

Cyclops

Metallographic



Version 1.1A

User Guide

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1. Product Introduction

1.1 Packing Contents

The box contains microscope and accessories.

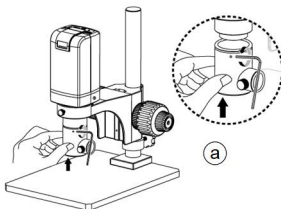
Item	Q'ty	Item	Q'ty
Cyclops Microscope	1	White Balance Card	1
HDMI Cable	1	IR Remote Control	1
USB-C 3.0 Cable	1	User's Guide	1
Power adaptor	1	Calibrator	1
S112 Stand (Hex key included)	1	Object Lens 4x-A	1
Stand assemble guide	1	Object Lens 10x-A	1
GN08(Hex key included)	1	Object Lens 20x-A	1
Light Adaptor	1		

Software download: www.aventools.com/software-downloads

1.2 Assemble microscope with stand

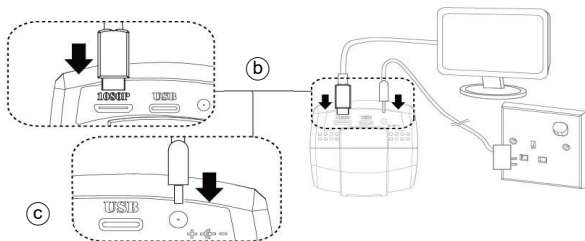
1.2.1 Fix microscope

Tighten the microscope onto stand[Ⓐ]. Refer to Stand assembling instruction for detailed explanation.




1.2.2 Start to use microscope

Connect the HDMI cable**⑥** and adaptor**⑦** to HDMI monitor and power. See below:

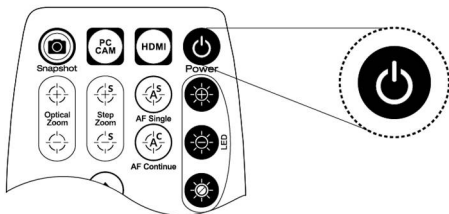






1.2.3 Power On/Off

Press Power  to turn on microscope. Choose HDMI mode or Auto on HDMI monitor to output image. *Long press means press and hold the button for 2 seconds*

1.3 IR Remote controller


The microscope operation and functions is controlled by the IR remote controller.




- (1) Power  : Turn on/off.
- (2) HDMI  : When in HDMI mode, the HDMI cable must connect with the screen and microscope.
- (3) PC CAM  : When in PC CAM mode, the USB cable must connect to a PC and microscope. Please disable software before switching to HDMI mode or powering off.
- (4) Snapshot  : When preview on PCCam mode, press snapshot to


take picture.

- (5) LED Adjustment: 12 levels of brightness.


(5-1) Increase  : Increase LED brightness.


(5-2) Decrease  : Decrease LED brightness.


(5-3) On/Off  : Turn the LED on/off. When turn on the LED, the brightness will return to the situation before turn off.


- (6) Motor Reset  (Recalibrates entire operation) : Returns to the lens position. If a loss of electricity occurred during operation, please reset the operation.

- (7) Manual focus

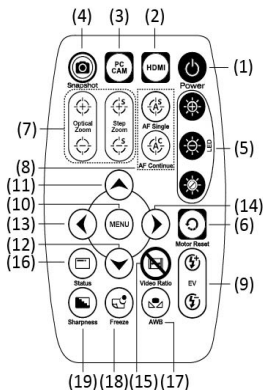
(7-1) Zoom in  : Zooms in; speed increases when held.














(7-2) Zoom out  : Zooms out; speed increases when held.

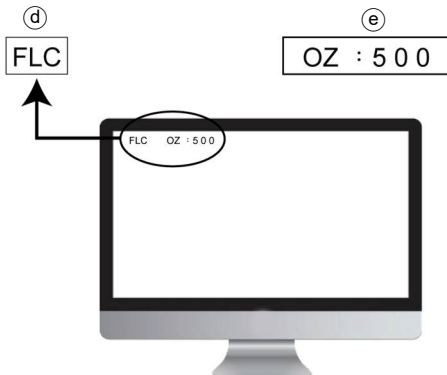
(7-3) Step zoom in  : zoom in by steps.

(7-4) Step zoom out  : zoom out by steps.

- (8) Autofocus: Press one time to search focus in current area, long press for 2 seconds to search focus in whole area.



- (8-1) Single Autofocus : Focuses one time.
- (8-2) Continuous Autofocus : Re-focuses when image blurred.
- (9) Exposure Value: 20 levels of exposure value are selectable, from -10~Auto~+9.
 - (9-1) Increase  : Use to increase exposure when the image is too dark.
 - (9-2) Decrease  : Use to decrease exposure when the image is too bright.
- (10) Menu on Screen  : Open/close menu for setting. Refer to Section 1.4.
- (11) Up  : Choose the previous item, if Crosshair is ON, select other color.
- (12) Down  : Choose the next item, if Crosshair is ON, select other color.
- (13) Left  : Choose the next value, if Crosshair is ON, select Line Size.
- (14) Right  : Choose the last value. When MENU function is not turn on, press to change Crosshair in Full screen size, normal size or turn off.
- (15) Video Ratio  : No Function.
- (16) Status Bar  : Status bar show [FLC]  for free lens Coaxial. The area  tells the operation status and only show 3 seconds.



(16-1) Area@ :


(16-1-1) OZ : Optical Zoom. Ex: OZ : 500.

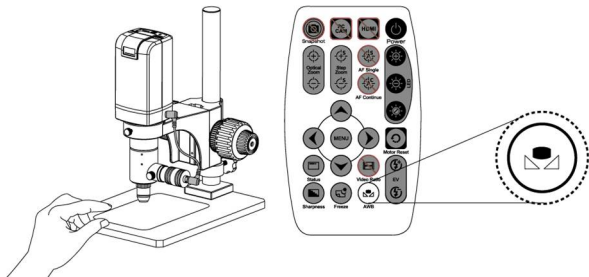
500means sensor position.



(16-1-2) SZ : Step Zoom. Ex :SZ : 500. Same format as OZ.

(16-1-3) AFS : Single Autofocus. Ex: AFS▶ A500, “A” means search focus in “current area”, 500 means sensor position. AFS▶ W500, “W” means search focus in “whole area”.











(16-1-4) AFC : Continuous autofocus, “A” and “W” are same function as AFS.

- (16-1-5) LED : LED levels. Ex: LED : 12, 12 means the LED level.
- (16-1-6) EV : Exposure Value. Ex: EV : +5, means EV is +5, EV : -5 means EV is -5.
- (16-1-7) MR : Motor Reset.
- (16-1-8) SHA : Sharpness. Ex: SHA▶SET(5), means sharpness is 5. SHA▶SET(10) means the maximum 10.
- (16-1-9) FRZ : Image Freeze. Ex: FRZ▶ON, means freeze image, FRZ▶OFF means unfreeze image.
- (16-1-10) WB : White Balance Calibration. Ex: WB▶SET means calibrate white balance.
- (16-1-11) NONE : No Function.
- (17) Auto White Balance Calibration : To calibrate the white balance, place the white balance card (included in box) under the lens, focus until clear, and choose On. Because the white balance is sometimes influenced by external light sources, it is recommended to calibrate the white balance if the color seems off or incorrect.



- (18) Image Freeze : ON/Off to freeze or unfreeze the image.
- (19) Sharpness : On/Off to set sharpness at Minimum and Maximum level.

1.4 Microscope menu functions

Press  button to enter MENU, press Up  and Down  to choose item, Left  and Right  to turn on/off or adjust parameter. Enter  means more functions, press Menu  to enter next function or confirm.  means no more settings. Return to return last page, or press Left  or Right  to choose “End” to return preview window.

MAIN MENU	
1.EXPOSURE	⏏
2.BACKLIGHT	OFF
3.WHITE BAL	ATW
4.NR	⏏
5.SPECIAL	⏏
6.ADJUST	⏏
7.EXIT	SAVE&END ⏏

1.4.1 EXPOSURE

To set exposure time, see below:

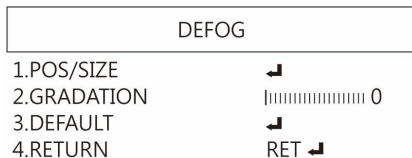
EXPOSURE	
1.SHUTTER	AUTO
2.AGC	8
3.SENS-UP	OFF
4.BRIGHTNESS	50
5.D-WDR	ON ⏏
6.DEFOG	OFF
7.RETURN	RET ⏏

- (1) Shutter: Digitally control amount of light, the amount is smaller the image is darker and the frame rate is also slower.

- (2) AGC (Auto Gain Control) :auto control the brightness based on setting when light is not enough.
- (3) SENS-UP :Only available when item (2) AGC value is larger than 0, use to increase Sensor to light's sensibility.
- (4) Brightness: Adjust image brightness.
- (5) D-WDR: Digitally adjusting exposure in areas of the frame to maintain optimum detail in both the shadows and highlights of the image.



- (5-1) LEVEL: Adjust image exposure level from too dark or too bright.
- (5-2) RETURN: Return to Last page or Save & End Menu.
- (6) DEFOG: De-Fog. When observing under strong light or special environment, use Defog function to see clear image. Below fig for De-Fog setting. When select AUTO, enter the DEFOG Setting.



(6-1) POS/SIZE : Adjust de-fog position and area.

(6-2) GRADATION: To set gradation levels near the edge of defog area.

(6-3) DEFAULT: Return to Factory setting.

(6-4) RETURN: Return to Last page or Save & End Menu.

(7) RETURN: Return to Last page or Save & End Menu.

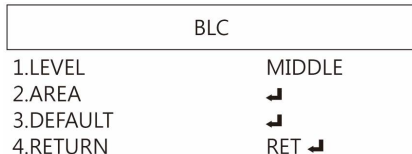
1.4.2 BACKLIGHT

Press left/right button to choose turn on/off Backlight mode.



(1) OFF :Disable backlight function.

(2) BLC (Back Light Compensation)

To adjust brightness for darker image in back light environment.



- (2-1) LEVEL: To adjust brightness level.
- (2-2) AREA: Choose the back light compensation area and size.
- (2-3) DEFAULT: Return to default setting.
- (2-4) Return: Return to last page or Save & End Menu.
- (3) HSBLC (High Suppress Back Light Compensation)
To identify the over luminance area by backlight, and proceed masking the area.

HSBLC	
1.SELECT	AREA1
2.DISPLAY	ON 
3.BLACK MASK	OFF
4.LEVEL	 50
5.DEFAULT	
6.RETURN	RET 

- (3-1) SELECT: Select the areas which needs to be adjusted.
4 areas are selectable.
- (3-2) DISPLAY: Display the selected area.
- (3-3) BLACK MASK: Shade the over exposed area into Black.
- (3-4) LEVEL: Set Threshold for over exposed image.
- (3-5) DEFAULT: Return to factory default setting.
- (3-6) RETURN: Return to last page or Save & End Menu.

- (4) WDR :Wide Dynamic Range. WDR allows an imaging system to correct the intense back light surrounding subject and thus enhances the ability to distinguish features and shapes on the subject. See below for setting WDR.



(4-1) LEVEL: Adjust the WDR Level.

(4-2) RETURN: Return to last page or Save & End Menu.

1.4.3 MANUAL WB

Calibrate the white light balance, to find out right White color.

- (1) AWB: Auto white balance.
- (2) ATW: Trace white area and auto-calibrated.
- (3) AWC->SET :Semi-auto white balance. Use to track the white color from current image. (Same as 1.3, (17) operation)
- (4) 4200K: Suitable for ambient light 4200K.
- (5) 5200K Suitable for ambient light 5200K.
- (6) MANUAL: Manually adjust blue and red values to find correct white color. Refer to below fig.

MANUAL WB	
1.BLUE	50
2.RED	40
3.RETURN	RET ↵

1.4.4 NR

Noise Reduction : (NR) To obtain high quality output image and increase file compression. See below:

NR	
1.2DNR	MIDDLE
2.3DNR	MIDDLE
3.RETURN	RET ↵

- (1) 2D NR : LOW/MIDDLE/HIGH, Edge Preserving 2D NR.
- (2) 3D NR LOW/MIDDLE/HIGH, Motion Adaptive 3D NR.
- (3) Return :Return to last page or Save & End Menu.

1.4.5 SPECIAL

Set special functions:





SPECIAL	
1.D-EFFECT	↵
2.MOTION	ON ↵
3.LANGUAGE	ENG ↵
4.DEFECT	↵
5.FIRMWARE	↵
6.RETURN	RET ↵

- (1) D-EFFECT : Functions as following: Press Left ⏮ or right ⏭ to turn on or off.

D-EFFECT	
1.FREEZE	OFF
2.MIRROR	OFF
3.NEG.IMAGE	OFF
4.RETURN	RET ↵

- (1-1) FREEZE: Turn ON/OFF to freeze image. If Freeze function is turn on, the (1-2) Mirror function can not be used at the same time
- (1-2) MIRROR: Image rotatory. (Horizontal or Vertical)
- (1-3) NEG. IMAGE: Turn On/Off Negative image.
- (1-4) RETURN: Return to last page or Save & End Menu.

(2) MOTION: Detect the moving object, see below setting.

MOTION	
1.SELECT	AREA1
2.DISPLAY	ON 
3.SENSITIVITY	64
4.COLOR	GREEN
5.TRANS	1.00
6.ALARM	
7.DEFAULT	
8.RETURN	RET 

(2-1) SELECT: Select the detected area.

4 areas are selectable. The selected area and sequence will change as MIRROR function is ON.

(2-2) DISPLAY: Display the selected area. Position and area can be set in (2-1).

(2-3) SENSITIVITY: The sensitivity to detect whenever object moves. The lower value gets the higher sensitivity.

(2-4) COLOR: The Area frame color: Green, Blue, White and Red.

(2-5) TRNAS: The Area frame transparency.

(2-6) ALARM: Setup Detected Area's display content.

ALARM

- | | |
|-------------|---------|
| 1.VIEW TYPE | OUTLINE |
| 2.OSD VIEW | ON |
| 3.TIME | 3 |
| 4.RETURN | RET ↵ |

(2-6-1) VIEW TYPE: Select the frame type to show detected area. Frame type: transparent square, grid, both open or close all.

(2-6-2) OSD VIEW: Select to show “MOTION DETECTED” when detect moving image.

(2-6-3) TIME: Set Frame pausing time when detect the image is not moving .

(2-6-4) RETURN: Return to last page or Save & End Menu.

(2-7) DEFAULT: Return to factory setting.

(2-8) RETURN: Return to last page or Save & End Menu.

(3) LANGUAGES: 16 languages are selectable.

(4) DEFFECT: Dead Pixel compensation.

DEFFECT

- | | |
|-------------|-------|
| 1.LIVE DPC | ON ↵ |
| 2.WHITE DPC | ON ↵ |
| 3.RETURN | RET ↵ |

(4-1) LIVE DPC: Dead Pixel Correction. Correct the live dead pixel during preview.

LIVE DPC	
1.AGC LEVEL	0
2.LEVEL	5
3.RETURN	RET ↵

(4-1-1) AGC LEVEL: Auto Gain Control. When light source is not enough, AGC will follow the threshold setting to adjust brightness and compensate the dead pixel.

(4-1-2) LEVEL: Set the threshold value to judge if compensation is needed.

(4-1-3) RETURN: Return to last page or Save & End Menu.

(4-2) WHITE DPC: White Dead Pixel Correction, scan and find the dead pixel then save the position for correction.

Note: Please do not change this setting.

WHITE DPC	
1.POS/SIZE	┐
2.START	┐
3.DPC VIEW	OFF
4.LEVEL	13
5.AGC	14
6.SENS-UP	x6
7.RETURN	RET ┐

- (4-2-1) POZ/SIZE: Choose the compensation area.
- (4-2-2) START: Start to do Static Dead Pixel correction.
- (4-2-3) DPC VIEW: Show corrected Dead Pixels.
- (4-2-4) LEVEL: Set the threshold value to judge if it needs to be corrected.
- (4-2-5) AGC: Auto Gain Control. When light source is not enough, AGC will follow the threshold setting to adjust brightness and compensate the dead pixel.
- (4-2-6) SENS-UP: Raise up the sensor's sensitivity to compensate the dead pixel.
- (4-2-7) RETURN: Return to last page or Save & End Menu.
- (5) FIRMWARE: Firmware version.
- (6) RETURN: Return to last page or Save & End Menu.

1.4.6 ADJUST

Image Adjustment

ADJUST	
1.SHARPNESS	AUTO ↵
2.MONITOR	↵
3.LSC	ON
4.VIDEO.OUT	NTSC
5.RETURN	RET ↵

- (1) SHARPNESS: Adjust Sharpness, higher value increases the higher contrast along/near edges of the image.

SHARPNESS	
1.LEVEL	5
2.START AGC	64
3.END AGC	160
4.RETURN	RET ↵

- (1-1) LEVEL: Adjust Image Sharpness level.
(1-2) START AGC: Set start levels to adjust sharpness.
(1-3) END AGC: Set end levels to end adjust sharpness.
(1-4) RETURN: Return to last page or Save & End Menu.

(2) MONITOR: Adjust Monitor settings.

MONITOR	
1.GAMMA	USER
2.BLUE GAIN	40
3.RED GAIN	40
4.RETURN	RET ↵

(2-1) GAMMA: Adjust display contrast.

(2-2) BLUE GAIN: Adjust Blue GAIN level.

(2-3) RED GAIN: Adjust Red Gain level.

(2-4) RETURN: Return to last page or Save & End Menu.

(3) LSC : Lens Shading Correction. Use Lens shading correction to average the luminance of image.

(4) VIDEO.OUT: Select NTSC or PAL for TV output.

(5) RETURN: Return to last page or Save & End Menu.

1.4.7 RETURN

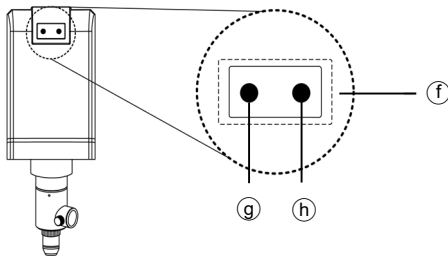
Save & exit MENU or press Left ⬅ or Right ➡ button to go back to Factory setting or Exit and not Save.

1.5 Microscope introduction:

1.5.1 IR Remote Area/Indicator

When both ⑨ and ⑩ LED indicator blinks, the microscope is in standby mode.

Caution: Please remove the transparent protection sheet on the IR receiver area.

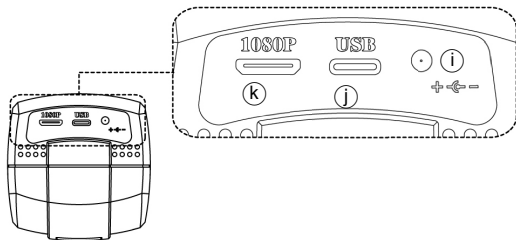


- (1) IR remote control aiming area⑩ : The indicator will blink whenever buttons are pressed. If the indicator did not blink means the signal was not delivered and please repress again.
- (2) HDMI indicator⑨ : When lit up, the microscope is in HDMI mode. If light blinks, means microscope does not connect with monitor.
- (3) PCCam Indicator⑩: When lit up, the device is in USB mode.

If light blinks, means microscope is not connected to a PC

1.5.2 Power/USB/HDMI port

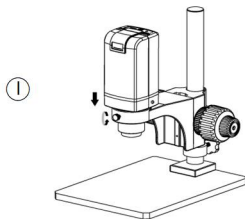
Caution: Please hold the cable when remove from microscope and do not disassemble cables forcefully.



- (1) Power^① : Power adaptor is only compatible with the cord in the box. Please do not use other adaptor.
 - (2) USB^① : USB port for PC connection or Firmware update.
 - (3) HDMI^① : The HDMI port is used to connect the microscope to a screen. When the device is in HDMI mode, connect the microscope to the screen using the HDMI cable from the box.
- * For TV screen connections, make sure to choose the homologous image ratio and format.

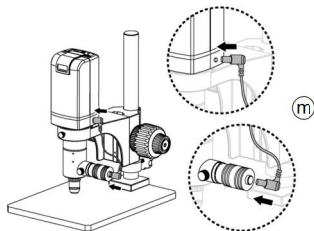
1.5.3 Stand gear box

Assemble the stand and then screw the microscope onto the universal joint ① on the gear box.



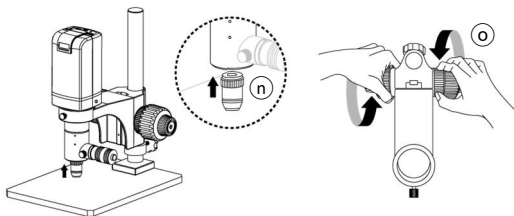
1.5.4 GN08 Light Socket

- (1) Coaxial Light Socket[™] : Connect Power cable from GN08 to Microscope. LED can control from both remote control and PC software.



1.6 Microscope Focus

Depends on the object and observation needs, change the suitable object lens. Take the chart as reference for the working distance. Recommend to find focus from the minimum magnification (Zoom out to the end, easier to find focus). Use Gearbox to quick find the shape of object; once the shape is seeable, use fine tune to find clear image. When clear image is found, rotate the lock to fix the focus.



1.6.1 Below chart is measured on 24" screen, it's only a reference data, might not be accurate enough. Based on the image ratio (preview window size), field of view and magnification size will change.

UM20-GN08 on 24" Monitor (Reference Data)						
Object Lens	4x-A		10x-A		20x-A	
Sensor Position	H	L	H	L	H	L
WD (mm)	11.9	15.7	6.4	7	1.6	1.7
FOV(mm)	1.25	1.87	0.511	0.68	0.26	0.343
Mag. (X)	425x	284x	1041x	781x	2042x	1548x

1.7 Microscope accessory

1.7.1 White balance card

The white side is used to calibrate the white balance. If the object is tiny, place it onto the white balance card and move the card instead of the object.

2. Printed Notice

Please read the following information before operating.

2.1 Maintenance

Please abide by the following rules while storing or using this product:

- 2.1.1 Keep dry: do not place the product in a humid environment. Dry surroundings help extend the life of the product.
- 2.1.2 Avoid temperature shock: temperature shock (for example, taking the product into a warm room from a cold environment) will cause internal condensation inside the machine. Please put the device inside the protection bag or handbag to prevent temperature shock, and avoid using the device in an environment with extreme temperatures.
- 2.1.3 Avoid dropping: the device may malfunction if it encounters strong collision, vibration, or distortion.
- 2.1.4 Turn the microscope off before cutting off the power supply :do not forced cut off the power supply.
- 2.1.5 Do not face the lens against strong light or sunshine for extended periods of time: Strong light rays may degrade sensitive elements and generate white stains on images.
- 2.1.6 Handle the device carefully: do not disassemble cables forcefully and avoid contact with the lens since they are subjected to damage.
- 2.1.7 Make sure to switch the power supply off and unplug the power cable if the device is not in operation for an extended period of time. Store the device in a dry environment with excellent ventilation. Do not expose the machine in an environment lower than -5°C or higher than 50°C.
- 2.1.8 While carrying, put the device inside the box to prevent from being damaged.

2.2 Product Specification

CMOS Sensor	2 million pixels CMOS sensor
Lens	Object lens 4X/10X/20X
Magnification	Object lens 4X: 284x~425x;10 Object lens : 721x~1041x; 20X Object Lens: 1548x~2042x on 24" monitor
Auxiliary source	GN08
DC Port	Adaptor DC Input
HDMI Port	Mini HDMI Output 1080P(1920*1080 Pixel) image
USB 3.0 Port	Type C output YUV/MJPE format; Max res. 1080P
Focus control	IR remote control
Power Supplier	Adaptor (Output : DC 5.0V/2.0A Input : AC 100-240V 50/60Hz)
Power Consumption (A/C)	1A(Max)
Size	68(L)×66(W)×255(T) mm
Weight	Host weight around 452 grams
Operation environment	Temperature -5℃ ~ 35℃; Humidity-lower than 85% (No Condensation)
For any changes, please visit https://www.aventools.com	

*USB 3.0 transmission speed might be downgrade depends on the device/host condition

2.3 Safety Instructions

- As an electronic product, please do not use the device in any place in which electronic products are prohibited.
- Keep the device away from water sources to avoid electric shock as it is not waterproof.
- Keep the device away from chemicals or substances with explosive or fire hazards. Switch the device off near gas stations.
- In the case that there are foreign substances or water inside the device, or the device is dropped or damaged, please switch off and remove the power supply to avoid fire and electric shock.
- Do not look steadily into Light sources after switching on the host as it is harmful to your eyes.
- Please use only the product accessories provided in the box for connections. Do not use any outside products without approval of original factory.
- Please remove the power supply from the microscope when not in use.
- Do not disassemble the machine for inspection. For any problems occurring in the machine itself, please power off the device and contact us through e-mail: info@aventools.com

AVEN Warranty

Product	
Model no	26700-425
S/L nos.	
Purchase date	DD/MM/YYYY
Purchaser	
Tel no:	
Address	
Email	
Distributor Seal for Confirmation	
(Stamp is necessary for validation of the Warranty)	
※Distributor's seal shall include name of the shop, telephone and address※	

Please ask the distributor to fill in the name of the shop, address, purchase date, and other contents to protect your rights and validate your one-year warranty since upon the purchase date.

Contents of Warranty: The warranty is provided free of charge for faults caused by manufacturing within one year from the purchase date.

Non-warranty:

1. Product appearance parts, such as the outer casing, knobs and LED cover, etc (charged spare parts are limited to one year after completing the product manufacturing).
2. Consumption goods of the host itself, such as LED lights and lens.
3. Product accessories and fittings, such as the power supplier, HDMI cable, white balance card, remote controller...etc.

Services caused by any of the following situations in the period of the warranty shall not be provided free of charge:

1. Improper use or disassembly, repair or refitting.
2. Any damages to the device caused by external or environmental factors.
3. Discrepancy of product serial number, unfilled or unidentified warranty. Any inspection or repair service after the period of warranty will be charged as follows:
 - (1) Service fees (including transportation fees) of product inspection.
 - (2) Repair fees.
 - (3) Fees of replaced parts

AVEN Service Center Tel: 734-973-0099

4330 Varsity Drive

Ann Arbor, MI 48108



*Tools for
Advancing
Innovation™*

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