PANTALLA DE 7 PULGADAS CON CÁMARA DEL MICROSCOPIO ZUZI
7-INCH SCREEN WITH CAMERA OF ZUZI MICROSCOPE
ÉCRAN 7 POUCES AVEC CAMÉRA DU MICROSCOPE ZUZI

MODELO - MODEL - MODÈLE 300SP

Este manual es parte inseparable del aparato por lo que debe estar disponible a todos los usuarios del equipo. Le recomendamos leer atentamente el presente manual y seguir rigurosamente los procedimientos de uso para obtener las máximas prestaciones y una mayor duración del mismo.

This manual should be available for all users of these equipments. To get the best results and a higher duration of this equipment it is advisable to read carefully this manual and follow the processes of use.

Ce manuel est une partie indissociable de l'appareil et doit être mis à la disposition de tous les utilisateurs de l'équipement. Nous vous recommandons de lire attentivement ce manuel et de suivre scrupuleusement les procédures d'utilisation afin d'obtenir des performances maximales et une plus longue durée de vie de l'appareil.

LANGUAGE INDEX

TABLE OF CONTENTS

1. OVERVIEW

1.1 Features

- ARM efficient processor.
- Supports the snapping and video recording of microscope images.
- With calibration and measurement function.
- Stable and reliable upgrade function.

1.2 Application

This screen is mounted directly to the microscope stand, replacing the microscope head.

1.3 Operating Environment

- Ambient temperature: 0 ~ 60 ºC
- Relative humidity: 0% ~ 95%, no condensation.
- Environment: no vibration, dust, corrosive gas, flammable gas, oil fog, water vapor, water drops, salt aerosol, etc.
- Atmospheric pressure: 70 ~ 106kPa
- Altitude: ≤5000m
- DC power input: 5V

2. PARAMETERS AND COMPOSITION

- Basic structure: camera with 7-inch IPS color display.
- Installation: mounted directly to the microscope stand.
- Weight: < 2.5 kg
- Surface coating: spray paint.

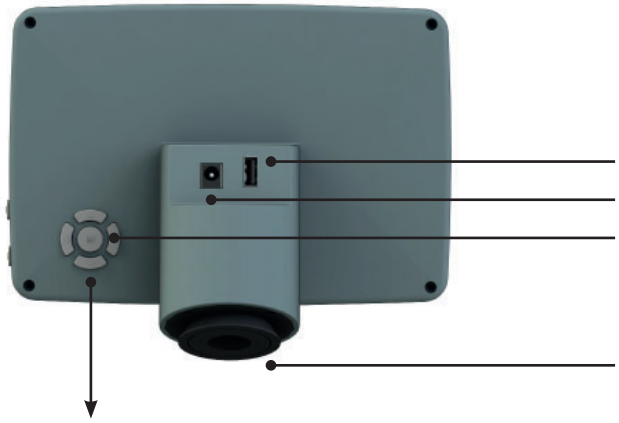
2.1 Parameters

For microscope model / reference	300SP / HBB020
Type of sensor	Color CMOS image sensor
Sensor size	1/2.8 Inch
Pixel size	2.9 μm (H) × 2.9 μm (V)
Resolution ratio	1920 x 1080
Exposure control	Auto / Manual
Power frequency	DC / 50Hz / 60Hz
White balance control	Auto WB / Once WB / Manual
Cross line	4 sets
Calibration and measurement	Supports calibrating and line measuring
Snap	Button snap / timed snap
Video recording	Supported
Frame rate	30FPS@1920 x 1080
Image adjusting parameters	Saturation/ Hue / Brightness / Contrast / Monochrome / Flip vertical / Flip horizontal / FOV
FOV (field of view)	20%-100% of eyepiece FOV
Storage for snap and record	TF card
Languages	English / Chinese
Firmware software update	Supported
Connecting way	It is mounted on microscope head socket
Dimensions	182mm x 125mm x 85mm

2.2 Packing List

- 7-inch display with camera for microscope
- 5V/1A power adapter

2.3 Appearance



3 OPERATION PROCEDURE

3.1 Connect the power adapter to the screen

Insert the plug of the 5V/1A power adapter into the power socket behind the screen. After powering on, the red light will illuminate. Press the power button, and the indicator light will change from red to green, and the screen will start up.

3.2 Use the back buttons to operate the interface

Use the back buttons to operate the device functions and adjust the functioning parameters. After modifying the parameters, exit the interface to save. In the upper left corner of the screen, “Param. saved” will appear, as shown in Figure 3-1.

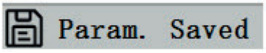


Figure 3-1

3.3 Snap

■ The snap button is on the right side of the screen, above the power button. Press it to capture the current image on the screen and store it in the SD card.
■ The screen shows “Snap Succeeded”, which means that the picture has been taken successfully. This is shown in Figure 3-2.

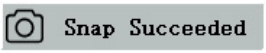


Figure 3-2

Warning: Disconnect the power supply if the equipment is not used for a long time.

4. MENU AND FUNCTIONS

After turning on the power and pressing the power button, wait for the screen to light up. At this point, press the MENU key to bring up the menu, as shown in Figure 4-1. The position of the current cursor (indicated by the highlighted icon) is the white balance function option.

Press ↑↓ for function selection, press → to enter the sub-menu interface of the corresponding functions, press MENU to hide the interface, and save all parameters that have been modified.

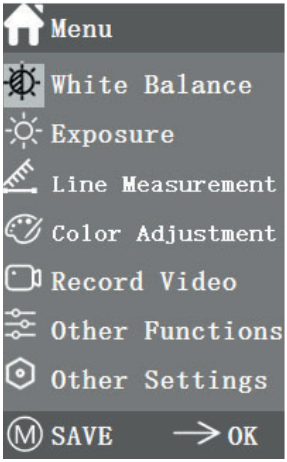


Figure 4-1

The specific functions of this device are shown in Figure 4-2.

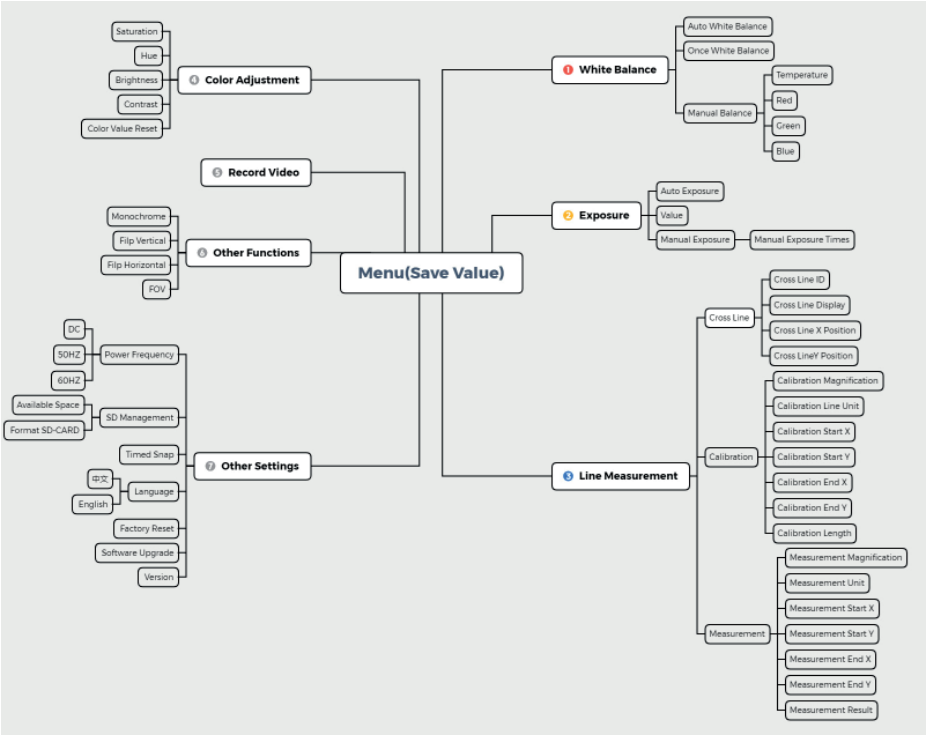


Figure 4-2. Function block diagram

5. OPERATING INSTRUCTIONS

5.1 White Balance

After entering the white balance menu, the default option is “Auto White Balance,” as shown in Figure 5-1. When the effect of automatic white balance is not ideal due to the difference in color temperature between different light sources, manual white balance can be used to adjust the parameters of color temperature, Red, Blue, and Green, respectively. This is shown in Figure 5-2.

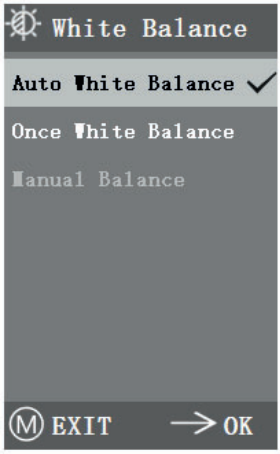


Figure 5-1

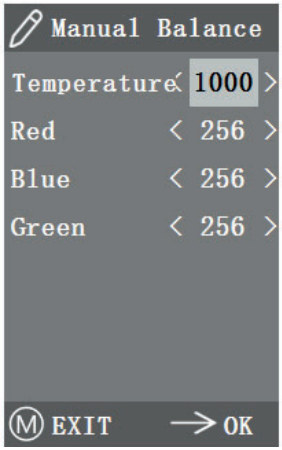


Figure 5-2

5.2 Exposure

After entering the exposure menu, the default option is “Auto exposure,” as shown in Figure 5-3. Under automatic exposure, you can adjust the target “value” to modify the degree of exposure. In manual exposure mode, you can also adjust the exposure by modifying the “time” value, as shown in Figure 5-4.

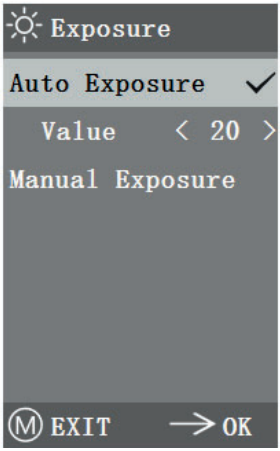


Figure 5-1

Figure 5-2

5.3 Line Measurement

This menu includes Cross Line, Calibration and Measurement, as shown in Figure 5-5.

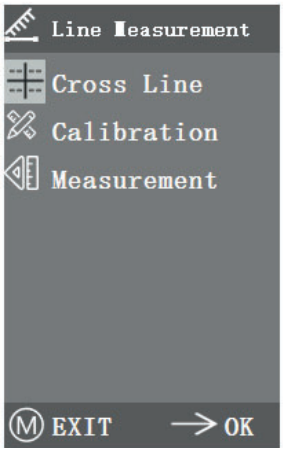


Figure 5-5

5.3.1 Cross Line

Four groups of cross lines are provided in red, blue, green, and white colors. You can choose according to your requirements.

Enter the Cross Line menu, as shown in Figure 5-6. “ID” refers to the number of each group of cross lines. “Display” adjusts whether the reticle is shown. “X Position” and “Y Position” adjust the position of the reticle’s center point.

You can also select and press “Turn off All Crosslines” to close all crosslines.

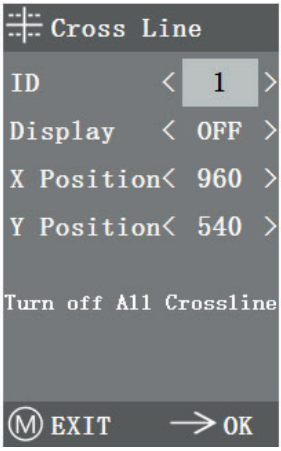


Figure 5-6

5.3.2 Calibration

There are default calibration values for this equipment. However, due to varying objective standards of the microscope, these values may have errors, so it is recommended to recalibrate. The calibration process is as follows:

■ Calibration requires a micrometer. Place the micrometer on the object platform and adjust the microscope so that the micrometer scale is clearly visible on the screen. To facilitate calibration, it is recommended to rotate the camera so that the micrometer appears horizontally on the screen without being obstructed by the menu.
■ Enter the Calibration menu, as shown in Figure 5-7.

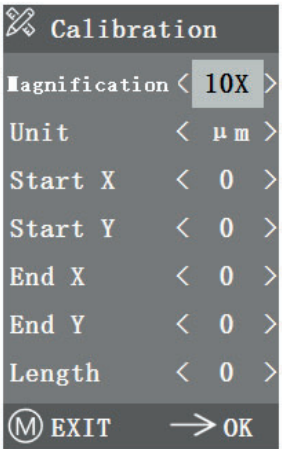


Figure 5-7

■ Adjust the positions of the starting and ending points of calibration to make the calibration line coincide with the micrometer scale and try to select the length containing most possible multiple scales, so as to make the measurement more accurate.

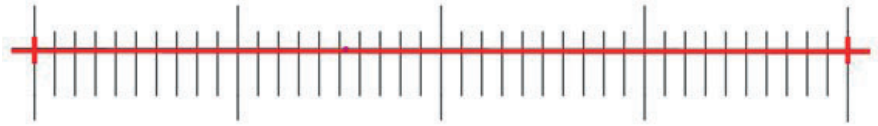


Figure 5-8

■ The minimum range of the selected micrometer is 0.01 mm (10 microns). Figure 5-8 shows the image under a 10x objective lens. At this time, set the “magnification” to “10X,” the “unit” to “μm,” and the “length” to “40.”
■ After adjusting the parameters, exit the calibration interface to complete the calibration process.

5.3.3 Measurement

The image needs to be calibrated before it can be measured. Since the calibration ruler differs with magnification, it must be calibrated separately under each objective lens.

Enter the Measurement menu. Select the measurement magnification, adjust the starting and ending points, and the measurement length will be displayed at the bottom in real time, as shown in Figure 5-9.

Changes in the field of vision do not affect the measurements.

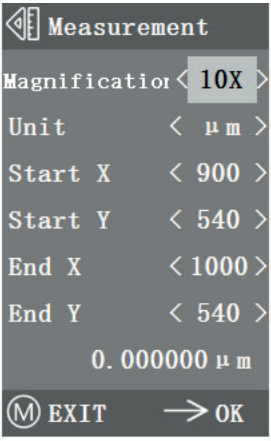


Figure 5-9

5.4 Color Adjustment

After entering the color adjustment menu, as shown in Figure 5-10, you can adjust Saturation, Hue, Brightness, and Contrast to achieve the desired picture quality. To facilitate color adjustment, the menu includes a “Color Value Reset” option. When selected and pressed, all the color values in the menu will be restored to their default settings.

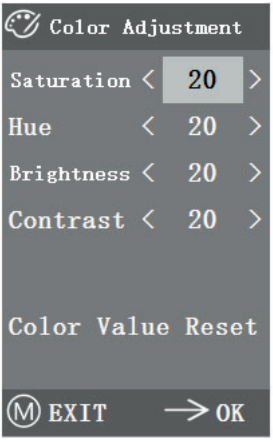


Figure 5-10

5.5 Record Video

Before recording the video, ensure that an SD card with a FAT32 file system and sufficient free space is inserted. Note that you cannot take a photo during the recording process. The recording time is displayed as shown in Figure 5-11.

Figure 5-11

5.6 Other Functions

The menu includes the functions Monochrome, Flip Vertical, Flip Horizontal, and FOV (Field of View). Numerical options can be adjusted using the ← → keys, while the switch options can be toggled open or closed with the → key. After completing the adjustments and closing the main menu, the function states will be saved. These function states will be retained when the device is started again, as shown in Figure 5-12.

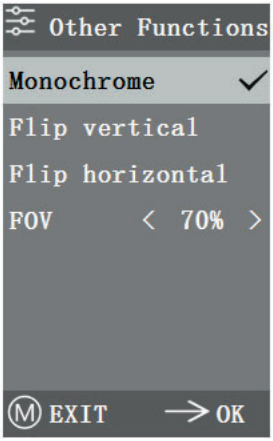


Figure 5-12

5.6.1 Monochrome

The function produces visual images in varying tones of a single color (such as gray).

5.6.2 Flip

This function is divided into vertical flipping and horizontal flipping.

5.6.3 Field of View

This function allows you to adjust the range of the observation field. Use the ← → keys in the menu to adjust the size. When the menu is not displayed, press the ↑↓ keys to adjust, and a 70% similarity indicator will appear in the upper left corner.

5.7 Other Settings

This menu, as shown in Figure 5-13, contains the following options: Power Frequency, SD Management, Timed Snap, Language, Factory Reset, Software Upgrade, and Version.

Figure 5-13

5.7.1 Power Frequency

CMOS detectors have a rolling curtain effect that causes flicker problems, which can be resolved by capturing a line of pixels as an integer (n) times the flicker period. Among them, 60Hz in North America and 50Hz in Europe. As shown in Figure 5-14.

■ DC: For DC light sources, there is no light fluctuation, so there is no need to compensate for the flashing light source.

■ AC (50Hz): Select AC (50Hz) to eliminate the dark strip of the lamp curtain caused by the 50Hz fluorescent lamp.

■ AC (60Hz): Select AC (60Hz) to eliminate the dark strip of the lamp curtain caused by the 60Hz fluorescent lamp.

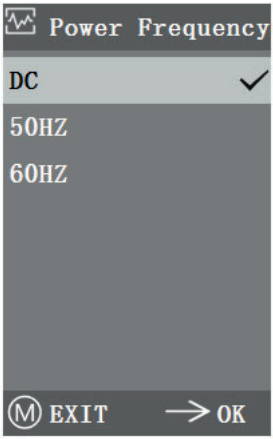


Figure 5-14

5.7.2 SD Card Management

After inserting the SD card, the remaining space and total space of the SD card can be seen in “Available Space,” as shown in Figure 5-15.
If it indicates “0.00 GB / 0.00 GB,” as shown in Figure 5-16, the SD card was not successfully mounted; please try reinserting it.
Enter “Format SD-CARD” to format, as shown in Figure 5-17. Please back up important files on your computer before formatting the SD card.

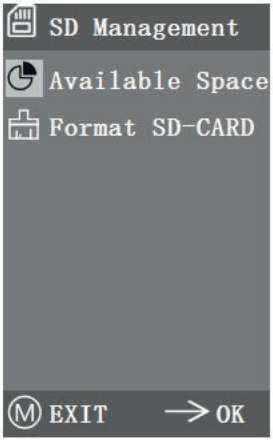


Figure 5-15

Figure 5-16

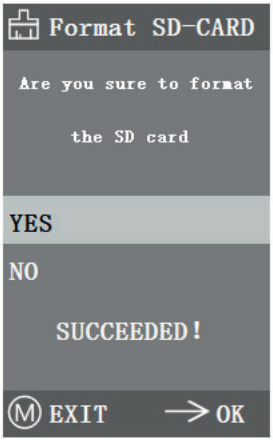


Figure 5-17

5.7.3 Timed Snap

"Hours, minutes, and seconds" refers to the time interval for the timed snap, and "counts" refers to the number of timed snaps. After setting the parameters, move the cursor to "Timed Snap Start" and press → to begin the timed snap. At this point, the number below will update to show the number of photos that have been successfully taken so far, as shown in Figure 5-18.

If the available space on the SD card is insufficient during the timed snap process, it will exit.

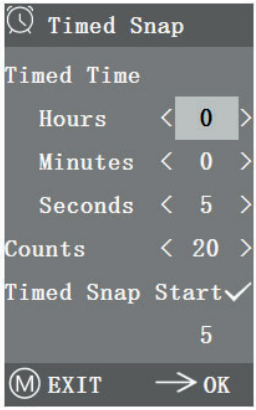


Figure 5-18

5.7.4 Language

The current version can switch between English and Chinese, as shown in Figure 5-19.

Figure 5-19

5.7.5 Factory Reset

Press → key to reset the menu settings to factory settings. This is shown in Figure 5-20.

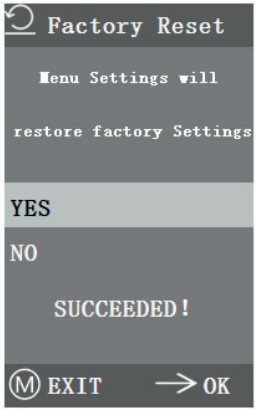


Figure 5-20

5.7.6 Software Upgrade

After the system upgrade, the menu parameters will be restored to the factory settings. Therefore, you should record the parameters before the update so you can restore them after the upgrade.

■ The system is upgraded normally

When the system upgrade files are published, they should be placed on the SD card, and the system upgrade can be carried out on this page. Ensure that the upgrade file names match the required format, for example:
main_app_v1.0.bin, rootfs_uclibc_64k_v1.0.jffs2

Select “Yes” to begin the upgrade, and the following message will appear: “UPGRADING...”, as shown in Figure 5-21.

Warning: Please wait patiently for 2-3 minutes. During this time, do not operate the device and keep the power connected.

If “FILES ERROR” or “NO FILE” occurs, please check whether the upgrade file is missing or if the version number matches. After verifying, please attempt the system upgrade again.

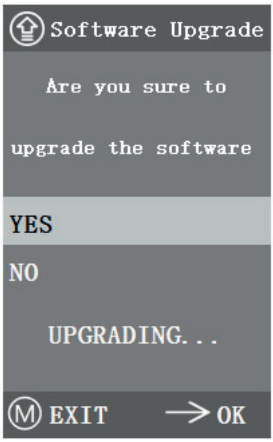


Figure 5-21

■ System upgrade failed

When a system upgrade fails, it goes into the tiny system, which is used for emergency updates.

1. After entering the tiny system, the message “Upgrade Failed. Please try again according to the instructions.” will be displayed on the screen.

2. Insert SD card with upgrade files, then the screen shows “Files detected, Press Menu to Upgrade.”

3. When you press the Menu key (M), the screen shows “Upgrading... Please do not power off.” When the upgrade is completed, the system will be automatically restarted to complete the upgrade.

4. If the screen shows “The version is illegal, please check the file,” that means the upgrade file is missing or the version number does not match. Please check the version number of the file and update it again.

5.7.7 Version

You can view the version information of this product, as shown in Figure 5-22.

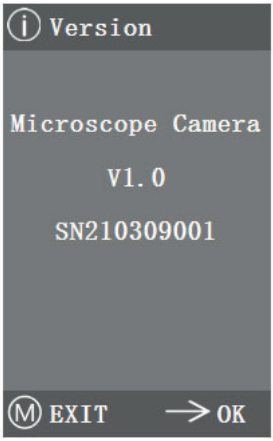


Figure 5-22

6. FAILURE ANALYSIS AND TROUBLESHOOTING

■ When pressing the snap button, recording videos, taking photos at a fixed time, or entering the SD card management menu, “NO SD-CARD” will be displayed, as shown in Figure 6-1. Please insert the SD card with the FAT32 file system into the SD card slot on the right side of the device, and then carry out the corresponding operations.

Figure 6-1

■ When pressing the snap button, recording videos, and taking photos at a fixed time, “No Available Space” will be displayed, as shown in Figure 6-2. Please sort out the SD card space on the computer and insert it again into the slot on the screen.

Figure 6-2

■ If the screen image appears wavy, open “Other Settings” - “Power Frequency” and select the appropriate power frequency.

■ If the image is blurry and out of focus, please change the objective lens and observe again.

■ If an unknown problem occurs and cannot be solved by yourself, please press the power button for 10 seconds to restart. If the problem persists, please contact your distributor to request technical assistance.