

# ShapeDrive G4 MLAS/MLBS

3D Sensors



## Operating Instructions

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

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# 1. Change Index of Operating Instructions

Version	Date	Description/Change	Firmware version
1.0.0	14.04.2023	Initial version of the operating instructions	1.0.0
1.1.0	27.09.2023	<ul style="list-style-type: none"><li>• Added description of trigger behaviour (section “<a href="#">8.6 Trigger Behaviour</a>”)</li><li>• Added default settings SyncOut (section “<a href="#">8.11 Default Settings</a>”)</li><li>• Added complementary software (section “<a href="#">9. Software</a>”)</li><li>• Some supplements</li></ul>	1.1.0
1.1.1	30.11.2023	<ul style="list-style-type: none"><li>• Small bugfixes</li></ul>	1.1.0
1.2.0	20.12.2023	<ul style="list-style-type: none"><li>• Greyscale HDR mode</li><li>• Intrinsic and extrinsic camera parameters via XML (see Interface Protocol at product area <a href="#">3D Sensors</a>)</li></ul>	1.2.0

## 2. General

### 2.1 Information Concerning these Instructions

- These instructions enable safe and efficient use of
  - » MLASx1x
  - » MLBSx1x
- 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.

### 2.2 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.

## 2.3 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/warranties 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.

## 2.4 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.

## 3. For Your Safety

### 3.1 Use for Intended Purpose

The ShapeDrive MLASx1x / MLBSx1x is a structured light sensor and used to generate 3D point clouds and 2D images. The sensor is designed for use in industry and laboratories.

### 3.2 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.



**DANGER!**

**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.
- 

### 3.3 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.
- 

### 3.4 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 mark and the guarantee may be rendered null and void.
- Modification of the product is impermissible.
  - Unauthorized opening of the device is not permitted.
-

### 3.5 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 sensor must be protected against contamination and mechanical influences.

### 3.6 LED Warnings



**LED risk group 2**  
DIN EN 62471:2009-03

Applicable standards and safety regulations must be observed.



**NOTE!**

Due to the normal human reactions of turning away from bright sources of light and withdrawing from thermal discomfort, lamps/luminaires do not represent any danger.

### 3.7 Approvals





## 4. Function Principle

ShapeDrive G4 sensors are designed to detect the geometry of an object in three dimensions. Therefore, they are also called 3D sensors.

The underlying functional principle is based on triangulation (see Fig. 1). A special light module (1) projects a sequence of patterns onto the object (2) and a camera (3) captures the reflected light. This arrangement forms a triangle with a fixed base between the camera, light module and object.

To generate 3D data (called a point cloud), different patterns are successively projected onto the stationary object. These are captured by the integrated camera. The point cloud is calculated with high precision from this captured image stack.

The resulting point cloud consists of a large number of 3D points and corresponds to the recorded surface. This point cloud can subsequently be used for inspection or measurement tasks, for example.

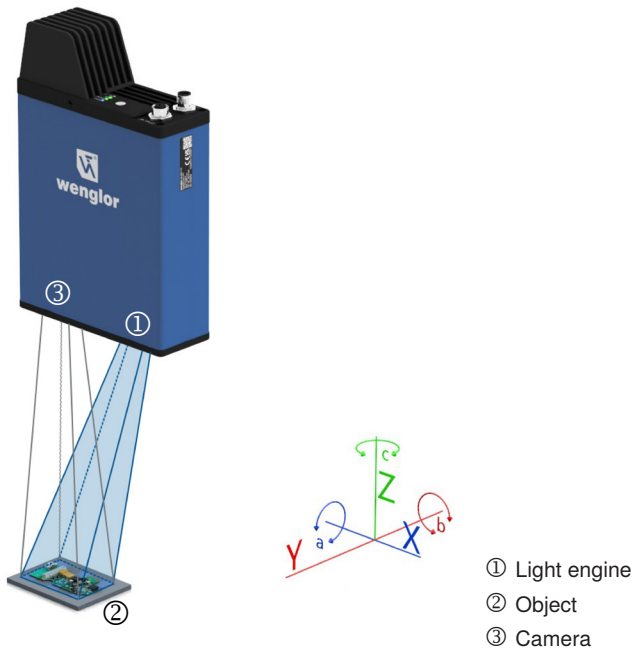


Fig. 1: Function principle of a 3D sensor

## 5. Sensor Types

ShapeDrive offers several different types of sensors:

- » MLAS11x: 3D sensor with a camera resolution of 5 MP and a measuring volume up to  $240 \times 200 \times 200$  mm
- » MLAS21x: 3D sensor with a camera resolution of 12,3 MP and a measuring volume up to  $240 \times 160 \times 200$  mm
- » MLBS11x: 3D sensor with a camera resolution of 5 MP and a measuring volume up to  $1300 \times 1000 \times 1000$  mm

## 6. Technical Data

	MLASxxx	MLBSxxx
Optical Data		
Light source	LED (blue)	
Wavelength	457 nm	
Service life (ambient temp. = +25° C)*	20 000 hours	
Risk group (EN 62471)	2	
Environmental conditions		
Storage temperature	-5 ... 70 °C	
Ambient temperature	0 ... 40 °C	
Max. ambient light	5000 lux	
EMV	DIN EN 61000-6-2; 61000-6-4	
Electrical Data		
Supply voltage	18 ... 30 V DC	
Max. current consumption (Ub = 24 V)	2,5 A	3,5 A
Short-circuit protection	Yes	
Reverse polarity protected	Yes	
Interface	Ethernet TCP/IP	
Transmission speed	1...10 Gbit/s	
Protection class	III	
Inputs/Outputs	4	
Integrated web server	Yes	
Mechanical Data		
Housing material	Aluminum/plastic	
Degree of protection	IP67 **	
Power I/O connection	M12×1, 12-pin	---
Power connection	---	M12×1, 5-pin
I/O / I/O power connection	---	M12×1, 12-pin
Ethernet connection	M12×1, 8-pin, X coded	
Optic cover	Plastic	
Safety-relevant data		
MTTd (EN ISO 13849-1)	71,35 a	

\* Service life is related to the LED. Since the LED is not permanently switched on, the service life increases accordingly

\*\* Only valid if all plugs are connected/closed by cables or caps with corresponding protection class.

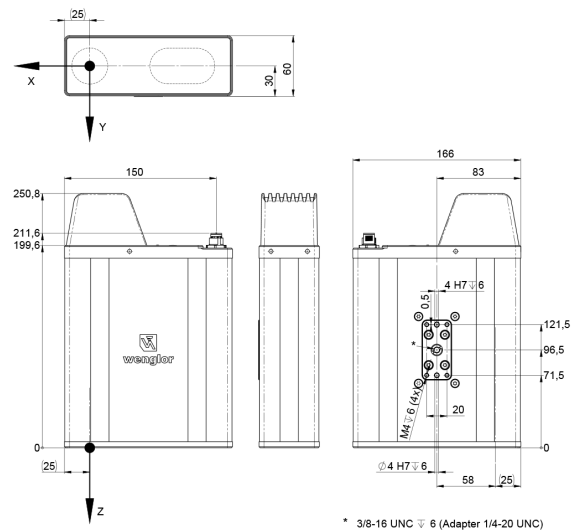
Order Number	MLAS112	MLAS113	MLAS114	MLAS212	MLAS213	MLAS214
Technical Data						
Optical Data						
Working range Z	300...340 mm	220...320 mm	400...600 mm	255...295 mm	220...320 mm	270...470 mm
Measuring range Z	40 mm	100 mm	200 mm	40 mm	100 mm	200 mm
Measuring range X	60 mm	120 mm	240 mm	60 mm	120 mm	240 mm
Measuring range Y	48 mm	90 mm	200 mm	40 mm	80 mm	160 mm
Resolution Z	3...4 μm	4...8 μm	13...30 μm	1...2 μm	2...5 μm	3...9 μm
Resolution X/Y	30...34 μm	47...69 μm	115...172 μm	18...20 μm	30...44 μm	37...65 μm
Camera resolution	5 MP			12,3 MP		
Electrical Data						
Acquisition time *	0,22...0,5 s			0,4...0,9 s		

Order Number	MLBS111	MLBS112	MLBS115
Technical Data			
Optical Data			
Working range Z	1050...1450 mm	1550...2050 mm	1750...2750 mm
Measuring range Z	400 mm	500 mm	1000 mm
Measuring range X	500 mm	750 mm	1300 mm
Measuring range Y	380 mm	560 mm	1000 mm
Resolution Z	25...48 $\mu\text{m}$	34...60 $\mu\text{m}$	61...151 $\mu\text{m}$
Resolution X/Y	226...312 $\mu\text{m}$	335...442 $\mu\text{m}$	605...950 $\mu\text{m}$
Camera resolution	5 MP		
Electrical Data			
Acquisition time *	0,22...0,5 s		

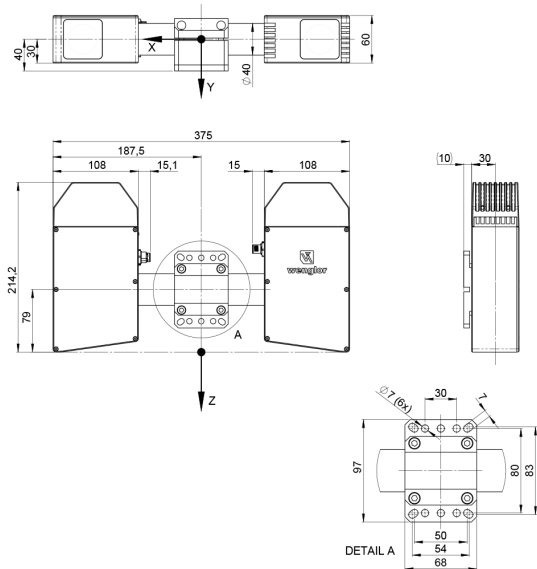
\* At a transmission speed of 10 Gbit/s and an exposure time of 10 000  $\mu\text{s}$

# 6.1 Dimensional Drawings

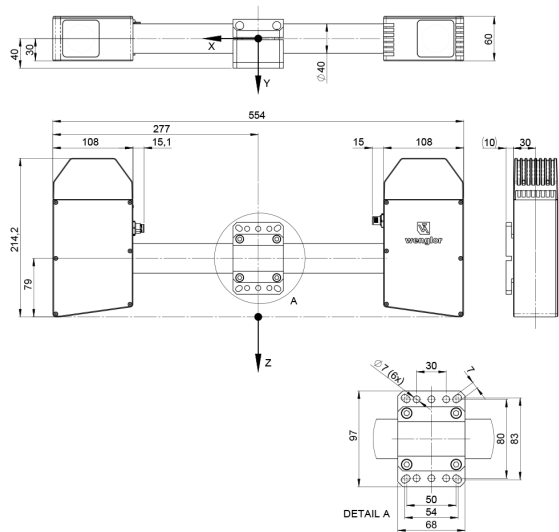
## MLASx1x:



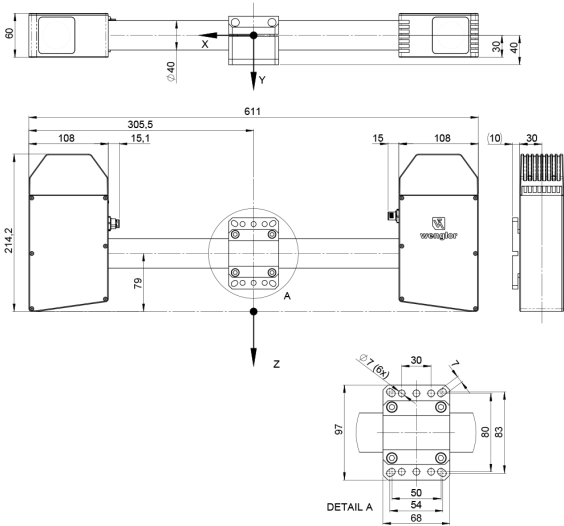
## MLBS111:



MLBS112:

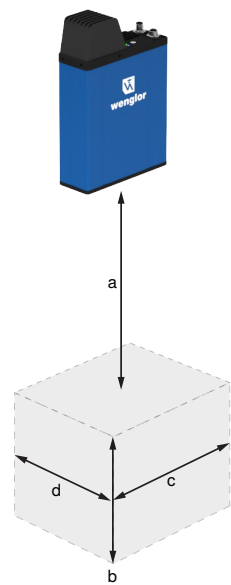


MLBS115:



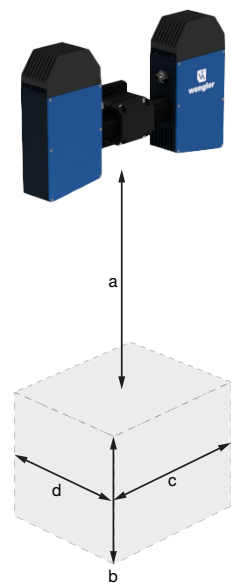
## 6.2 Field of View

### MLASx1x:



Sensor	Field of view (b×c×d)	Working distance (a)
MLAS112	40×60×48 mm	300 mm
MLAS113	100×120×90 mm	220 mm
MLAS114	200×240×200 mm	400 mm
MLAS212	40×60×40 mm	255 mm
MLAS213	100×120×80 mm	220 mm
MLAS214	200×240×160 mm	270 mm

### MLBSx1x:

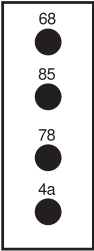


Sensor	Field of view (b×c×d)	Working distance (a)
MLBS111	400×500×380 mm	1050 mm
MLBS112	500×750×560 mm	1550 mm
MLBS115	1000×1300×1000 mm	1750 mm

### 6.3 LED Display

LEDs:

A22



68 = Supply voltage indicator  
85 = Link/Act  
78 = Module status  
4a = User LED

LED	Designation	Status	Function
68	Power	Blue	Operating voltage on
		Off	Operating voltage off
85	Link/Act	Green	Link established (10 Gbit)
		Orange	Link established (2,5...5 Gbit)
		Red	Link established (100...1000 Mbit)
		Off	No Ethernet device connected
78	Module status (MS)	Green	Device operative
		Red	Device error
		Off	Device doesn't start up
4a	User LED	Off	controlled via SDK command
		Green	
		Red	
		Orange	

## 6.4 Button on Device

3D Sensors have one button next to the connectors.

### MLASx1x:

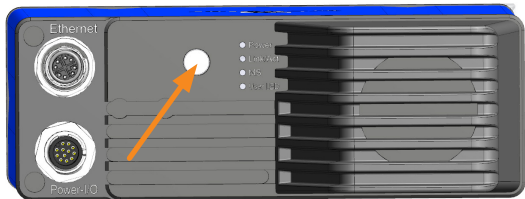


Fig. 2: Button position at MLAS

### MLBSx1x:



Fig. 3: Button position at MLBS

Pressing and releasing the button within the following time period enables the following functionality.

State	Press duration	Function
Localize	3...6 s	Starts or stops localizing
Network Reset	10...15 s	Resets network settings of Ethernet connector to defaults <ul style="list-style-type: none"><li>• IP address 192.168.100.1</li><li>• Subnet mask 255.255.255.0</li><li>• Gateway 0.0.0.0</li></ul>



### NOTE!

To avoid unwanted changes from the button on the device, deactivate the functionality on the device website (see section 10.4.2).



## 7. Transport and Storage

### 7.1 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.

### 7.2 Scope of Delivery

- ShapeDrive 3D sensor
- Instruction leaflet
- Safety information sheet
- Mounting set
- Thread adapter (MLAS only)

### 7.3 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 property damage in case of improper storage!**

The product may be damaged.

- Comply with storage instructions.
-

# 8. Installation and Initial Start-Up



**ATTENTION!**  
**Risk of property damage in case of improper installation!**  
The product may be damaged.  
• Comply with installation instructions

## 8.1 General Installation Instructions

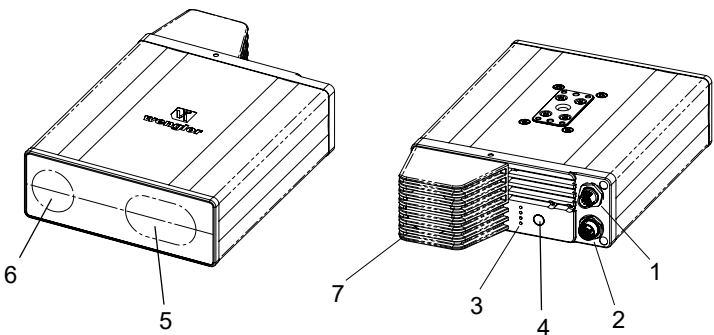
- Observe electrical and mechanical regulations, standards, and safety rules.
- Make sure that the sensor is mounted firmly and securely.
- The power supply should be connected directly and it should be as short as possible (max. length: 30 m).
- The sensor must be protected against mechanical influences.
- The sensor should not be subjected any vibration because this could influence measurement.
- To ensure sufficient air circulation, leave some space around the device and do not cover the fan and its air outlets.
- Adequate heat dissipation must be assured for the device. This can be accomplished, for example, by means of a metallic connection between the sensor housing and the mounting base.
- Stable operation is achieved after a warm-up phase of 5-10 min, depending on the ambient temperature and kind of mounting.
- The sensor needs approx. 30-40 sec. to boot.



**ATTENTION!**  
It is essential to ensure that the maximum device temperature of 85 °C is not exceeded.

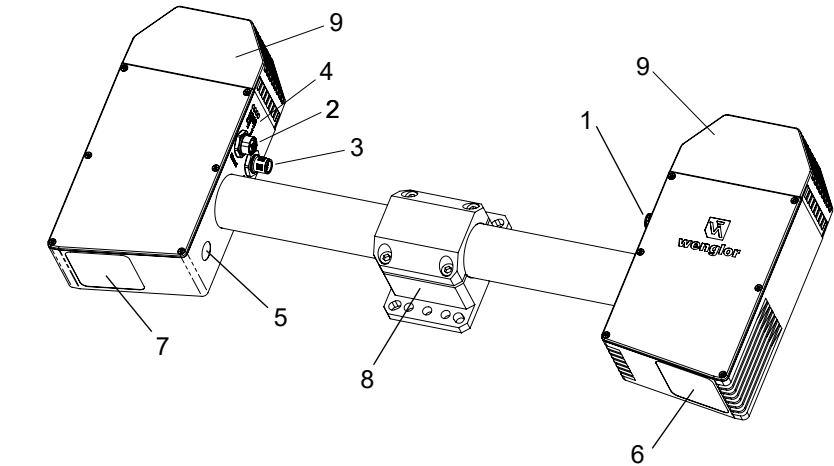
## 8.2 Sensor Construction

MLASx1x:



- ① = Power / Digital I/O
- ② = Ethernet connector
- ③ = Status LEDs
- ④ = Button
- ⑤ = Light emission
- ⑥ = Receiver
- ⑦ = Fan

MLBSx1x:



- ① = Power connector
- ② = Ethernet connector
- ③ = I/O connector
- ④ = Status LEDs
- ⑤ = Button
- ⑥ = Light emission
- ⑦ = Receiver
- ⑧ = Mounting clamp
- ⑨ = Fan

8.2.1 Tightening Torques

Tightening torques must be complied with in order to assure error-free operation. The respective values are listed in the following table.

Connection Type	Tightening torque (Nm)
M12 connection cable power/I/O (connector 1)	see corresponding cable datasheet
M12 connection cable I/O (connector 3)	see corresponding cable datasheet
M12 connection cable Ethernet (connector 2)	see corresponding cable datasheet
MLAS: Mounting M4 (thread)	2,5 (min. thread engagement length: 4 mm)
MLBS: Mounting M6 (thread)	8

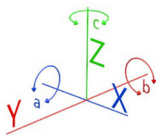
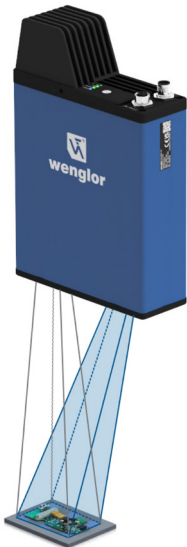


**NOTE!**  
The values may differ when using other cables (please see cable data sheet).

### 8.3 The Sensor's Coordinate System

The coordinate system is a right-handed trihedron and is defined as follows:

- The Z-axis runs along the optical axis at the receiver side.
- The XY-plane coincides with the front face of the receiver.



The X-axis corresponds to measuring range X.  
The a-axis corresponds to rotation around the X-axis.  
The Z-axis corresponds to measuring range Z.  
The c-axis corresponds to rotation around the Z-axis.  
The Y-axis corresponds to measuring range Y.  
The b-axis corresponds to rotation around the Y-axis.

Fig. 4: Coordinate system of the 3D sensor

### 8.4 Shadowing and Obstruction



**NOTE!**

Under certain arrangements, shadowing may occur. Please take this into account.

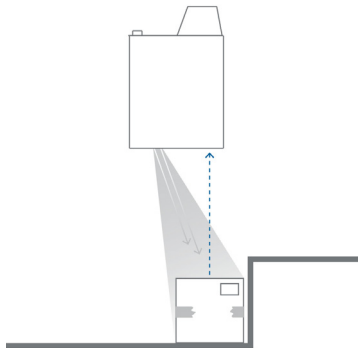


Fig. 5: Measurement without any obstruction

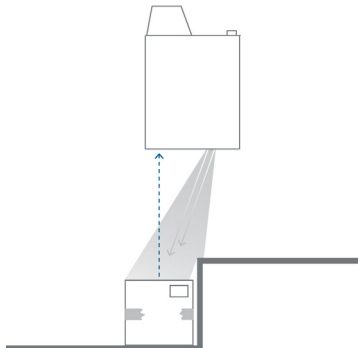


Fig. 6: The visible range is obstructed by the edge. The measuring object cannot be fully captured.

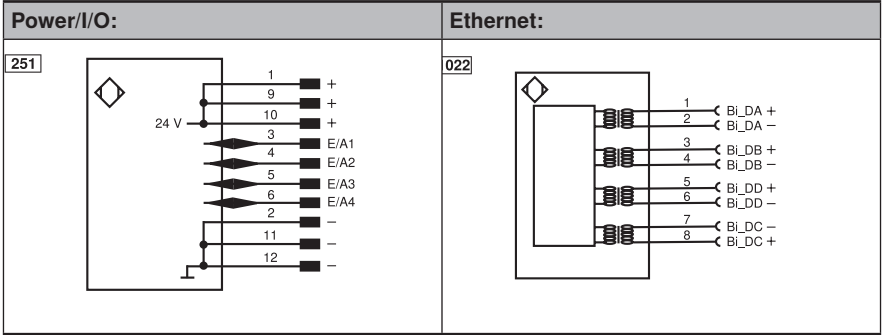
8.5 Installation

8.5.1 Electrical Connection

Depending on the sensor and usage only two or three connections are needed.

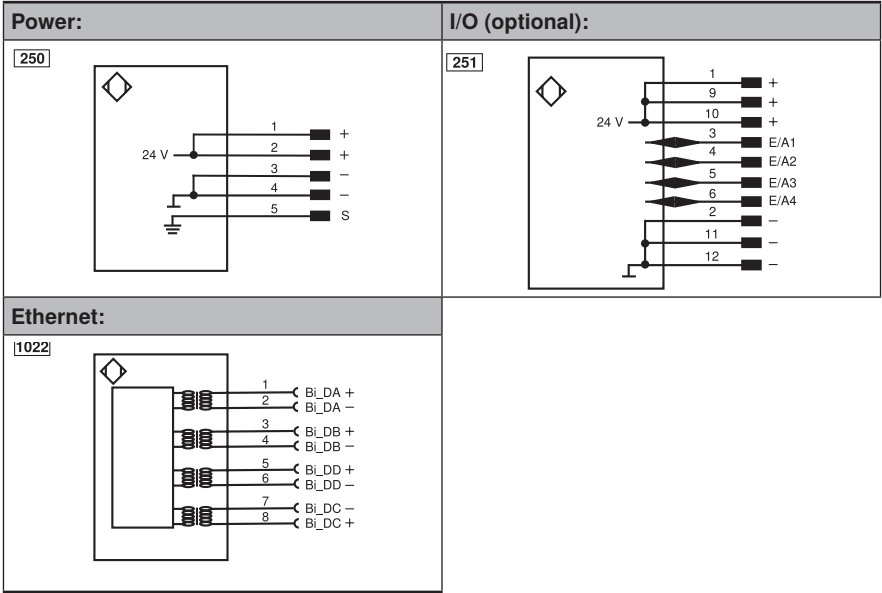
MLASx1x:

- Power/I/O: M12; 12 pin for power and digital I/O
- Ethernet: M12; 8-pin x-coded for 1/10 Gbit Ethernet



MLBSx1x:

- Power: M12; 5 pin for power
- I/O: M12; 12 pin connector for digital I/O and digital I/O power supply. Only needed if digital I/O is used.
- Ethernet: M12; 8-pin x-coded for 1/10 Gbit Ethernet



Legend:

Legend					
+	Supply Voltage +	nc	Not connected	EN <sub>BRs422</sub>	Encoder B/B (TTL)
-	Supply Voltage 0 V	U	Test Input	ENa	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	ENb	Encoder B
A	Switching Output (NO)	W	Trigger Input	AMIN	Digital output MIN
Ā	Switching Output (NC)	W-	Ground for the Trigger Input	AMAX	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	ACK	Digital output OK
Ṽ	Contamination/Error Output (NC)	O-	Ground for the Analog Output	SY In	Synchronization In
E	Input (analog or digital)	BZ	Block Discharge	SY OUT	Synchronization OUT
T	Teach Input	AMV	Valve Output	OLT	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		
RDY	Ready	E+	Receiver-Line	BK	Black
GND	Ground	S+	Emitter-Line	BN	Brown
CL	Clock	≡	Grounding	RD	Red
E/A	Output/Input programmable	SnR	Switching Distance Reduction	OG	Orange
IO-Link	IO-Link	Rx+/-	Ethernet Receive Path	YE	Yellow
PoE	Power over Ethernet	Tx+/-	Ethernet Send Path	GN	Green
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)	BU	Blue
OSSD	Safety Output	La	Emitted Light disengageable	VT	Violet
Signal	Signal Output	Mag	Magnet activation	GY	Grey
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	WH	White
ENo RS422	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contactor Monitoring	PK	Pink
PT	Platinum measuring resistor	EN <sub>ARs422</sub>	Encoder A/Ā (TTL)	GNYE	Green/Yellow

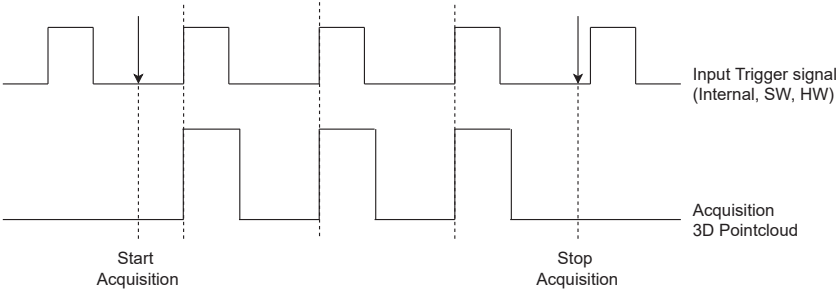
8.6 Trigger Behaviour



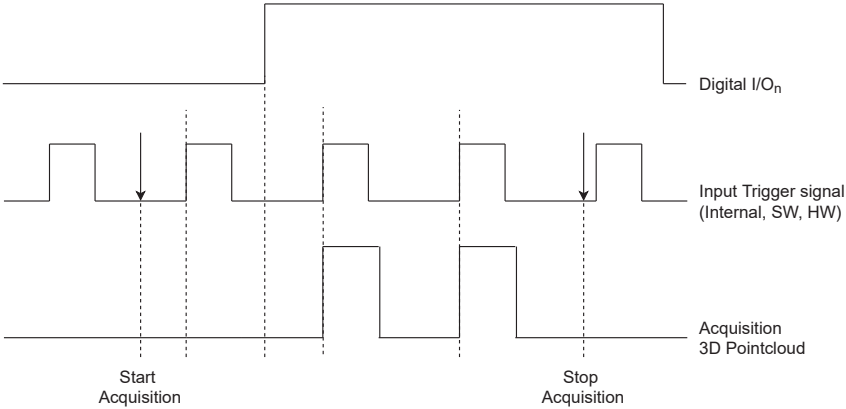
**NOTE!**  
For details about trigger source and activating digital I/O data acquisition check interface protocol at [ShapeDrive 3D Sensors](#).

8.6.1 Trigger Input

SetTriggerSource=0 (or any trigger source); SetSensorEnable=0



SetTriggerSource=0 (or any trigger source); SetSensorEnable=1 (or 2...4)

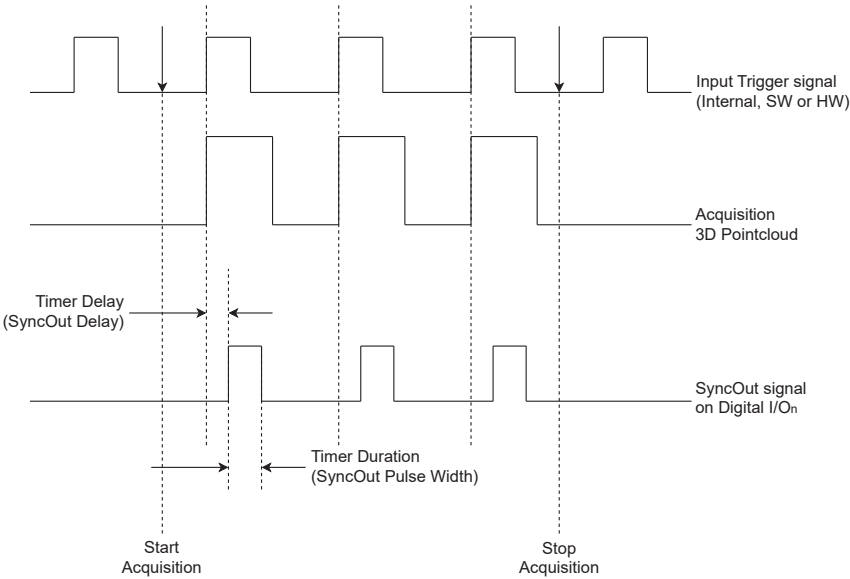


8.6.2 SyncOut Function



**NOTE!**  
Due to the time required to configure the projector of the sensor after Start Acquisition, the first SyncOut pulse has a delay of a few milliseconds (typically 100ms), which gets reduced to minimum possible (typically 20-40 ms) for subsequent SyncOut pulses.

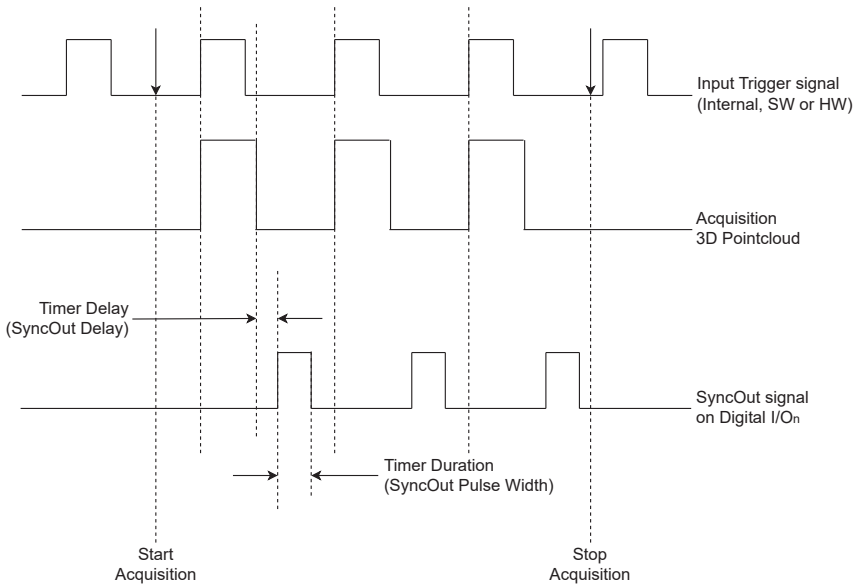
SyncOut with Frame Start Behaviour



### Example Command sequence:

1. SetEA3LineMode=1 → Set IO3 pin function as user output
2. SetEA3LineSource=2 → Set IO3 pin function as Timer0 (SyncOut)
3. SetTimer0Source=0 → Set trigger point of Timer to be start of the frame (at the start of the capturing stacks)
4. SetTimer0Duration=20000 → Set the pulse width of the SyncOut signal in  $\mu\text{s}$
5. SetTimer0Delay=10000 → Set the delay of the Timer in  $\mu\text{s}$

### SyncOut with Frame End Behaviour

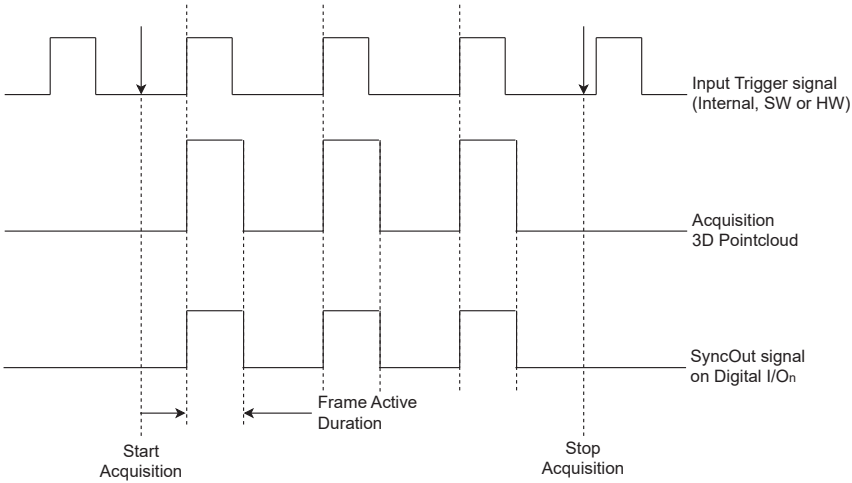


### Example Command sequence:

1. SetEA3LineMode=1 → Set IO3 pin function as user output
2. SetEA3LineSource=2 → Set IO3 pin function as Timer0 (SyncOut)
3. SetTimer0Source=1 → Set trigger point of Timer to be end of the frame (at the end of the capturing stacks)
4. SetTimer0Duration=20000 → Set the pulse width of the SyncOut signal in  $\mu\text{s}$
5. SetTimer0Delay=10000 → Set the delay of the Timer in  $\mu\text{s}$



### SyncOut while Frame Active Behaviour



### Example Command sequence:

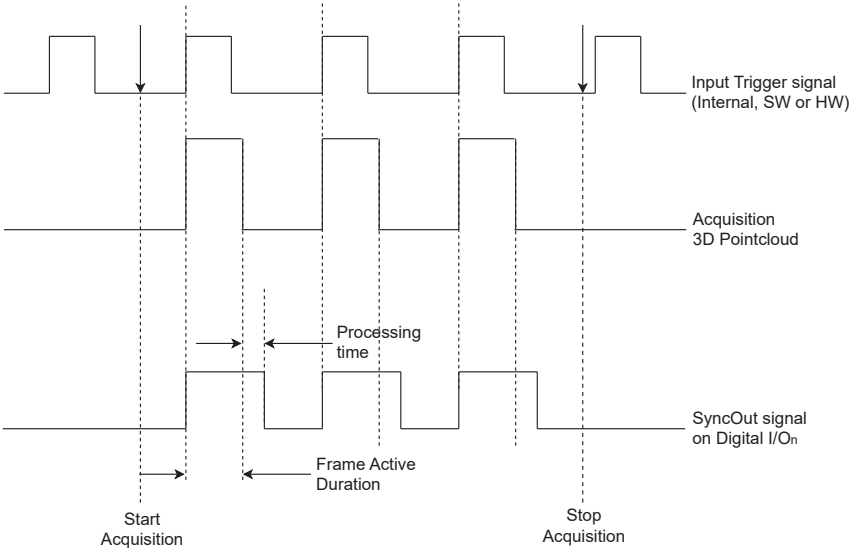
1. SetEA3LineMode=1 → Set IO3 pin function as user output
2. SetEA3LineSource=0 → Set IO3 pin function as Sync Out while Frame Active (SyncOut signal remains HIGH as long as the sensor is capturing stacks, i.e. ExposureTimeLimit × LED Pattern (16 or 28))



### NOTE!

In this mode the commands SetTimer0Duration and SetTimer0Delay have no effect.

### SyncOut while Sensor Busy Behaviour



#### Example Command sequence:

1. SetEA3LineMode=1 → Set IO3 pin function as user output
2. SetEA3LineSource=1 → Set IO3 pin function as Sync Out while Sensor Busy (SyncOut signal remains HIGH as long as the sensor is capturing stacks and processing them, i.e. (ExposureTimeLimit × LED Pattern + Processing Time))



#### NOTE!

In this mode the commands SetTimer0Duration and SetTimer0Delay have no effect.

## 8.7 Initial Startup

Connect the power cables to the sensor and connect them to the power supply and IPC.



### CAUTION!

Make sure that the cables have been correctly and securely connected in order to assure error-free operation.

---



### NOTE!

Maximum permissible length of the power supply cable is 30 m.  
The power supply cable must be equipped with an additional, suitable shield.



### NOTE!

The voltage drop across the cable must be taken into account during installation.

### 8.7.1 System Requirements IPC

Following system requirements are recommended

- Prozessor Core i7 (min. 6. Generation)
- RAM 16GB
- SSD 250GB
- 1...10 Gbit Ethernet
- Windows 10/11
- Linux Ubuntu 20.04

## 8.8 Transmission Speed Selection

In speed sensitive applications it is recommended to use a separate 10 Gbit network card. A function is already guaranteed with 1 Gbit, even if not at full speed. In addition, it is recommended not to operate any other devices on the same network adapter. The device selects the maximum transmission speed itself. If this does not correspond to the network adapter, check the cabling or exclude disturbances of the transmission.

## 8.9 Adjusting Network Settings

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



### NOTE!

For details check operating instructions of the Software wenglor Discovery Tool ([DNNF022](#))

8.9.1 Test Connection between Sensor and IPC

To test the connection between sensor and IPC following should be done:

- Ensure that power and Ethernet connection is available and wait approx. 30-40 s after power on.
- Check LEDs
  - » Supply voltage indicator – blue
  - » Link/Act LED – on (red, orange, green)
  - » Module state – green
- Open browser and type the sensor 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. If still no success please follow the next steps.

8.9.2 Manual Network Settings

Upon shipment from the factory, the default Ethernet network settings of the sensor are:

- IP address           192.168.100.1
- Subnet mask       255.255.255.0.

In order to be able to connect the sensor to your PC, you have to make sure that the sensor 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.	001
Subnet mask	255.255.255.	000

The network part of the sensor’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 sensor and the IPC. By default, the IP address of the network adapter card in the IPC is set to dynamic (automatic allocation). Change the setting to “static”. The IP address must differ from the sensor IP and must be unique in the network, e.g. 192.168.100.181.

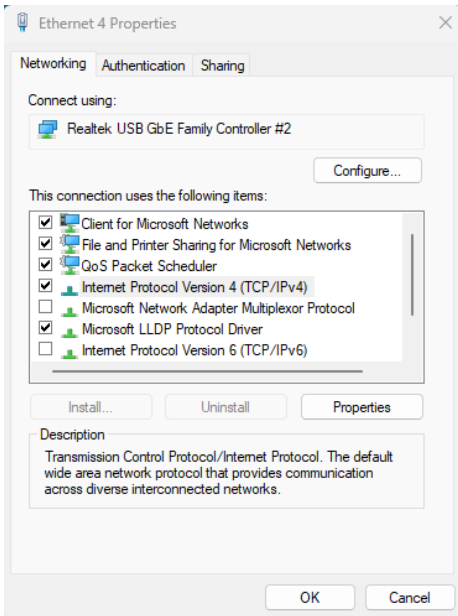


Fig. 7: Local connection properties

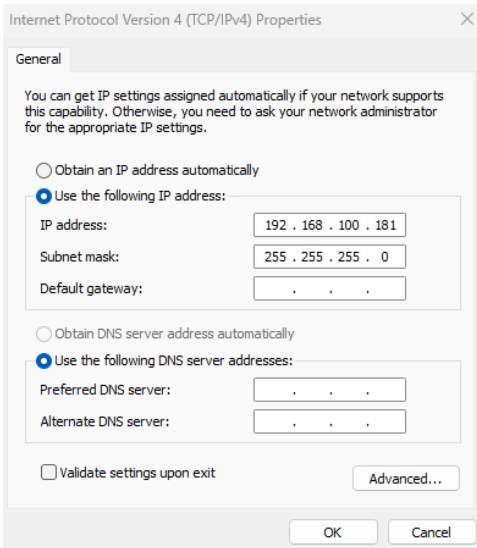


Fig. 8: Properties of internet protocol

The integrated web server can then be accessed containing all global device settings (see section 10).

## 8.10 Complementary Accessories

The product pages of the 3D sensors can be reached via the link below or the QR code. From there navigate to the desired product and the corresponding system components

- Complementary products
- Mounting technology
- Connection equipment
- Software

<https://www.wenglor.com/en/3D-Sensors/c/cxmCID214181>



## 8.11 Default Settings

		MLAS11x	MLAS21x	MLBS11x
Pin function	I/O1	---	---	---
	I/O2	---	---	---
	I/O3	Sync Out	Sync Out	Sync Out
	I/O4	Sync In	Sync In	Sync In
I/O Settings	I/O1	Operating voltage active, extra load enable	Operating voltage active, extra load enable	Operating voltage active, extra load enable
	I/O2	Operating voltage active, extra load enable	Operating voltage active, extra load enable	Operating voltage active, extra load enable
	I/O3	Operating voltage active, extra load enable	Operating voltage active, extra load enable	Operating voltage active, extra load enable
	I/O4	Operating voltage active, extra load enable	Operating voltage active, extra load enable	Operating voltage active, extra load enable
3D	Measuring rate (exposure time limit)	10 000 $\mu$ s	22 000 $\mu$ s	30 000 $\mu$ s
	Exposure time	10 000 $\mu$ s	22 000 $\mu$ s	30 000 $\mu$ s
	Patternmode	28	28	28
	LED power	10 %	10 %	10 %
Interface	IP address	192.168.100.1	192.168.100.1	192.168.100.1
	Subnet mask	255.255.255.0	255.255.255.0	255.255.255.0
	Control port	32000	32000	32000
	TCP port	32001	32001	32001
	MAC address	See website	See website	See website
Web interface	User name	admin	admin	admin
	Password	admin	admin	admin
Language		English	English	English

## 9. Software

### 9.1 wenglor Discovery Tool

The wenglor Discovery Tool software [DNNF022](#) makes it easy to search for and find camera-based products in the network. The network configuration of the products is also adapted so that a connection can be established.

### 9.2 VisionApp Demo 3D

VisionApp Demo 3D software [DNNF013](#), available free of charge, displays measurement data from 2D/3D profile sensors and 3D sensors on your monitor. These point-cloud presentations of data can be saved, loaded and transferred so as to support users regardless of their location. Furthermore, the sensor parameters can be configured on the convenient user interface.

### 9.3 Interfaces

Shape Drive 3D Sensors can be integrated via SDK or GigE Vision. For details check the interface protocols at [ShapeDrive 3D Sensors](#).



# 10. Integrated Web Server

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



**NOTE!**  
Make sure that the network settings of the device and the communication partner fit together (see section 8.9.1).

Supported browsers (tested on Windows 10 (22H2) and Windows 11 (22H2) PCs):

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

## 10.1 Structure of Device Website

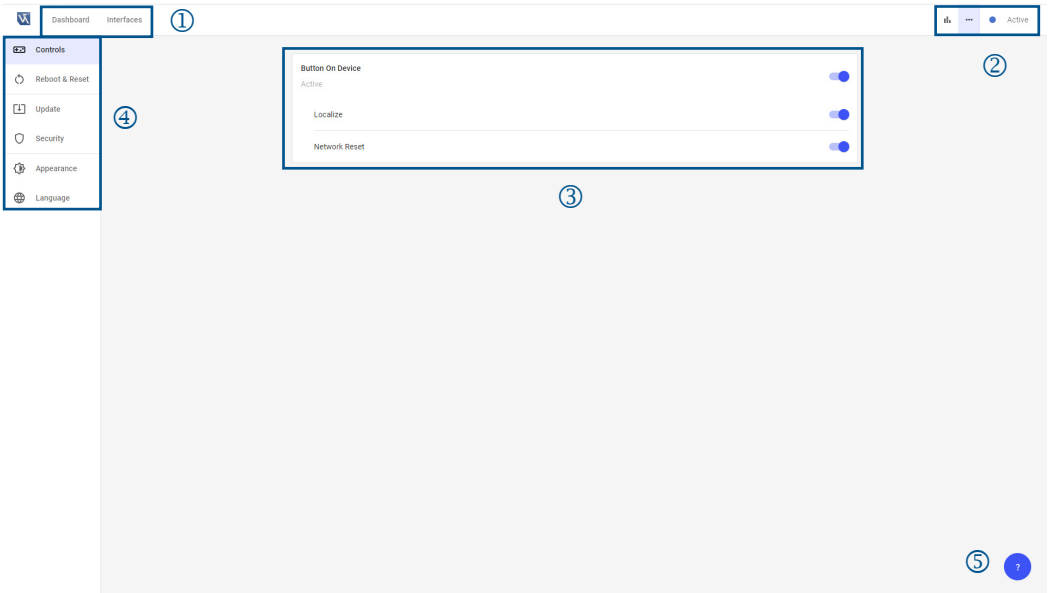


Fig. 9: Structure of the device website

The website is divided in several areas:

- (1) Tabs
- (2) Icon menu bar (see section 10.4)
- (3) Workspace
- (4) Side navigation
- (5) Help button (see section 10.6)

## 10.2 Dashboard

By default, the dashboard shows the details of the 3D sensor.

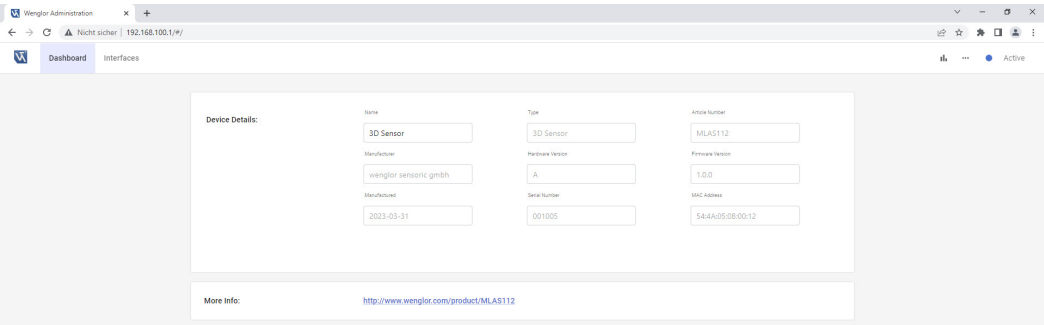


Fig. 10: Dashboard with sensor specific information

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

## 10.3 Interfaces

Open the tab “Interfaces” tab to see and edit all interface settings. It is possible to adjust the fixed network settings of the 3D sensor:

- IP address
- Subnet mask
- Gateway

By default the 3D sensor has the following network settings:

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

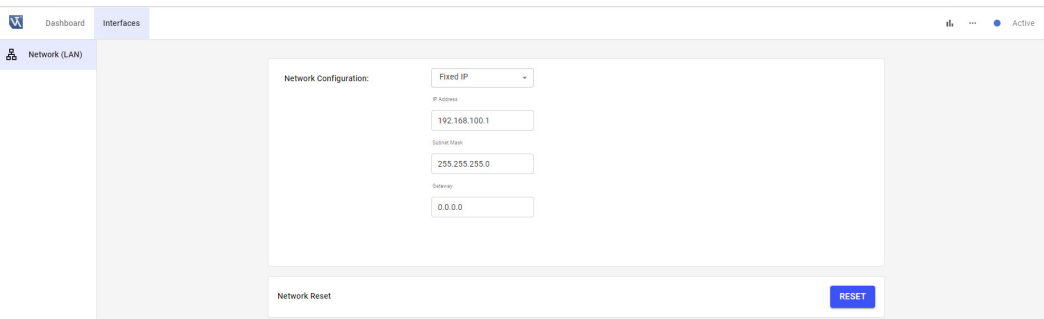


Fig. 11: Network configuration



### NOTE!

- Confirm the reboot info to start the network change. During the network change, a software reboot is done automatically.
- After network changes, enter the new IP address in the browser in order to access the device website again.

“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

## 10.4 Icon Menu Bar

### 10.4.1 Diagnosis

Browser data shows additional info for the used browser version.

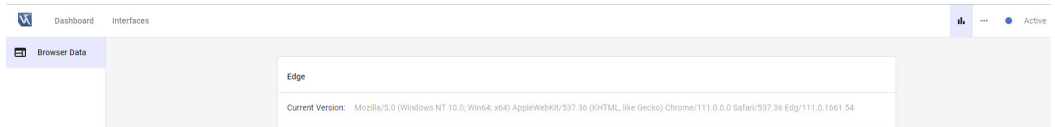


Fig. 12: Browser data

### 10.4.2 Settings

The icon menu bar “Settings” contains the following side navigation:

- **Controls:** Option to activate/deactivate the button functionality on the device for localize and network reset in order to protect it from unwanted changes (see section 6.4).

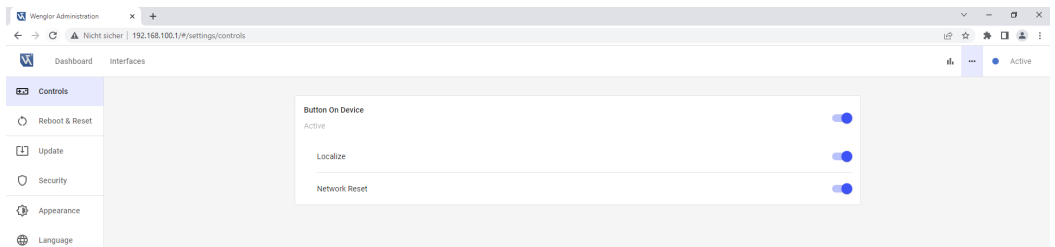


Fig. 13: Activating/deactivating of device button

- **Reboot & Reset:** Option to reboot the device

- **Update:** Update the firmware via click on CHOOSE. Select a \*.swu firmware update file. Confirm the reboot info to start the firmware update. During the firmware update, a software reboot is automatically done.



Fig. 14: Firmware update

- **Security:** Option to activate/deactivate authentication to protect the device from unwanted changes (see section 10.5). By default, authentication is deactivated.
- **Appearance:** Switch between dark and bright theme

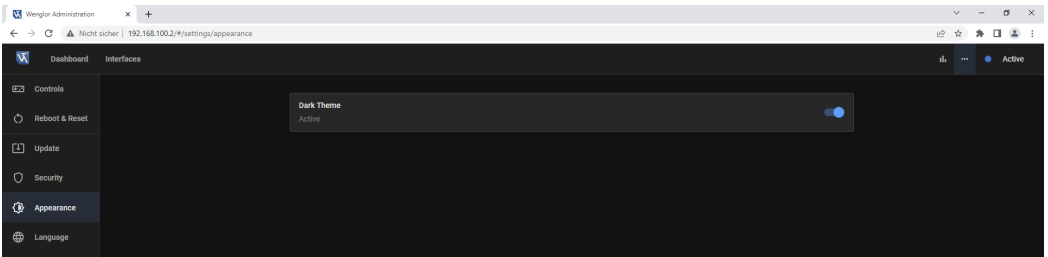


Fig. 15: Dark theme

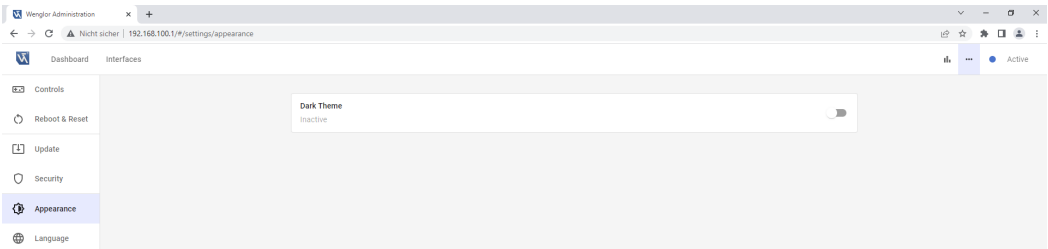


Fig. 16: Bright theme

- **Language:** Only language English ist supported

### 10.4.3 Device Status

The device status signals the following states:

- Blue: Active (Running)
- Blue blinking: Localizing (activate/deactivate localizing via button on device, see section 6.4)
- Red: Error (e.g. in case of crashed software service)

## 10.5 Login and Logoff

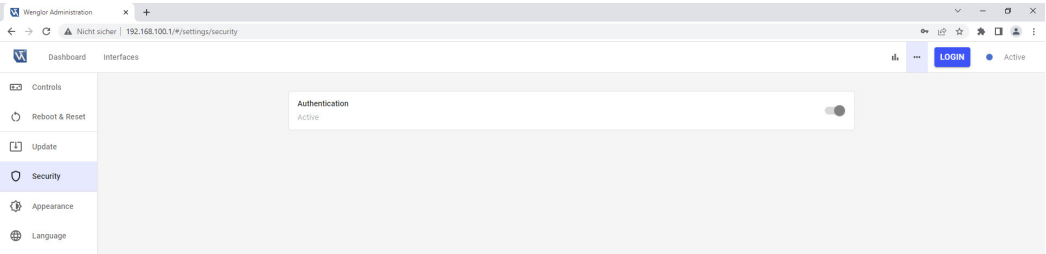


Fig. 17: Activation/deactivation of authentication

If authentication is active, the device is protected from unwanted changes. Before changing properties, it is necessary to login.

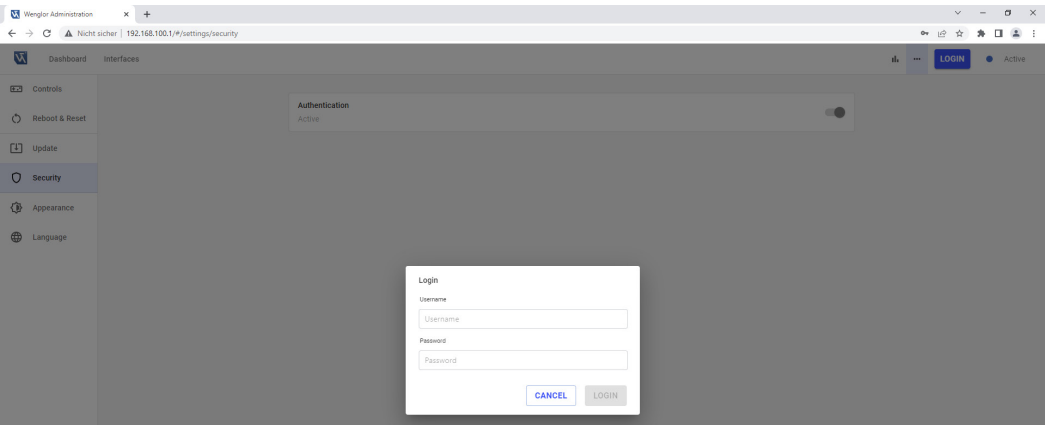


Fig. 18: Login

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

- Username: admin
- Password: admin



### NOTE!

It is possible to edit username and password of admin (default), but it is not possible to delete the account or to change the user group.

Fig. 19: Edit username and password



### NOTE!

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

Fig. 20: User account overview

The following table shows the rights for the different user groups:

Functionality	Admin or admin (default)	Setter	Worker	Logged off
Device website: See properties	Yes	Yes	Yes	Yes
Device website: Edit properties	Yes	No	No	No



### NOTE!

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

# 10.6 Help Button

After clicking on the help button (bottom right question mark, see [Fig. 9](#)) a menu opens with access to

- Downloads
- Third party licenses
- Manual
- Release Notes

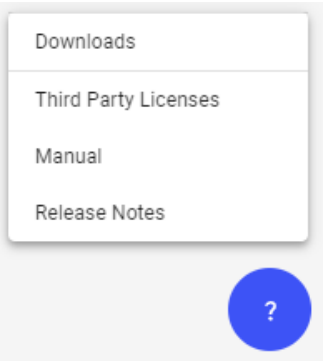


Fig. 21: Help Button

## 11. Maintenance Instructions



### NOTE!

- This sensor does not require any cyclical recalibration.
- Cleaning of both lens covers at regular intervals is recommended in order to assure uniform good quality of the measured values. A commercially available cloth for cleaning eyeglasses can be used for this purpose.
- Do not clean the sensor with solvents or cleansers which could damage the product.

## 12. 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.

## 13. EU Declaration of Conformity

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

### **wenglor sensoric GmbH**

wenglor Straße 3  
88069 Tettnang  
GERMANY

Phone: +49 7542 5399-0  
[info@wenglor.com](mailto:info@wenglor.com)

For further wenglor contacts please see [www.wenglor.com](http://www.wenglor.com)