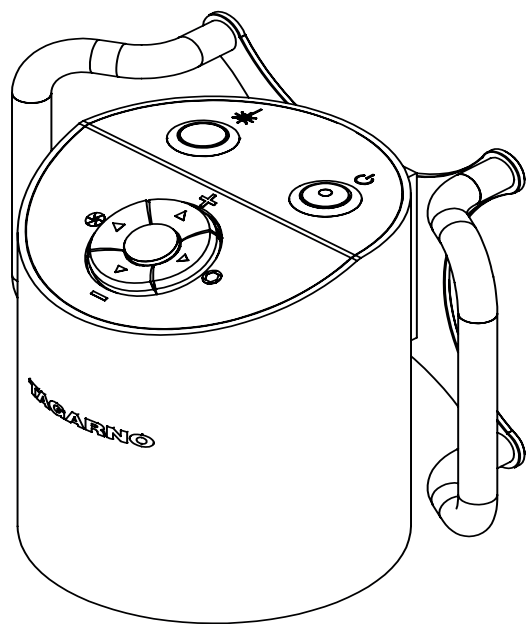


# MANUAL | TAGARNO FHD ZAP

VERSION: 1.9 | FIRMWARE 5.8 | 2020-09-15



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Go to [tagarno.com/productmanuals](https://tagarno.com/productmanuals) to find manuals and tutorial videos.

# 1. INTENDED USE

The product is a digital magnifying system consisting of a camera unit, PCBs, mechanical parts and a power supply. The product is intended for marketing worldwide and is designed for manual visual inspection.

# 2. WARNINGS



Read all safety information before you use the product.  
Please pay attention when you see a warning label on the product.



This product is for indoor use only.



You must not discard this electrical/electronic product in domestic household waste.  
Please dispose at your local recycling centre.

1. Read the manual before you use the product
2. Use the product only as specified, or the protection supplied by the product can be compromised
3. Do not position the equipment so that it is difficult to operate the disconnecting device (appliance inlet of external power supply, equipment input connector)
4. If fluids are spilled on the product, turn the system off immediately by pulling the power supply out of the electrical outlet
5. In case of fire close to the microscope, please turn off and disconnect the system
6. Avoid subjecting the lens to sharp or hard objects
7. Please do not connect the microscope, if visible damages appear
8. Do not dismantle any parts of the microscope, except where noted in the manual
9. Never disassemble or clean internal optical surfaces
10. Use only the power supply provided from TAGARNO
11. Always turn off the system before unplugging, when possible

# 3. TIPS

1. When applicable, use both hands to move the XY Table
2. When applicable, use both hands to adjust the height of the product
3. Avoid touching the lens

# 4. LASER POINTER WARNING

This product is equipped with a red laser pointer to enable easy alignment of the camera and areas of interest during the inspection process.  
This product is a Class 2 laser product that complies with IEC60825-1 international standard for lasers.



## CAUTION

- Follow these safety instructions when using the product.
- Never look directly into the laser aperture
  - Do not point towards anyone deliberately
  - Leave the laser on only when necessary
  - Always turn off power during service and maintenance
  - Service may only be performed by trained personnel appointed by TAGARNO

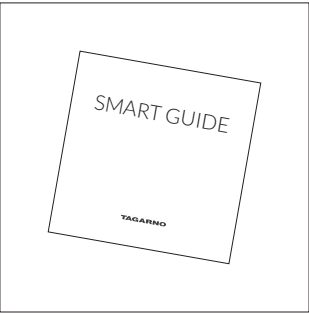
These labels appear visible on the product:



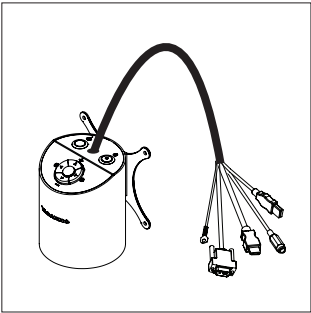
This label is placed near the laser aperture  
The label below is placed on the camera head



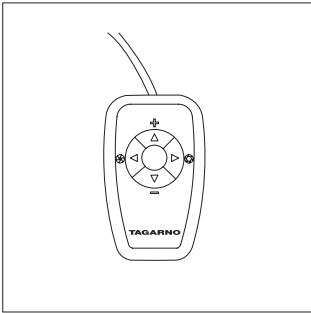
# 5. YOU HAVE RECEIVED



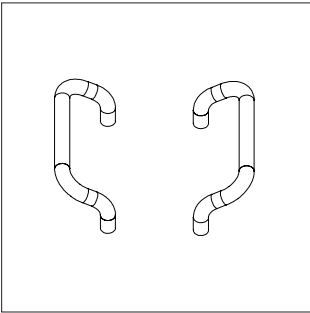
Smart guide



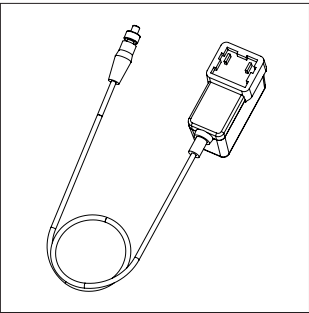
Camera head with lens



XKEY Control box



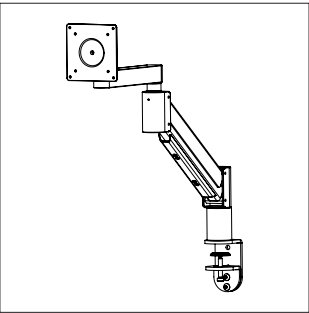
Handles



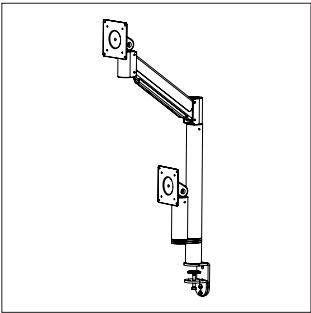
Power supply

## OPTIONS

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Flex arm advanced

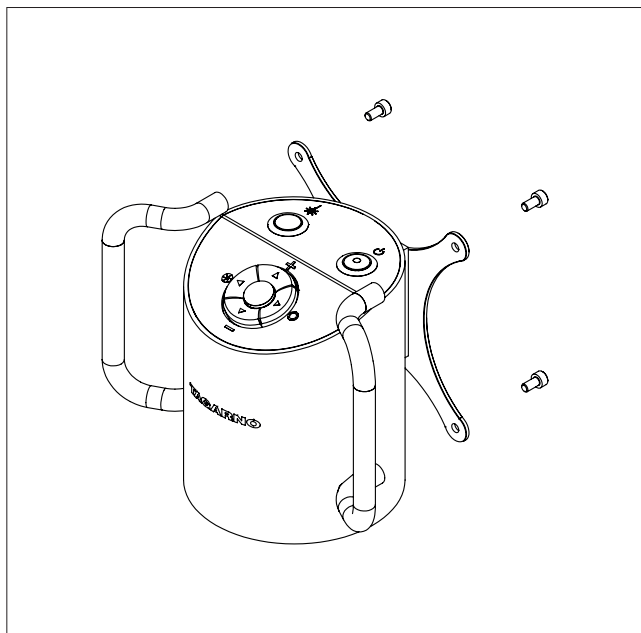


Flex arm inline

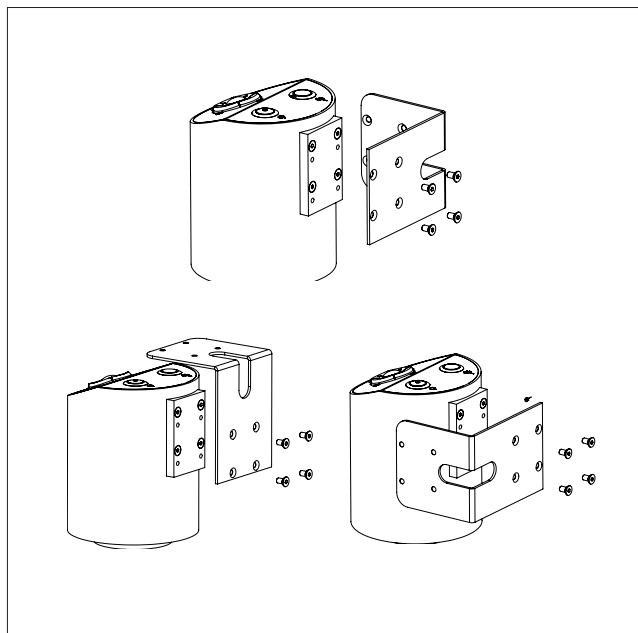
## 6. ASSEMBLING & CONNECTING

### ASSEMBLING & CONNECTING (1/3)

TIP!  
Find the "How to Install" tutorial video here:  
[www.tagarno.com/installzap](http://www.tagarno.com/installzap)



Mount the handles on the vesa bracket.

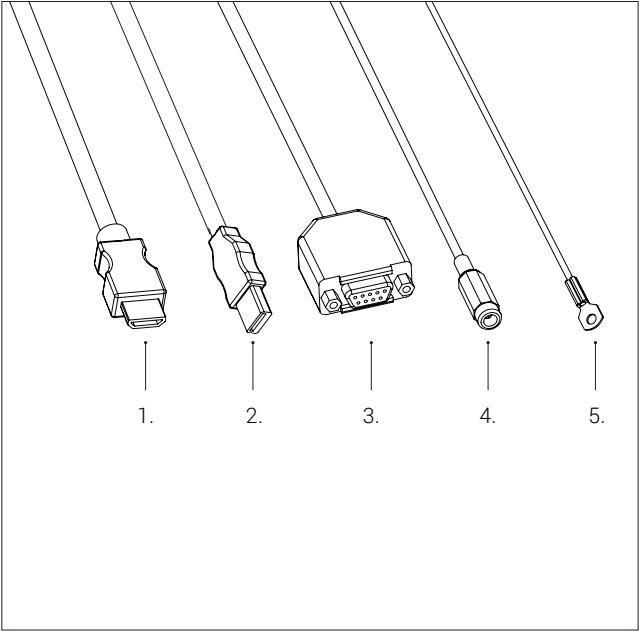


Alternatively, mount the microscope on an angle bracket, flexarm or similar suitable for your process environment.

To use angle bracket, detach Vesa mount and handles and mount the angle bracket to the microscope. Several options.

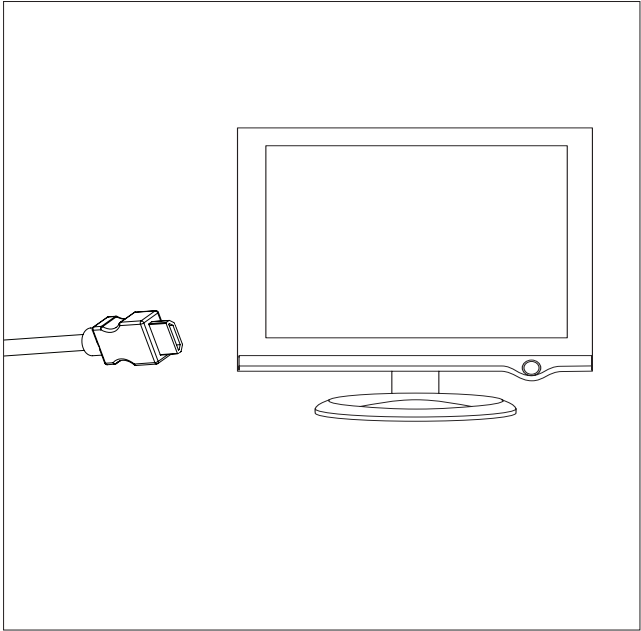
For safe operation, mount only the microscope on support equipment capable of bearing a load of at least 6kg (3 times the weight of the microscope).

ASSEMBLING & CONNECTING (2/3)






Connect HDMI cable (1), USB 3.0 cable (2), control box (3), power supply (4) and ESD - Electro Static Discharge (5).

**WARNING!** Do not use force when inserting the cable plugs.

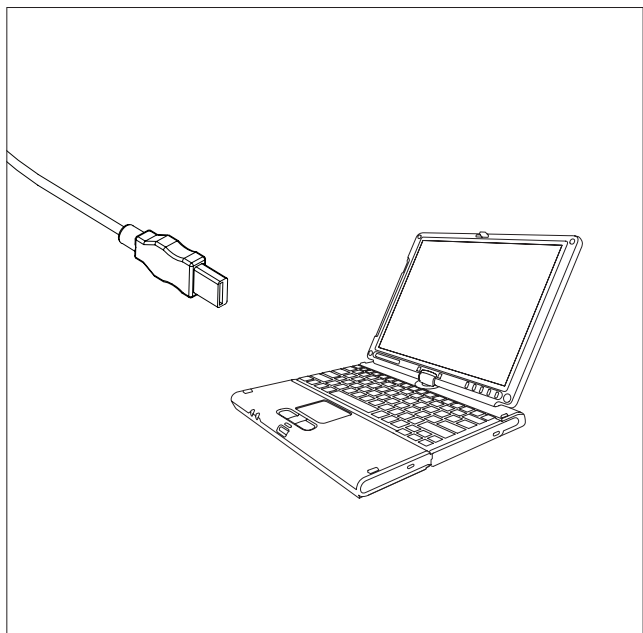


Connect HDMI cable from the microscope to a monitor.

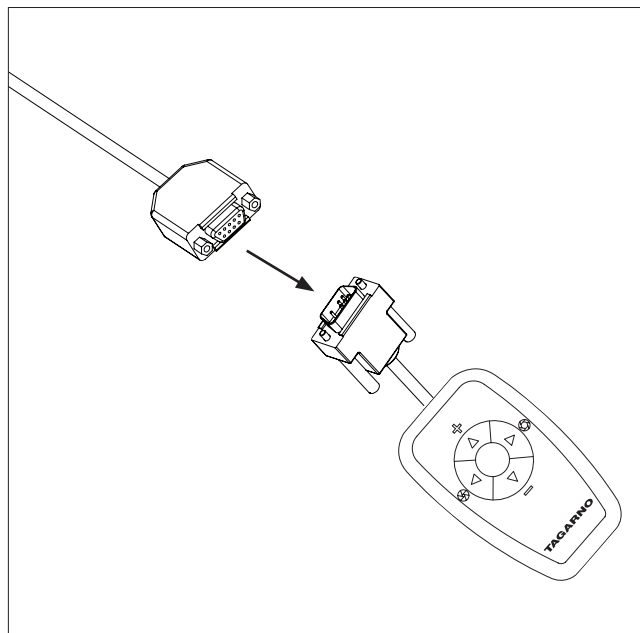
**WARNING!** Do not connect the HDMI cable to a PC.

Wire	Description	Type	Connect to	Cable length	Specification
1	Output	HDMI Type A	Monitor	2700mm	HDMI out 720p50, 720p60, 1080p25, 1080p30, 1080p50, 1080p60
2	USB 3.0 output	USB 3.0 Type A	Computer	2700mm	USB 3.0 Device, Self-powered
3	Control box	D-SUB 9-Pin Female	Control box	3000mm	Output: 3.3V $\rightleftharpoons$ 330 $\mu$ A  <b>Use only control boxes supplied by TAGARNO</b>
4	Power supply (DC)	DC Jack	Power socket	3000mm	Input: 12V $\rightleftharpoons$ 0.5A  <b>Use only the power supply provided by TAGARNO:</b> Brand/Model: Mean Well/GEM18I12  Protection class II Input: 100-240V $\sim$ 0.45-0.2A, 50/60Hz Overvoltage category II Output: 12V $\rightleftharpoons$ 1.5A Max
5	ESD	Ring Terminal Connector	ESD Grounding point	3000mm	ESD Grounding point

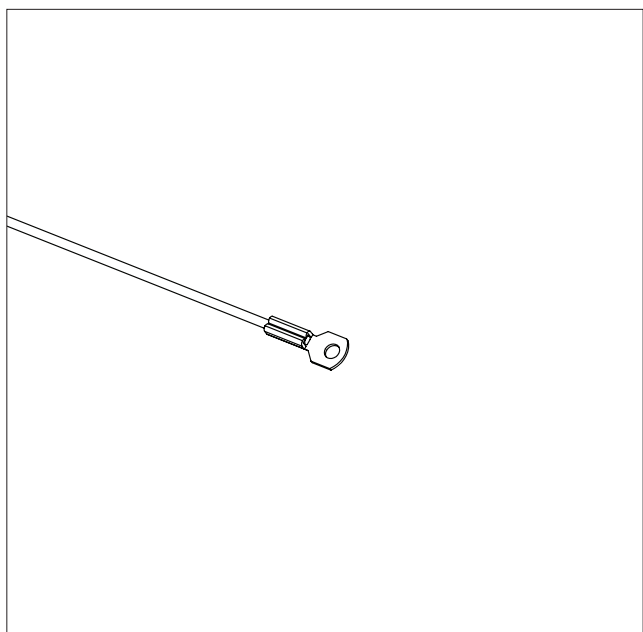
## ASSEMBLING & CONNECTING (3/3)



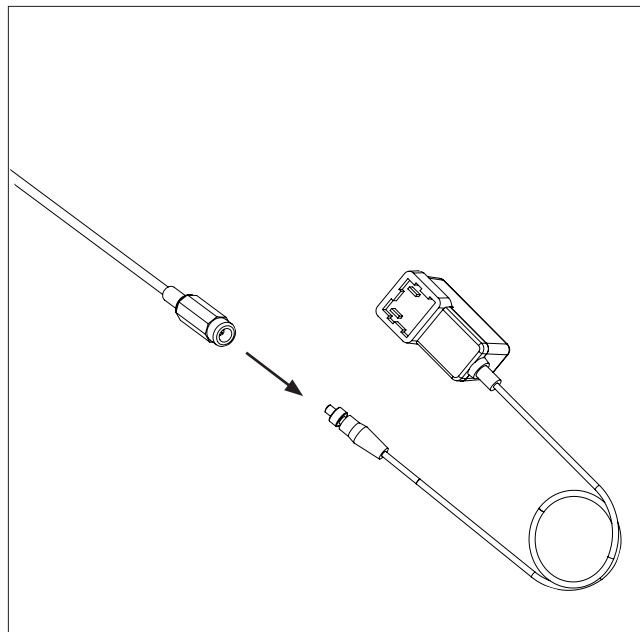
Connect USB 3.0 cable from the microscope to a PC.



Connect the microscope to the XKEY Control box.



Connect grounding cable to grounding point, to ensure ESD of the microscope.



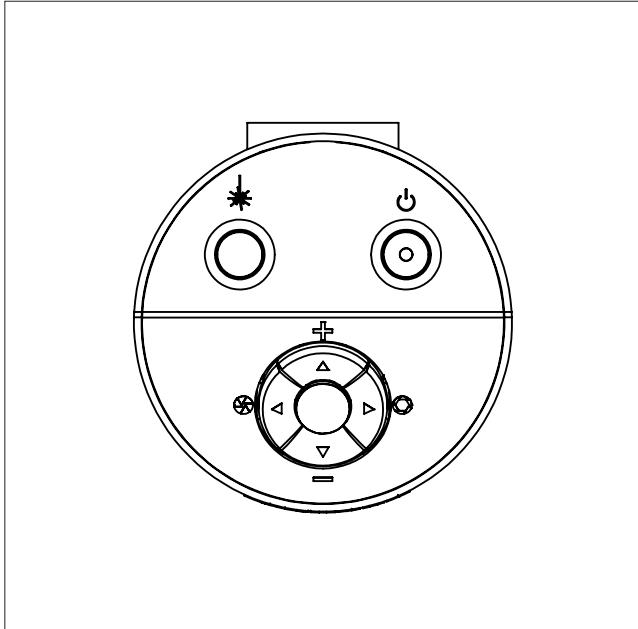
Connect the power supply cable to the power supply battery and then to a electrical outlet.

## 7. OPERATION

### OPERATION (1/2)

TIP!

Find the "How to Use" tutorial video here:  
[www.tagarno.com/usezap](http://www.tagarno.com/usezap)



Control buttons for TAGARNO functions.  
Do only connect equipment distributed by TAGARNO.

### CONTROL OPTION | XKEY CONTROL BOX



XKEY Control box for TAGARNO functions.  
Do only connect equipment distributed by TAGARNO.



Turn off/on



Laser on/off (WARNING! Laser radiation when turned on)



Zoom in



Zoom out



Push both plus and minus to change from auto focus to manual focus. You can now adjust the focus manually by using the plus/minus buttons



If you wish to focus on something close



If you wish to focus on something further away



Short push switches between Iris, Gain and Preset mode.



Increase Iris/Gain or switch between zoom preset 1, 2 or 3.



Decrease Iris/Gain or switch between zoom preset 1, 2 or 3.

To change and save a zoom preset, use zoom buttons to select a zoom level and simultaneously press left/right buttons. OSD will show STORED: PRE(X)



Hold for 3 sec. to use auto exposure mode

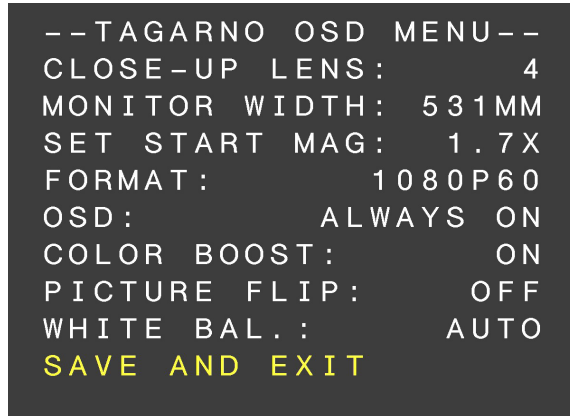
### RESET TO FACTORY SETTINGS

Follow this procedure to change back to factory setting 1080P60.

1. Turn the microscope off
2. Press and hold the center button down while turning the power on
3. Keep holding the center button down for 25 seconds
4. Release the center button and turn the power off
5. Turn the power back on and the microscope is set to factory setting 1080P60

## OPERATION (2/2)

### ON SCREEN DISPLAY (OSD)



When turning on your FULL HD system, you are informed of the given units, serial number (SN), version and resolution.

#### 1. Open the OSD menu

To open the TAGARNO On Screen Display Menu, press and hold the center button for approximately 5 seconds.

#### 2. Choose lens

Set the current close-up lens by using the left/right arrows on the CONTROL BOX XKEY. On a TAGARNO FULL HD system, the choice naturally is between LENS +2, +3, +4, +5 or +10. LENS +4 is factory default. Continue using the down arrow.

#### 3. Choose monitor width

Press the center button to set up the width of the monitor. You need to measure the horizontal width of the monitor panel on your monitor. Select one digit at a time by using the left/right arrows and adjust the digits with the up/down arrows. Switch between millimeters and inches via the up/down buttons. Monitor 24" FHD is factory default. To store change in settings press the center button.

#### 4. Set start magnification

Select which magnification level you need your system to use as start up level. Press the center button and select one digit at a time in the bottom of the page, by using the left/right arrows and adjust the digits with the up/down arrows. By pressing the center button one more time, you have selected the values chosen. Press the down arrow to choose format.

#### 5. Choose format

You have the option to switch between different video formats, 1080p 60fps being the highest quality. Select the required format by pressing the center button, and use arrow keys left/right to select between 6 different formats.

#### 6. Select OSD presets

You need to choose between respectively ALWAYS ON, OFF or TIMEOUT using the left/right arrows in order to have the OSD Menu displayed continuously, never or for 3 seconds at the time. Continue by pressing the down arrow.

#### 7. Color boost

The OSD menu gives you the possibility to choose between two color settings; Color boost on or off, by using the left/right arrows. Which setting chosen, is a matter of individual preferences and the object projected on screen. Continue by pressing the down arrow.

#### 8. Flip picture

In the menu you have the possibility to rotate the screen image 180 degrees, or choose the standard view by using the left/right arrows. Choose between the two views by pressing the left/right buttons. Continue by pressing the down arrow.

#### 9. White balance

Choose between these settings: AUTO and POWER UP by using the left/right arrows. In AUTO mode the white balance is continuously adjusted to achieve the best color reproduction. In POWER UP mode the white balance calibration is performed only once when the system is turned on. In this mode it's important that a white sheet of paper is visible in the field of view when the microscope is switched on. Continue by pressing the down arrow.

#### 10. Save presets

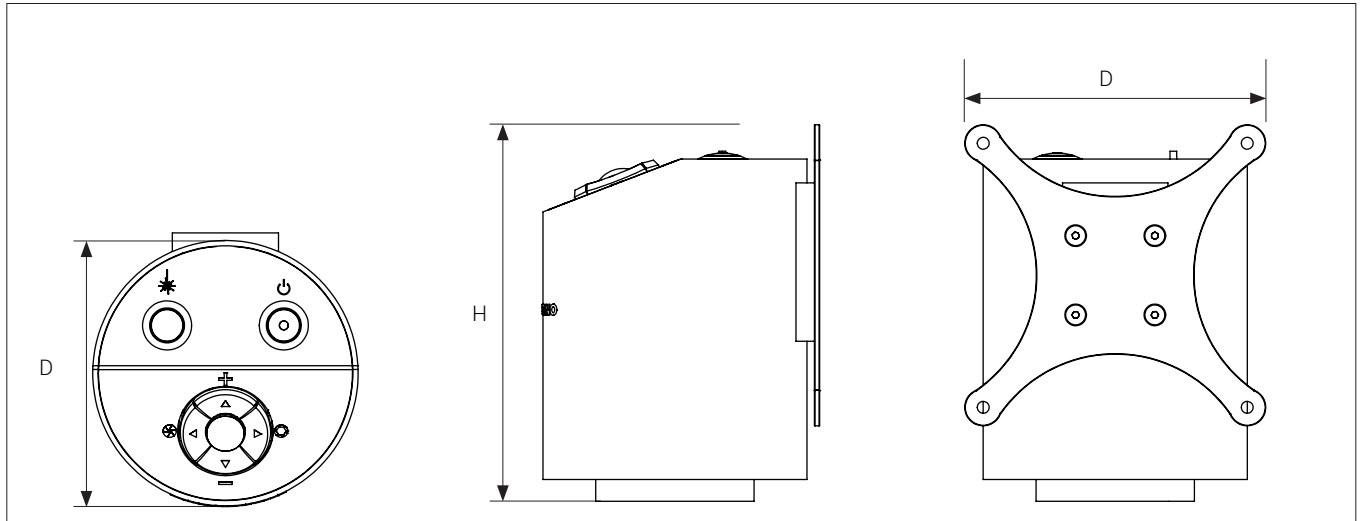
To save your presets and exit the menu, press the center button and thereby return to the image displayed on the monitor, using your recently saved presets.

If you have changed the various formats, your FULL HD system needs to be restarted. This will be indicated in the bottom if needed.



## 8. TECHNICAL SPECIFICATIONS

### TECHNICAL SPECIFICATIONS (1/2)



<b>Dimensions</b>	H: 121mm/4.76", D: 100mm/3.94"	
<b>Weight</b>	1.5 kg/3.3 lbs	
<b>Camera resolution</b>	FHD 1080p, 1920x1080p at 59,94/50/29,97/25Hz HD 720p, 1280x720p at 59,94/50Hz	
<b>Camera zoom</b>	30x optical	
<b>Autofocus</b>	Yes	
<b>Work height</b>	Min: 78mm/3.07" Max: 645mm/25.39" (depends on flexarm)	
<b>Work depth</b>	Adjustable (depends on flexarm and mounting)	
<b>Auto Monitor Detect</b>	No	
<b>Power requirements</b>	Line voltage	100 - 240V ~ ± 10%
	Line frequency	50/60Hz
	AC current consumption (typ.)	70mA/100V~ 30mA/240V~
	DC current consumption (typ.)	0.5A/12V ---
<b>Environmental conditions</b>	Temperature	Storage -5 to 60°C / 23 to 140°F Operation 5 to 40°C / 41 to 104°F
	Humidity range	Storage 20 to 90% RH non-condensing Operation 20 to 80% RH non-condensing
	Altitude	0 to 2000m / 0 to 6500ft above sea level
	Pollution degree	2

## TECHNICAL SPECIFICATIONS (2/2)

LENS	Lens to object distance	Magnification on 24" monitor
<b>+2</b>	500 mm/19.67"	0.8x - 26.2x
<b>+3</b>	333 mm/13.22"	1.3x - 40.1x
<b>+4 (Included)</b>	250 mm/9.84"	1.7x - 53x
<b>+5</b>	200 mm/7.87"	2.2x - 66x
<b>+10 (Achromatic)</b>	100 mm/3.9"	4.2x - 129x
<b>+10 (Plan - 1x)</b>	78 mm/3.07"	4.3x - 133x

FIELD OF VIEW	MAXIMUM		MINIMUM	
Lens	X-Direction	Y-Direction	X-Direction	Y-Direction
+2	600 mm / 23.62"	337.50 mm / 13.29"	21 mm / 0.83"	11.80 mm / 0.46"
+3	409 mm / 16.10"	230.10 mm / 9.06"	13.40 mm / 0.53"	7,54 mm / 0,02"
+4	290 mm / 11.42"	163.10 mm / 6.42"	10.50 mm / 0.41"	5,91 mm / 0,02"
+5	245 mm / 9.65"	137.80 mm / 5.43"	8 mm / 0.32"	4,50 mm / 0.18"
+10 (Achromatic)	125 mm / 4.92"	70.30 mm / 2.77"	4.10 mm / 0.16"	2,31 mm / 0,091"
+10 (Plan - 1x)	87 mm / 3.42"	48.94 mm / 1.93"	4 mm / 0.16"	2,25 mm / 0.089"

### RECOMMENDED MONITOR FORMAT

<b>Panel format</b>	16:9 (Widescreen)
<b>How to link</b>	HDMI input
<b>Response time</b>	2 ms
<b>Signal format</b>	FHD 1920x1080

### ACCESSORIES

Lens +2, +3, +4, +5, +10 (achromatic) and +10 (Plan - 1x)	TAGARNO Ring light White	Height Adjustment Table
Magnetic lens ring	TAGARNO Ring light IR	XY table
XKEY Control Box	TAGARNO Ring light UV	Glass table
Foot switch	Backlight kit	Cleaning kit
FHD monitors per request	Coaxial light	Angle brackets
Flex arms	Circular tilting table	

## 9. PC REQUIREMENTS

FULL HD 1080P @ 59,94/50HZ		
OS	Desktop	Laptop
	Windows 7, 8 or 10 (with DirectX 11)	
Memory	8GB	
CPU	Intel® Core™ i5 or i7 @2.4GHz, (4th generation named 4xxx or newer)	CPU: Intel® Core™ i5 or i7 @2.4GHz (4th generation named 4xxx or newer)
Hard Disc Space	1GB required (SSD type recommended)	
Connections	USB 3.0 xHCI host controller (Intel chipset recommended)	
Integrated Graphics	Intel® HD Graphics 4000	Intel® HD Graphics 4400
Dedicated graphics card	AMD Radeon™, HD 7xxx Series with 2GB RAM	nVidia GeForce GT 740M with 2GB RAM
Monitor resolution	1920x1080 (recommended)	

FULL HD 1080P @ 29,97/25HZ AND HD 720P @ 59,94/50/30/25HZ		
OS	Desktop	Laptop
	Windows 7, 8 or 10 (with DirectX 11)	
Memory	4GB	
CPU	Intel® Core™ Dual@3.0GHz or i3@2.4GHz, (4th generation named 4xxx or newer)	Intel® Core™ i3 @ 3.2GHz, (4th generation named 4xxx or newer)
Hard Disc Space	1GB required (SSD type recommended)	
Connections	USB 3.0 xHCI host controller (Intel chipset recommended)	
Integrated Graphics	Intel® HD Graphics	
Dedicated graphics card	AMD Radeon™, 1GB ram	nVidia GeForce GT 1GB RAM
Monitor resolution	1920x1080 (recommended)	

### SOFTWARE RECOMMENDED

Windows 7	Youcam 7
Windows 8	Windows 8 Camera App
Windows 10	Windows 10 Camera App

## 10. MAINTENANCE

- Store and use the product in a dry, clean and ventilated room.
- Do not place the product in direct sunlight, next to a radiator/heater or some place where the system may be subjected to liquids.
- All plugs are designed to be used in one way only. Therefore, you should never use force when you connect the system.
- Remember to disconnect all elements if you intend to move the product.
- If you move the product from a cold to a hot room, you must wait at least an hour before you turn it on, to avoid short circuits due to condensation.
- Remove the cables by pulling the plug itself - never by pulling the cable.
- If the product needs repair, never do it yourself, contact your distributor.
- When cleaning the product, please turn off the system and wait until the system has cooled off.
- Clean the product with a damp cloth. Never use strong cleaning agents or chemicals - these may damage the microscope.
- Clean the lens regularly with isopropyl alcohol and a microfiber cloth or with the TAGARNO cleaning kit.

## 11. WARRANTY

**Warranty terms for the product shall be as follows:**

TAGARNO warrants that the product will correspond with the specification at the time of delivery and will be free from defects in material and workmanship for a period of 24 months (2 years) from date of invoice from Supplier.

**This warranty covers:**

- a. The replacement of defective parts.
- b. All labour costs to exchange defective parts in product.
- c. Complete functions test of product before return to end user's site.
- d. Return transport costs of product from TAGARNO to end user's site.

The warranty only applies if the product is packed, shipped, stored, handled and maintained correctly.

Failures due to improper packing and transport are not covered.

Failures due to drops and sudden blows are not covered.

Failures due to storage and handling in extreme high or low temperatures are not covered.

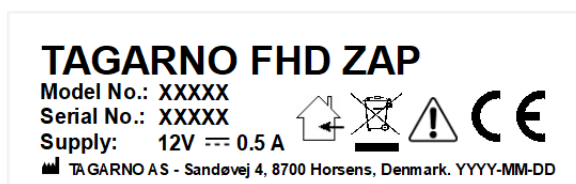
Failures due to storage or handling in extreme high humidity are not covered.

## 12. ERGONOMICAL RECOMMENDATIONS

Please be careful when carrying the product from one place to another.

Please do not lift the microscope by grabbing the camera arm.

All TAGARNO products are marked with a product label:



*Values marked with X varies from product to product and are replaced by specific numbers and letters.*

## 13. DECLARATION OF CONFORMITY

### PRODUCT

MODEL TAGARNO FHD ZAP | Type no.: 690600  
ART Inspection camera unit

### MANUFACTURER

NAME TAGARNO A/S  
ADDRESS Sandøvej 4  
ZIPCODE/CITY 8700 Horsens  
COUNTRY Denmark  
PHONE +45 76251111



### DESCRIPTION

TAGARNO A/S hereby declares that the product listed above, consisting of a camera unit and a 12V power supply, is in compliance with the following European directives:

**2006/25/EU Artificial Optical Radiation**  
**2014/30/EU Electromagnetic Compatibility**  
**2014/35/EU Low Voltage Directive**

By conforming to the following harmonized standards:

**IEC 60825-1:2014 Class 2**  
**EN 61326-1:2013 Class B / Basic Electromagnetic Environment**  
**IEC 61010-1:2010 IECCE CB Scheme Ref. Certif. No. NO104184**

### THE DECLARATION IS ISSUED BY

MANUFACTURER TAGARNO A/S

**TAGARNO**

TAGARNO A/S  
Sandøvej 4  
8700 Horsens  
Denmark

+45 76251111  
mail@tagarno.com

www.tagarno.com

# 14. COMPLIANCE STATEMENTS

## INDUSTRY CANADA COMPLIANCE STATEMENT

CAN ICES-3 (B)/NMB-3(B)

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le Matériel Brouilleur du Canada.

## FCC COMPLIANCE STATEMENT (UNITED STATES)

### **Federal Communications Commission (FCC) Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.