

The side navigation “Language” defines the user language of the device website (DE, EN, FR, IT, ES, PT, NL, HU, TR, ZH, RU).



## 7.7 Device Status

Open the device status in the icon menu bar for further status info.



The device status signals the following states:

- Blue On: Active (Running)
- Blue Blinking: Localizing (activate/deactivate localizing via button on device, see section „3.7.2 Button“, or via software wenglor Discovery Tool).

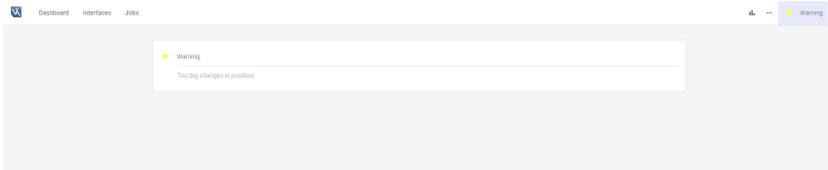
- Yellow: Warning (e.g. in case of unwanted position change, high CPU load, high RAM, high data memory or high LAN Ethernet)
- Red: Error (e.g. in case of crashed software, defect or blocked auto-focus module)

**NOTE!**



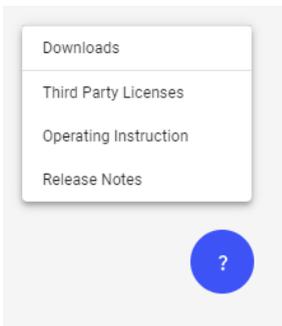
- The device status is also visualized via the two LED strips on the device (see section „3.7.3 Device Status LEDs“)
- Details about activating or deactivating localizing, see operating instruction of software wenglor Discovery Tool and section „3.7.2 Button“).

If position check is activated, unwanted position changes are shown via the device status (see section „7.6.2 Position Sensor“).



## 7.8 Help Button

Open the help button to access further information.



- Downloads: Opens a new tab in the browser with the product detail page of the device containing all available downloads on the wenglor website (only available with internet access).
- Third Party Licenses: Opens a new tab in the browser to access the third party licenses of the device (no internet access necessary).

**NOTE!**



Third party software licenses are also available on the wenglor website:  
<https://www.wenglor.com/License/s/License>.

- Operating Instruction: Opens the operating instruction of the B60 Smart Camera in a new tab of the browser.
- Release Notes: Opens the release notes of the B60 firmware in a new tab of the browser containing the changes between different firmware versions.

## 8. Software wenglor uniVision 3

The B60 is parameterized with the uniVision software (version 3.0.0 or higher). For details on the parameterization of the camera settings and the uniVision modules, please refer to the operating instructions for the wenglor uniVision 3 software. For more information, see: <https://www.wenglor.com/p/DNNF023>

## 9. Maintenance Instructions

### NOTE!



- This Smart Camera does not require any cyclical recalibration.
- Regular inspection of the plug connections is recommended.
- Cleaning of lens covers at regular intervals is recommended in order to assure uniform good quality of the acquired image and evaluation. A commercially available cloth for cleaning eyeglasses can be used for this purpose.
- Do not clean the Smart Camera with solvents or cleansers which could damage the product.

## 10. Proper Disposal

wenglor sensoric GmbH does not accept the return of unusable or irreparable products. Respectively valid national waste disposal regulations apply to product disposal.

## 11. Change Index of Operating Instruction

Version	Date	Description/Changes	Compatibility
1.0.0	21.08.2023	Initial version of the operating instructions of B60 Smart Cameras with C-Mount	Software: wenglor uniVision 3.0.0 Firmware B60: 1.0.0
1.0.1	26.09.2023	Updated info for firmware B60 1.0.1: <ul style="list-style-type: none"><li>• Recommended maximum trigger frequency (see „3. Technical Data“).</li><li>• Position sensor update (see section „7.6.2 Position Sensor“)</li></ul>	Software: wenglor uniVision 3.0.1 Firmware B60: 1.0.1
1.0.2	13.12.2023	<ul style="list-style-type: none"><li>• Adding BIS Symbol</li><li>• Small bugfix and adaptations</li></ul>	Software: wenglor uniVision 3.0.1 Firmware B60: 1.0.1
1.1.0	14.12.2023	<ul style="list-style-type: none"><li>• Updated description for version 1.1.0 of B60 firmware</li></ul>	Software: wenglor uniVision 3.1.0 Firmware B60: 1.1.0

Version	Date	Description/Changes	Compatibility
1.2.0	06.03.2024	<ul style="list-style-type: none"> <li>• Added B60 Auto-focus Smart Camera</li> <li>• Additional data on interfaces</li> <li>• General additions and improvements</li> </ul>	Software: wenglor uniVision 3.1.0 Firmware B60: 1.1.0

## 12. Appendix

### 12.1 Declarations of Conformity

Declarations of conformity can be found on our website at [www.wenglor.com](http://www.wenglor.com) in the product's separate download area.

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### 12.2 Third Party Licenses

Third party licenses used on the B60 Smart Camera are available via the device website (see section „7.8 Help Button“) or on the wenglor website (requires internet access) at: <https://www.wenglor.com/License/s/License>