VT300 PLUS User's Guide

Digital Portable Microscope

Version 2.1A

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1. Products Introduction

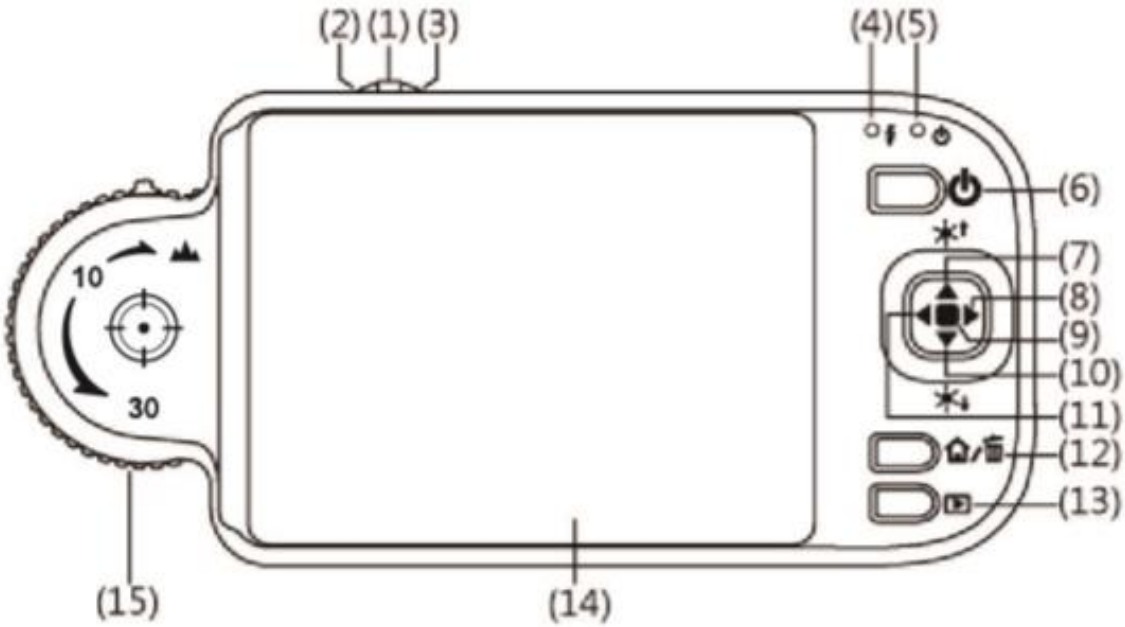
1.1 Packing Contents

Objects packed inside the box include one host and seven accessories as follows. Please charge the Li-ion battery for 6 to 8 hours for the first time.

Name	Qty	Name	Qty
Portable Microscope	1	Li-ion Battery	1
USB2.0 Cable	1	User's Guide	1
Adaptor	1	Clean Cloth	1
Calibrator	1	Wrist Strip	1

1.2 Functions of Microscope

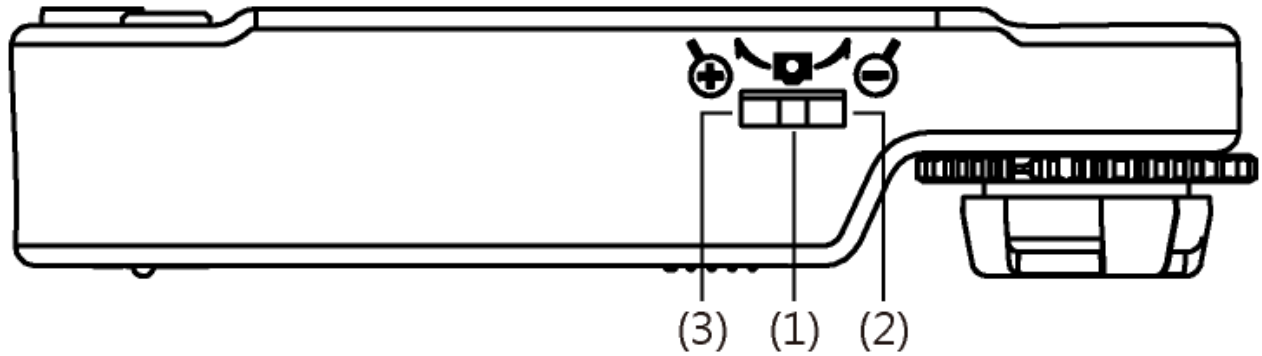
Microscope appearance is composed of buttons, transmission and storage interfaces. For the functions of interfaces, please refer to the following contents:



(1) Camera/Video REC : the button is applied to photograph in observing mode [please refer to item (1) of Section 1.4]. Press the button for a long time to enter/quit Comparison mode. In the Video Play mode, it can open video files [please refer to item (2) of Section 1.4]. In Video REC mode [please refer to item (3) of Section 1.4], the button is used to start/stop recording video.

(2) Zoom Out : the button is applied to zoom out digital image [please refer to (F) and (G) of item (1) of Section 1.4].

(3) Zoom In : the button is applied to zoom in digital image.



(4) Charging Display Light : The red light is to show the charging status if it is on. The red light will turn off when the charging is completed [please refer to (G) of item (1) of Section 1.4].

(5) Power Supply Display Light : a green light to show the machine is switched on. There is flash signal during recording.

(6) Power Supply : press the button for 3 seconds to switch on/off the machine

(7) Progressive-Brightness of Lights / : brightness can be adjusted at 8 levels [please refer to (D) of item (1) of Section 1.4]. In observing mode, the button is used to increase brightness of illumination (auxiliary sources). In the video

play mode the button is used for stop playing video. In other modes, it is used for choosing 'up'.

(8) Select 'right ▶' button: Press the button for 2 seconds to show Crossing Alignment in the center of the LCD Display. Or the button is used to next sequent 'right' function.

(9) Diminishing-Brightness of Lights ▼/☀↓: the button is used to decrease brightness of illumination. Press the button for 2 seconds to switch to the Scene mode. [please refer to (c) of item (1) of Section 1.4]. Or the button is used to next sequent 'down' function.

(10) Select 'left ◀' button: Press the button for 2 seconds to show Alignment in Range in the center of the LCD Display. Or the button is used to next sequent 'left' function.

(11) Confirmation Button ✥: a switching button between special effects under observing mode and video recording mode. [please refer to (C) of item (1) of Section 1.4].

(12) Function Menu ⌂/Delete 🗑: after entering observing mode, press the button to skip to the Function Menu. ⌂ In the review "Album" mode, press the button to delete photos. In the "Video Play" mode, it is used for delete the video.

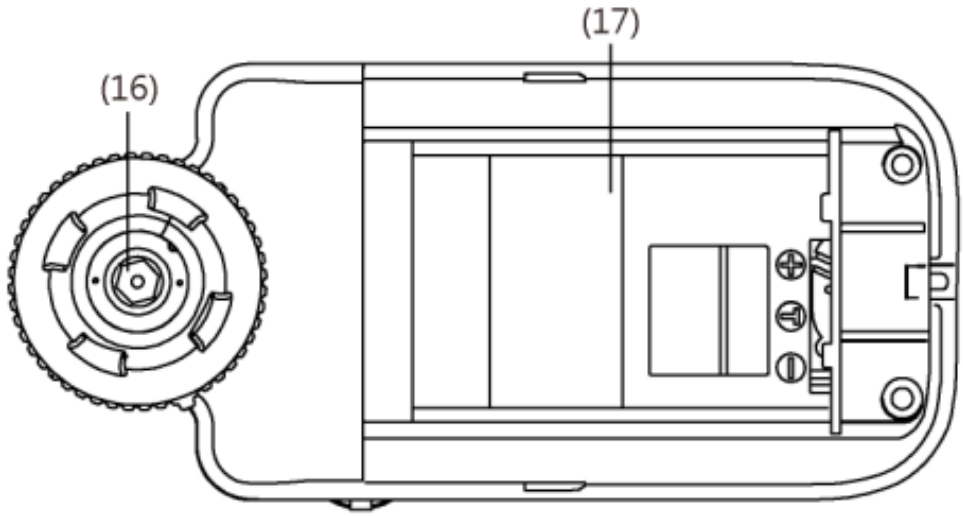
(13) Preview Photos ▶: Press the button to preview photos in observing mode, and back to previous level or exit image in other modes.

(14) Display Screen: To display image pictures.

(15) Wheel Focus: a button to adjust optical focus [please refer to item(1) of Section 1.3and (E) of item (1) of Section 1.4]. The indicator is to select the times of magnification.

(16) Lens: the lens is applied to photography.

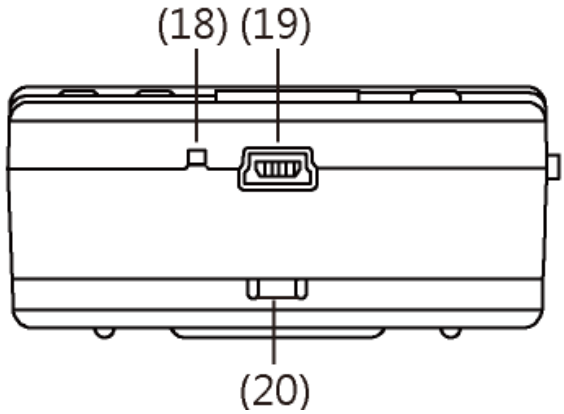
(17) Battery Container: Where is the Li-ion battery put. [please refer to item (5) of Section 1.5].



(18) RESET Hole: in case the machine stops (which means no reaction in the image by pressing any button), insert slender clip into the hole to trigger the RESET button. After RESET, please switch off/on power button or plug out/ in power cable.

(19) USB Connection Port: the port is applied to connect USB device to computer [please refer to item (6) of Section 1.4 and item (1) of Section 1.5].

(20) Handing Hole: a hanging hole for the Wrist Strap [please refer to item (4) of Section 1.5]



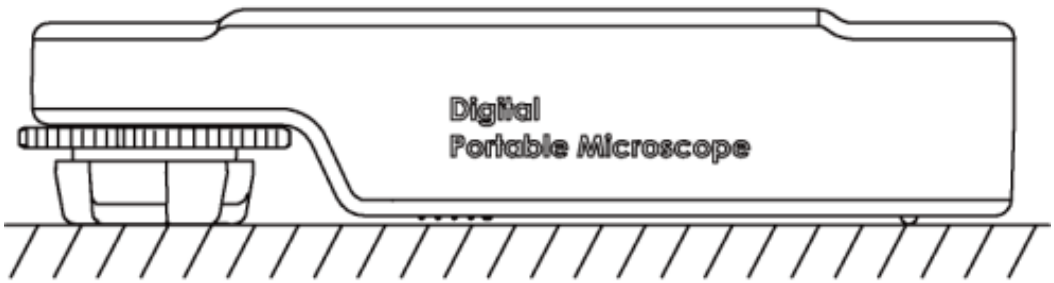
1.3 Operation of Microscope

First, please choose long shot or flush-way shot, then adjust the focus button.

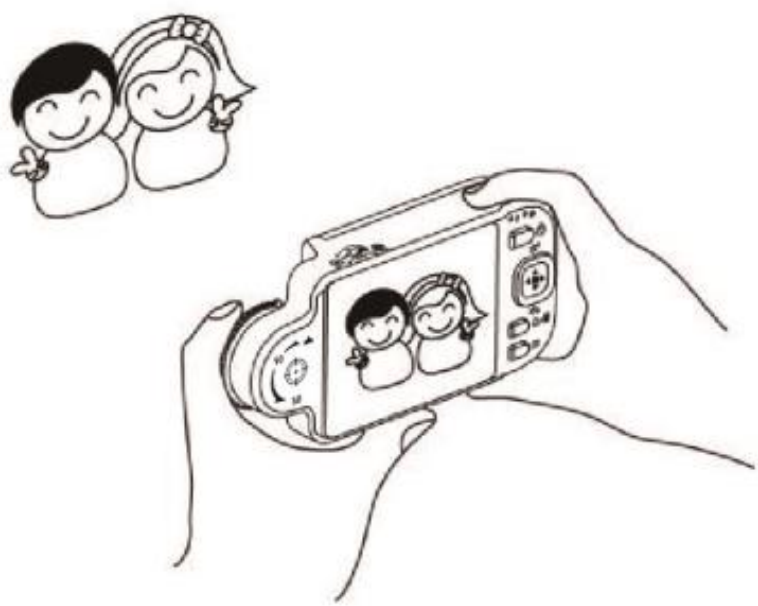
(1) Focus way : the focus dial is labeled to indicate the magnification amount (10x, 30x, and long shot ▲). Rotate the focus wheel from position (A) to position (B) is for long shot, need tuning the clear focus between (B) & (C) for continuous magnification 1~10x. (C) is low optical magnification (10x), and (D) is High optical magnification (30x). You may find symbol represents the magnification size.

Please see below image, the indicator is under the position of 10x (10) magnification.

(2) Horizontal contact : there are two focus points (10x & 30x) in horizontal-contact observation, slightly tuning the black indicator so that to get the clearest image quality.

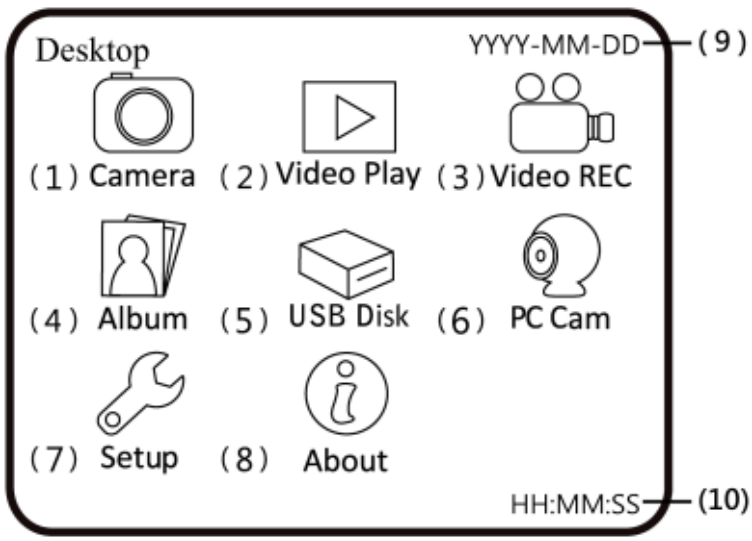


(3) Long Shot: Rotate the Focus dial next to 10X's right side, then slightly tuning so that to get the best image. Photography is same as the way of camera and scene mode is selectable. [please refer to (B) of item (1) of Section 1.4].

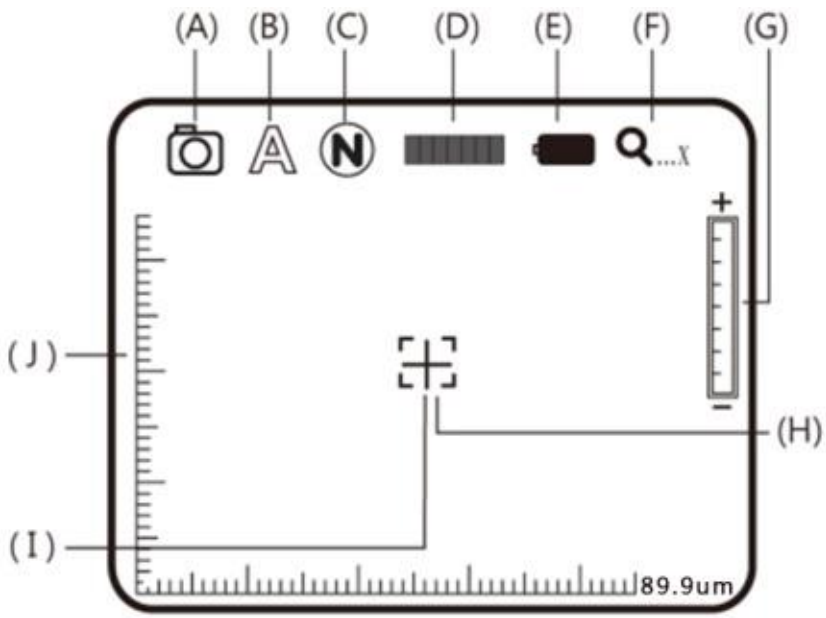


1.4 Microscope Programming Functions

There are 8 function modes in the programming interface. Press the Function Menu /Delete button to switch functional modes in the Camera. In other modes, press the button of Preview Photo /Back to back to the Menu and switch function as displayed in the following image:



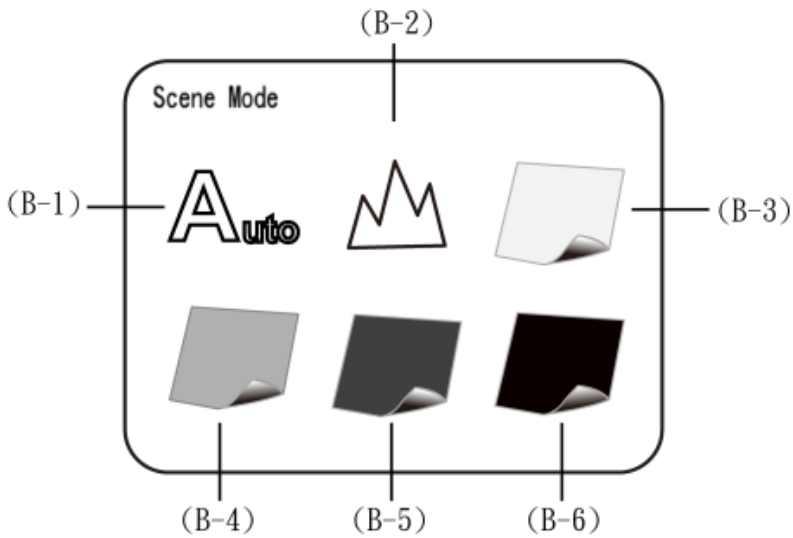
(1) Camera : Observation mode.



Please refer to the above image. Small icons are used to represent function modes.

(A) Mode : the machine is in observing mode.

(B) Scene Mode : Press the button for a long time to switch the six scene modes and select the modes by using buttons of /// .



(B-1) : Automatic mode (default).

(B-2) : Camera mode. LED will turn off automatically in this mode.

(B-3) : White mode, for example, the observed articles made of shining materials.

(B-4) : Grey mode, for example, the observed articles with light colors.

(B-5) : Dark Grey mode, for example, the observed articles with dark colors.

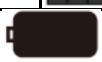
(B-6) : Black mode, for example, the observed articles with dark black.

(C) Special Effects Ⓝ: press ✥ button to choose the following special effects models in observing model:

- Normal Ⓝ: general model without any special effect.
- Grey Scale Ⓖ: shows by grey scale to simplify and easily identify images.
- Reversed-phase Ⓘ: shows by complementary colors to strengthen faint-colored or over-lighted image.

(D) Brightness of Lights : press ▲ and ▼ to adjust brightness of lights in the observing model. The brightness is divided into the following 8 levels:

level 0 (no light)		level 4	
level 1		level 5	
level 2		level 6	
level 3		level 7 (most bright)	

(E) Battery Status  : the state is divided into three types including Battery in Using, Battery Charging and USB Power Supply.

- Battery in Using : only use the battery without any external power supply.

Full	High	Medium	Low

- Battery Charging : use USB power supply to charge the battery. The charging will stop if the battery is full, and only USB power supply will be used. Power supply applied to charging can be provided by USB power supply device or USB connection port of computer.

The following images are presented while charging			

- USB Source : the graphic will be presented under two circumstances. One is insert USB power supply without using battery, and the other is insert USB source and use full-charged.

(F) Optical Digital Magnification : represents current magnification rate.

- The optical zooming rate will be changed while adjusting the black indicator on the wheel of Focus. Please refer to the following.

Low Mag.(L)	High Mag.(H)

- Digital magnification rate can be adjusted by the buttons of zoom out ( ) and zoom in ( ). The magnification is divided into 8 stages and can be up to 4 times with 0.5 times per stage. The image can be enlarged to 55 times when combining optical and digital magnifications. The rates at different stage are as follows:

10x optical rate [11* (1+0.5*stage)]				
Stage	1	2	3	4
Rate	16x	22x	27x	33x
Stage	5	6	7	8
Rate	38x	44x	49x	55x

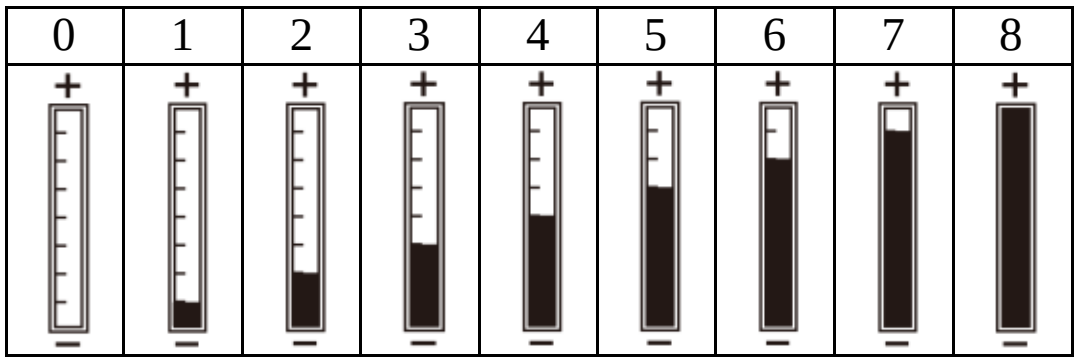
Note: this formula is for 0-8 stages.

- Adjust optical magnification to 31 times, and the total magnification can be 155 times. Rates at different stages as follows:

30x optical rate [31* (1+0.5*stage)]				
Stage	1	2	3	4
Rate	46x	62x	77x	93x
Stage	5	6	7	8
Rate	108x	124x	138x	155x

Note: this formula is for 0-8 stages.

(G) Digital Magnification Stage: digital magnification rates at different stages are listed as follows:

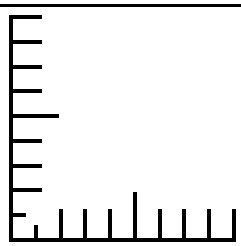
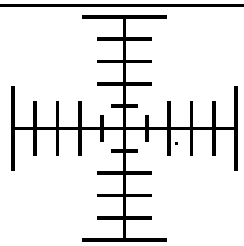


(H) Alignment in Range : press the button for a long time to display the sign of alignment in range, and press it again to shut down the sign. Use the sign to assist in aligning the observed article.

(I) Crossing Alignment : Press the button for a long time to display the sign of crossing alignment, and press it again to shut down the sign. Use the sign to show the position in which the lens of machine is located and make the alignment more conveniently in observation .

(J) Scale: Press the button (Confirmation button) for a

long time to display the scale, and press it long time again to shut down the scale. Press the button of ✥ without releasing to select different scales. After selection, release the button. The two types of scales are showed as follows:

L-shaped Scale	Crossing Scale
	

- The scale might be incorrect because of concaved and convex observed object making the focusing distance is not standard. For the standard focus, please use the flushing-way [Please refer to item (2) of Section 1.3].
- The scales will be varied with magnification rates changes. The unit in the scale is 「μm」. The following scales are highly precise and provided for the users as references.

Scales of Digital Magnification in 10x Optical Rates					
Rate	11x	16x	22x	27x	33x
Scale	89.95	59.96	44.97	35.98	29.98
Rate	38x	44x	49	55x	
Scale	25.70	22.48	19.98	17.99	
Scales of Digital Magnification in 30x Optical Rates					
Rate	31x	46x	62x	77x	93x
Scale	31.91	21.27	15.95	12.76	10.63
Rate	108x	124x	138x	155x	
Scale	9.119	7.979	7.093	6.383	

- Photo file name shall record the magnification size , For

example: 「IMGYYMMDD_HHMMSS_L1.JPG」, the “L” means optical low magnification. “1” digit means the stage number of digital zoom

「IMGYYMMDD_HHMMSS_H8.JPG」, the “H” means optical high magnification, “8” digit means the stage number of digital zoom. The above file name, capital letter L means the optical mag 10x, H means 30x. If the magnification icon shows “…x” which the file name will not note any L/H since machine is not able to know the preview situation. Below chart is the FOV for different magnification and stage of enlargement.

Field of View of 10x Optical zoom (unit :mm)					
Stage	L0	L1	L2	L3	L4
Horizontal	4.90	3.27	2.45	1.96	1.63
Vertical	3.68	2.45	1.84	1.47	1.22
Stage	L5	L6	L7	L8	
Horizontal	1.40	1.22	1.09	0.98	
Vertical	1.05	0.92	0.81	0.73	

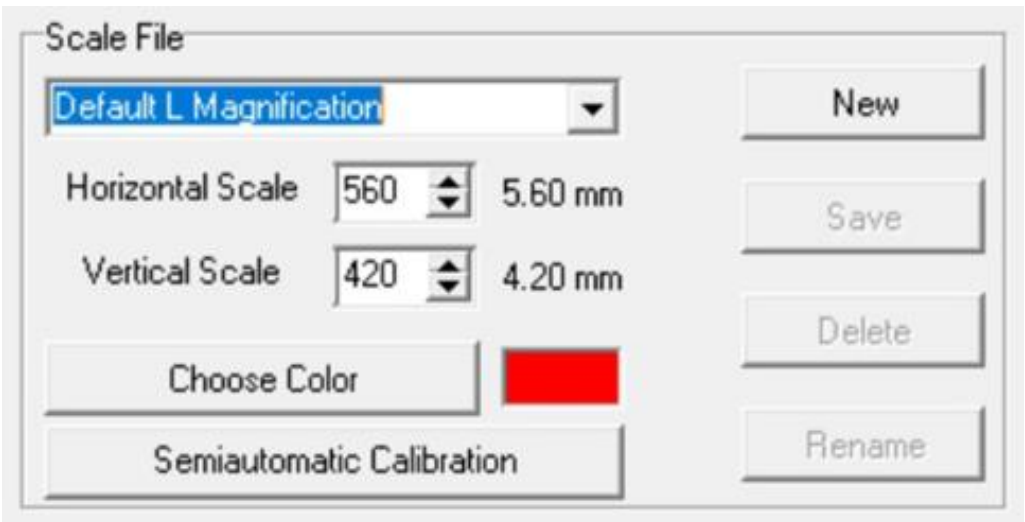
Field of View of 30x Optical zoom (unit :mm)					
Stage	H0	H1	H2	H3	H4
Horizontal	1.74	1.16	0.87	0.69	0.58
Vertical	1.30	0.87	0.65	0.52	0.43
Stage	H5	H6	H7	H8	
Horizontal	0.49	0.43	0.38	0.34	
Vertical	0.37	0.32	0.29	0.26	

The photo which taken under contacted observation can do measurement from “Application Program”. The taken photo image quality will decide the accuracy on measurement. (If the taken photo is not clear or missing focus, then the measurement might not be correct.) It is suggested to key in all values from the look-up table before start measurement.

To begin measurement, please open AP and choose “Measurement mode” see as below fig.

Then, choose “Setting Ruler”

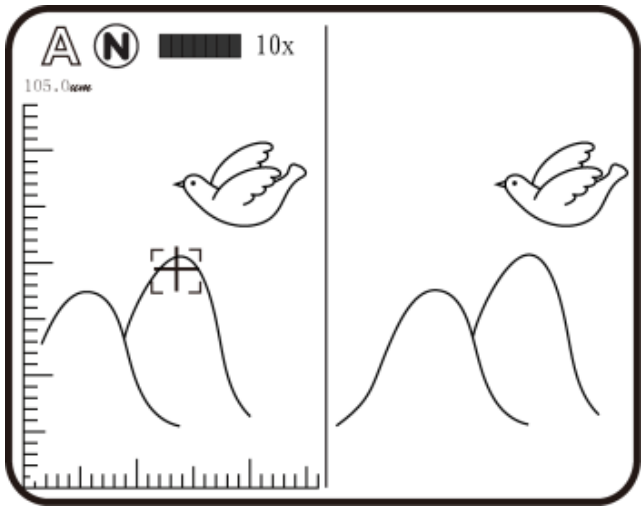
After enter “Setting Ruler”, please create scale files according to different optical mag and digital stage enlargement. The way to create the scale, please refer to AP manual 5.4.5 ((User's Manual\AP meanual.pdf) inside the Install CD. After create different scale files, choose the correct scale according on the taken photo file name to start measurement.



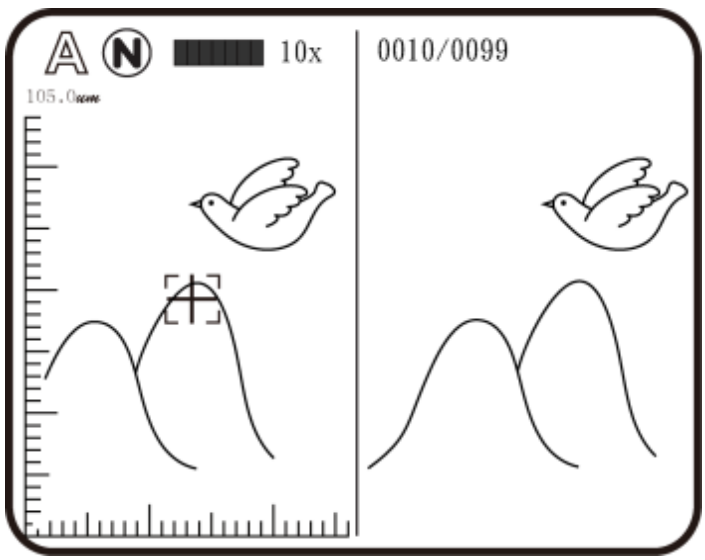
(K) Preview mode：Press under preview mode to enter photos browsing.

View taken photo in the window. The series number of the current photo is shown at the upper left. Press button to go next photo. Press button to go previous photo. It can enlarge and shrink the viewing photo by & button. After it enlarges the photo, it can move the photo up, down, left & right through /// . Press button to return the original window status, then it can allow to swift next photo.

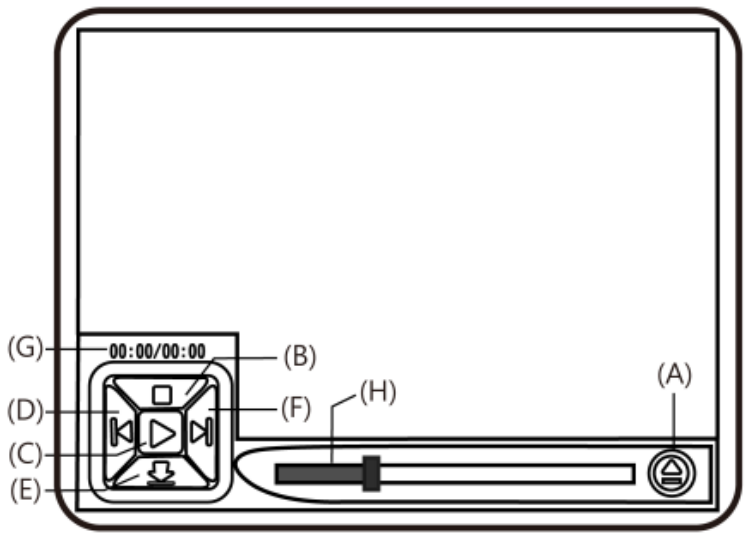
(L) Comparison mode：Press button for 10 seconds under preview mode, it can enter Comparison mode. See below illustration, the right window is the latest photo and the left window is the previewed image. All buttons are same functions but only allow to control the left preview window.



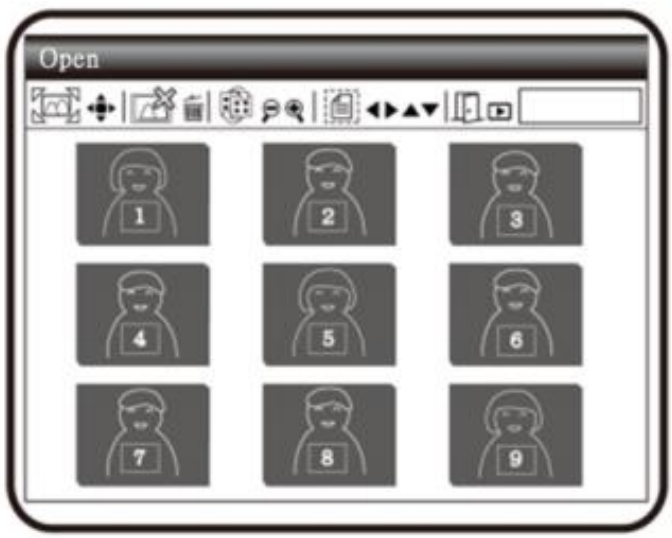
Under browsing photo, press 📷 for 10 seconds, it can enter Comparison mode. See below illustration. At the moment, all buttons are same function but only allow to control the right window. Press ▼ button to swift next photo and press ▲ to return the preview photo. Press ◀ & ▶ button and move the photo slightly toward left or right.



(2) Play ▷: Please refer to below following for a description the Video Play mode.



(A) Open File ⏏: Press the button of 📷 (Camera) in the mode of Video Play to enter the interface of file selection. Select the demanded file as in the following image. After selection, press the button of ✥ to play. Use buttons of ◀、▶、▲、▼ to select file type, file slot, file folder file. Use 🔍 & 🔍 to swift page, one page has 9 files. Press ✥ button to play vide.



(B) Stop : Press the button of ▲ to stop playing video.

(C) Play : After selecting file, press the button of ✥ (Confirmation) to play the video, and the sign of ▷ will be changed to ⏸ (pause). Press the button of ✥ (Confirmation) to pause playing.

(D) Last File : Press the button of ◀ to play the last file.

(E) Hide the Panel : Press the button of ▼ to hide the control panel.

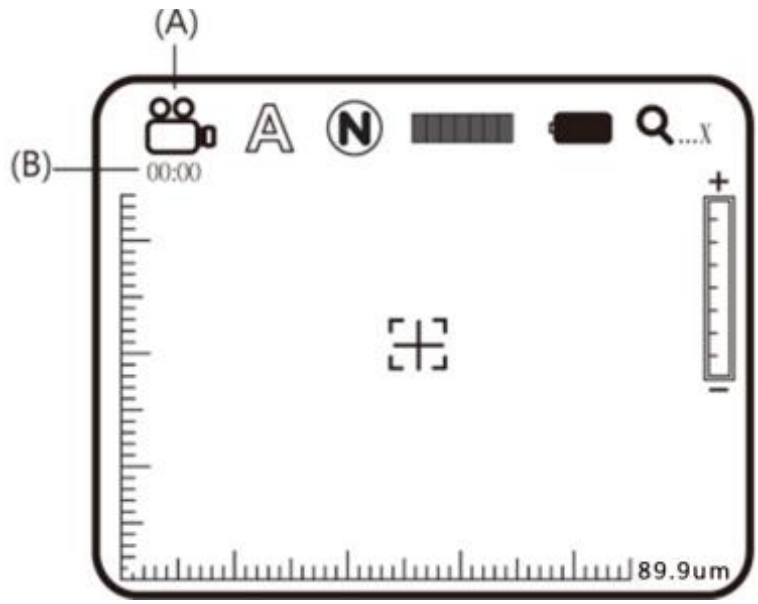
(F) Next File : Press the button of ▶ to play the next file.

(G) Current Time: Total time for the playing/video play currently.

(H) Timer Shaft: Timer shaft for video playing.

In addition, you can press the button of ⌂/🗑 to delet the current video, and the button of ▶ to quit playing program.

(3) REC : a model to record the video, please see the icon on the upper left.



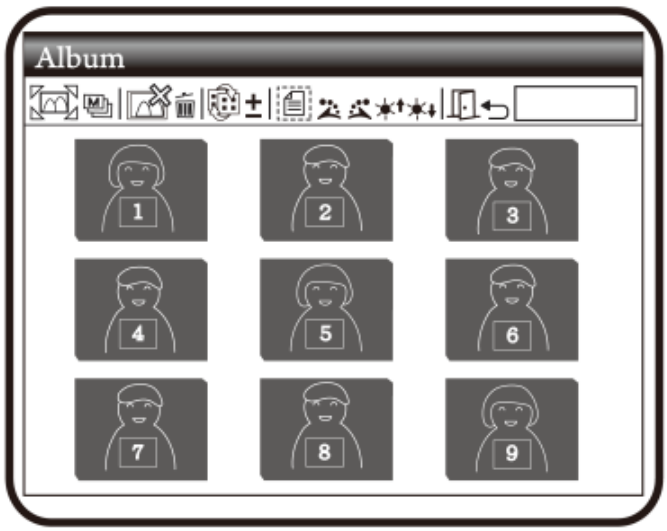
(A) Current Mode : After entering Video REC mode, the mark of Current Mode showed as representing video is recording. Press the button to record video, and the Current Mode turns to be REC from .

(B) Recording Time: After recording, recording time will be counted in second. Each file can be recorded maximum one hour.

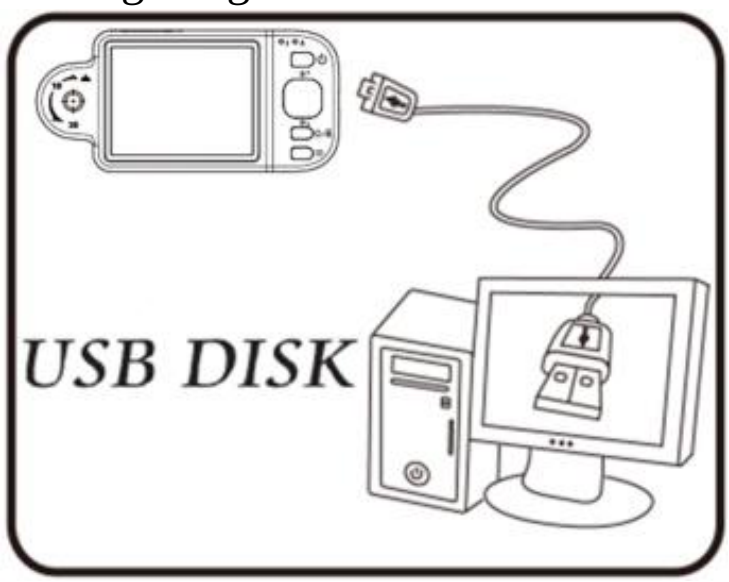
(4) Album : a model to browse photos by listing all shot pictures. Please refer to the following image. Use buttons of , , and to select images , use & to swift page, one page has 9 files.

Press the button to open it in full screen, and use & to enlarge or reduce photo size.

Press the button of to delete the image, and the inquiry window will be displayed before the deletion. Select (Yes) for deletion and (No) for not.



(5) USB Disk : VT300 has its internal memory(2G), save files as USB storage device directly to C Slot. For transmission files to PC, please refer to item (1) of Section 1.5 and the following image.

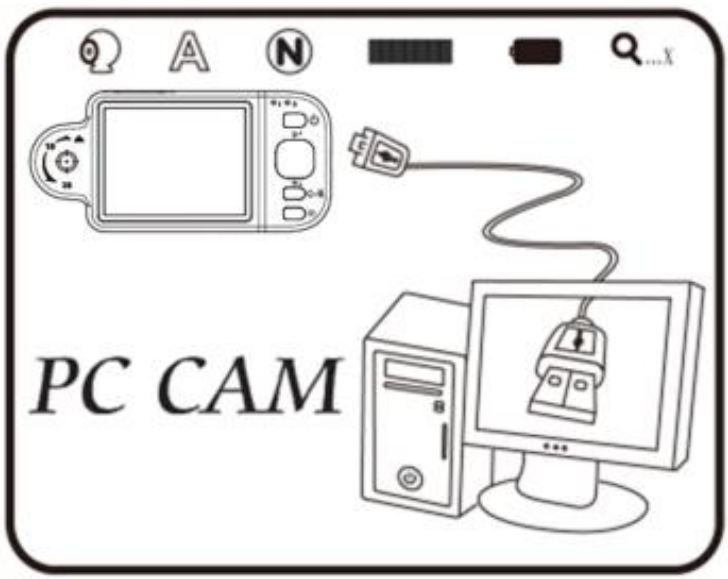


(A) Refer to section 1.5.5 to connect to computer.

(B) Access “USB disk” mode to operate by microscope.

(C) “Removable disk” window will pop up; or enter “my computer”, an device of “removable disk” is shown on the screen.

(6) PC Cam : Mode of computer camera (PC Camera). In this mode, the machine can be linked to the computer as internet camera or microscope camera. Before using, please link the USB transmission line and install driver program in the computer for correct linkage. For program installation, please refer to Section 2. The mode is as follows:



(A) Refer to section 1.5.5 to connect to computer.

(B) To operate by the device, please access “PC cam” and press “confirm”.

(C) Start the application in the computer as introduced in section 2.2.

(D) Click “connect” on the application as shown in section 3.4.

(7) Set Up : a model to set the system and provides seven functions for selection according to your own orientation. Please refer to the following setting image. Press buttons of ◀, ▶, ▲ and ▼ to select and adjust and to confirm the setting. System will be back to the image of system setting model after confirmation. Press button (Comfirmation button) to quit the model.

(A) Date/Time : Setup Date and Time on the device.

(B) Timestamp : To decide to save Date/Time on the

bottom left of the image. Please note that the scale on the image will not show if this function is activate. If want to show the Timestamp on the image, please turn off the scale function.

(C) Auto Power Off : This function can help you shut off the machine after a selected period of inactivity. Or to choose "never" to skip this function.

(D) White balance : set white balance automatically for switching on and off. Automatic white balance can correct image's contrast and color. We suggest you switch on automatic white balance to achieve optimum result.

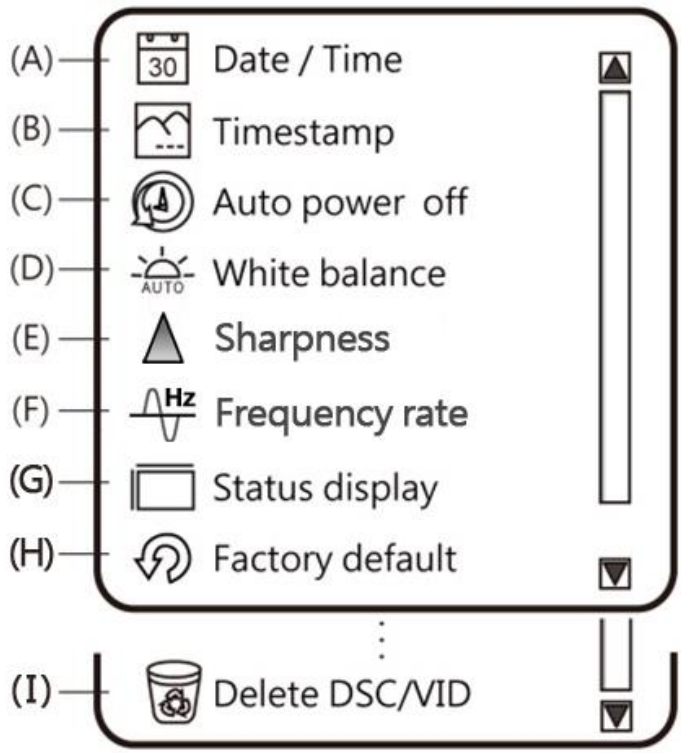
(E) Sharpness : Adjust image sharpness and highlight edge. The value is higher , the sharpness is more obvious.

(F) Frequency rate : Adjust it as per environment light frequency, to avoid flicker. For example: the environment light is 60HZ, it need set up 60HZ ,too.

(G) Status display : Use the button to display the status. The user can view status icons on the upper position for an image.

(H) Factory default : Revert to factory default settings.

(I) Delete DSC/VID : delete VID and files in DSC folder. VID is for storing videos, and DSC is for storing photos.



(8) About : the model to check relevant information of the product. Press button (Confirmation button) to quit the model.

(9) Date:(YYYY-MM-DD)：Display the system date.

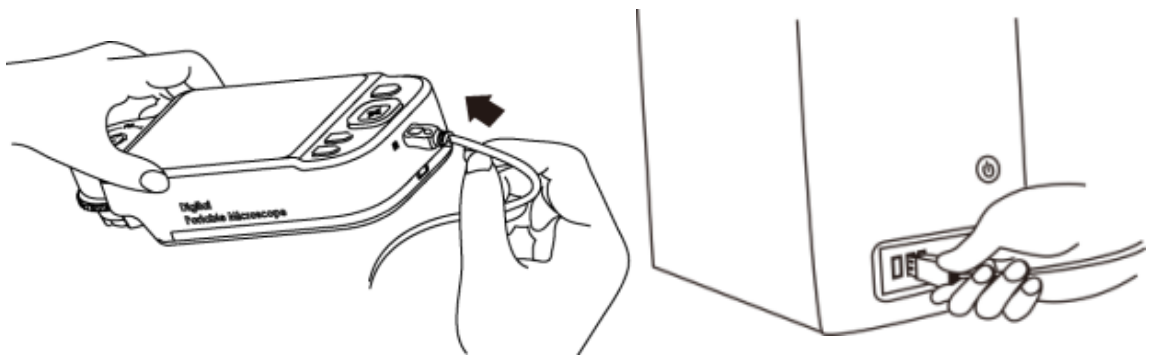
(10) Time:(HH:MM:SS)：Display the system time.

1.5 External Interfaces of Microscope

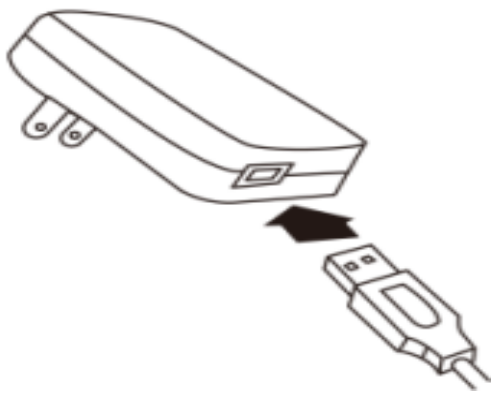
The machine contains many external interfaces. The following contents give instructions about assembly of the accessories. Please use accessories provided together with the machine including transmission line, battery, etc. Please do not use other accessories, as this may cause severe damage or incompatible to the machine.

(1) Connect USB Cable: The smaller connector end is used to connect with the machine, the larger connector end is used to connect USB port on PC. While connecting to computer, power source can also be provided besides transmitting images (PC Camera). Please refer to the following image for the USB connection.

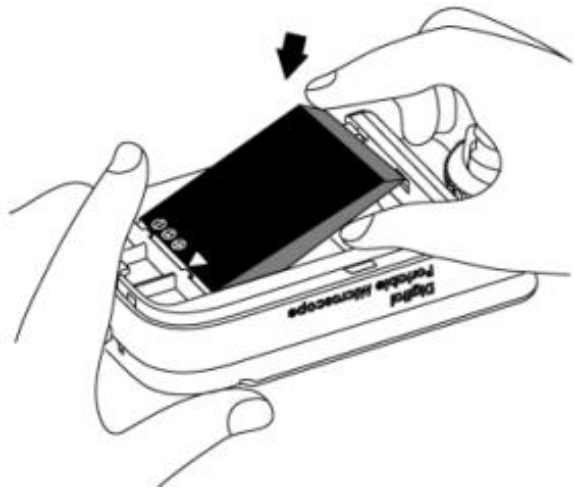
◎Caution: It is highly suggested to remove battery while connect machine to PC.



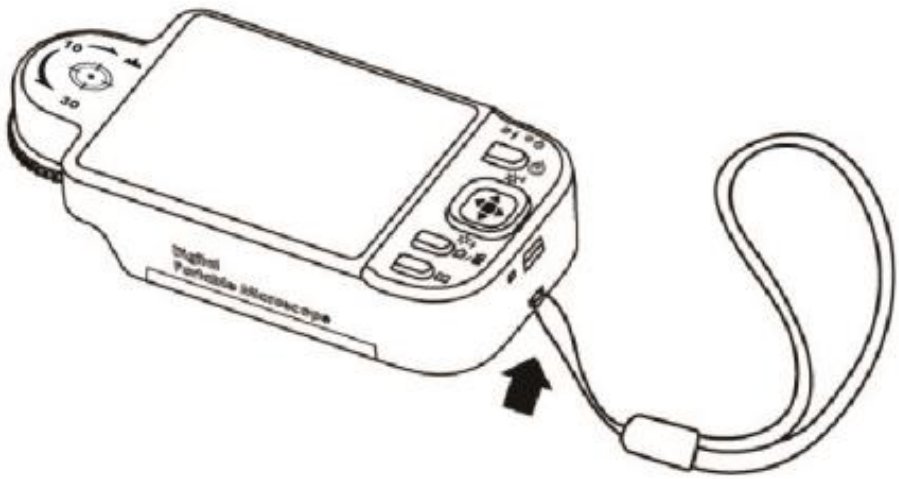
(2) USB Power Supply: provide power supply for the machine by USB cable and USB power supply. Smaller joint is applied to connect microscope host, and the larger one is applied to connect USB power supply (or USB connection port connecting to computer can also provide power supply). The installation is as follows.



(3) Install Battery: remove the battery cover and input the battery by placing the written face up and complying with positive and negative poles correctly. Close battery cover finally. Please refer to the following image.



(4) Install Wrist Strap: Remove battery cover. Hang the wrist strap on the hook, then close the battery cover. Please refer to the following image.



2. Program Installation

2.1 Execute Auto run program (Step 1)

Autorun.exe

3. Printed Notice

Please read the following information before operate.

3.1 Maintenance

Please follow below instructions for storing or using the product:

(1) Keep dry: do not place the product in a humid environment. Dry surroundings are helpful to extend the life of the product.

(2) Avoid temperature shock: temperature shock will cause internal condensation inside the machine, for example, take the product into a warm room from cold environment. Please put the machine inside the protection bag or handbag in advance to prevent temperature shock, and avoid using the machine in an environment with over-high/low temperature.

(3) Avoid collision and drop: the product might go wrong by strong collision, vibration or distortion.

(4) Shut down the machine before cutting off the power supply or removing the battery: do not forced cut off the power supply or remove the battery.

(5) Do not make face lens against strong light or sunshine for long time: Strong light rays might degrade sensitive elements and generate white stain on the image.

(6) Handle Removable accessories carefully. Do not violently remove the accessory or crash the screen, Power Supply, USB Cable, Battery Cover, and avoid to touch the Lens in the front because above mentioned are easily caused damaged.

(7) Machine storage: please switch off power supply and remove battery or unplug power cable, and store in a dry place with excellent ventilation. Do not expose the machine in an environment lower than -5℃ or higher than 50℃.

(8) Appropriate storage: while carrying, please put the machine

inside the protection bag to prevent it from being damaged because of collision.

3.2 Product Sizes

Sensitive Element	2 million pixels CMOS
Lens	High-sensitive Lens
Auxiliary Source	Ultra-bright white light LED x4
LCD	2.7” LCD Full color Screen
Memory	Build in 4G
USB Port	USB2.0 Compatible
Magnification	Optical Zoom 1x~ 10 x (continue) and 30 x; 5 x Digital Zoom
Joint	DC IN Terminal (mini USB joint)
Lithium Battery	Model: NP-120; Voltage: 3.7 V
USB Power Supply Device (Adaptor)	AC Transformer (Output: DC 5.0/1A Input: AC 100-240V 50/60Hz)
Electric Consumption	5V/250mA（Default）
Size	121(L) ×56(W) ×26 (T) mm
Weight	Host weighs around 90 grams (130 grams including the battery)
Operation Environment	Temperature -5℃ ~ 50℃; Humidity-lower than 85% (No Condensation)
For any change, please visit http://www.vitiny.com to check information.	

3.3 Safety Instructions

(1) As an electronic product, please do not use the machine in any place in which all electronic products are prohibited or required to shut off electronic products.
(2) Please do not make the machine close to water source or wet since it is not waterproof. Avoid electric shock.
(3) Do not make the machine close to chemicals, objects with explosive hazard or fire sources. Please switch off the product in gas station.
(4) In case that there is foreign body or water inside the machine, or the machine drops off, or the housing is damaged, please switch off power supply and remove battery or power supply device to avoid fire and electric shock.
(5) Do not look steadily at auxiliary sources after switching on the host as it is harmful to your eyes.
(6) Please use related products provided by original factory for connection. Do not use any product in connection on your own without approval of original factory.
(7) If the machine is left unused in a long time, please remove the battery to avoid leakage and erosion of battery electrolyte.
(8) Please dispose used battery in a proper way complying with local laws and regulations. Do not discard them in public waste field.
(9) Do not disassemble the machine for inspection on your own. For any problem occurred in the machine itself, please switch off the machine and then contact us by e-mail to the following address: mltc@vitiny.com

VT300 PLUS Warranty No.

Product	Portable Digital Microscope
Machine Type	
Serial Number	
Purchase Date	Day Month Year
Purchaser	
Purchaser Address	
Email	
Machine Type	

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 and seal to protect your rights and validate one-year warranty since upon the purchase date.

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

Non-warranty: 1. Product appearance parts, such as outer frame, panel and knobs, etc (charged spare parts are limited to one year after completing the product manufacturing). 2. Consumption goods of the host itself, such as lithium battery, LED lights and lens. 3. Product accessories and fittings, such as power supply device, USB transmission lines, protection bag and wrist strap, etc.

Services caused by any of the following situations in the period of the warranty shall not be provided free of charge: 1. Improper using or self (entrust any other with) disassembly, repair or refitting. 2. Any fault or damaged machine caused by act of god, lightning strike, abnormal voltage or environmental factors, etc. 3. Discrepancy of product serial number, unfilled Warranty, or unreal fill-in, alteration or unidentified Warranty. Product Accessories are Power Supply adaptor, USB Cable, Protection Bag, Wrist Strap..etc. Any inspection and repair service after the period of warranty will be charged as follows according to the situation: 1. Service fees (including transportation fees) of product inspection. 2. Repair fees. 3. Fees of replaced parts.

ViTiny Service Center Tel: 07-657-9551 Fax: 07-657-9561
Address: 10 F., No.1, Section 1, Syuecheng Road, Dashu District, Kaohsiung City 840, Taiwan (R.O.C.)
Website: **http://www.vitiny.com**

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