PANTALLA 7” PARA MICROSCOPIO, SERIE 400
7‘’ SCREEN FOR MICROSCOPE, 400 SERIES
ECRAN 7” POUR MICROSCOPE, SÉRIE 400

REF. - CODE - RÉF. HBD006
MODELO - MODEL - MODÈLE 400SP

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

Spanish 1-17
English 18-33
French 34-49

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1 OVERVIEW

1.1 Features

- Efficient ARM processor.
- Enables the capture and video recording of microscope images.
- With calibration and measurement function.
- Stable and reliable update function.

1.2 Application and scope

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

1.3 Operational environment

- Ambient temperature:0 ~ 60ºC.
- Relative humidity: 0% ~ 95%, non-condensing.
- Environment: no vibration, no dust, corrosive gas, flammable gas, oil mist, water vapour, water droplet or salt, etc.
- Atmospheric pressure: 70 ~ 106kPa.
- Altitude: ≤5000M.
- DC power input: 5V.

2 PARAMETERS AND COMPOSITION

- Basic structure: Camera with 7-inch IPS display.
- Mounting: Direct mounting on the microscope stand.
- Weight: < 2.5 kg.
- Surface coating: spray paint.

2.1 Parameters

Code	HBD006
Model	400SP
Sensor type	Colour CMOS image sensor
Sensor size	1/2.8 inches
Pixel size	2,9 μm (H) × 2,9 μm (V)
Resolution rate	1920 X 1080
Exposure control	Auto / Manual
Frequency of feeding	DC / 50 Hz / 60 Hz
White balance control	Automatic/Once/ Manual
Transversal line	4 sets
Calibration and measurement	Allows calibration and measurement of lines
Image capture	Timed capture/capture button
Video recording	Yes
Frame rate	30FPS@1920*1080
Image adjustment parameters	Saturation / Hue / Hue / Brightness / Contrast / Monochrome / Flip vertical / Flip horizontal / FOV
FOV (Field of View)	20%-100% of eyepiece FOV
Capture and recording storage	TF card
Language	English / Chinese
Firmware update	Yes
Connection mode	Mounts on the microscope head socket
Overall dimensions	182 mm x 125 mm x 85 mm
Accesorios opcionales	Oculares: Wuro

2.2 Packing list

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

2.3 Appearance

3 OPERATING PROCEDURE

3.1 Connect the power adapter to the camera

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

3.2 Use the back button to operate the interface

Use the rear buttons to operate the device functions and adjust the operating parameters. After changing the parameters, exit the interface to save them. In the upper left corner of the display, “Param. Saved” appears in the upper left corner of the screen. This is shown in Figure 3-1.

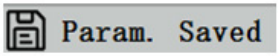

Figure 3-1

3.3 Image capture

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

Figure 3-2

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

4 MENU AND FUNCTIONS

After turning on the power and pressing the power button, wait for the screen to turn on. At that time, press the MENU key to open the menu, as shown in Figure 4-1. The current cursor position (i.e. the position of the highlighted icon) is the option of the white balance function.

Press to select the function, press to enter the submenu interface of the corresponding functions, press MENU to hide the interface and save all the changed parameters.

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

Figure 4-1

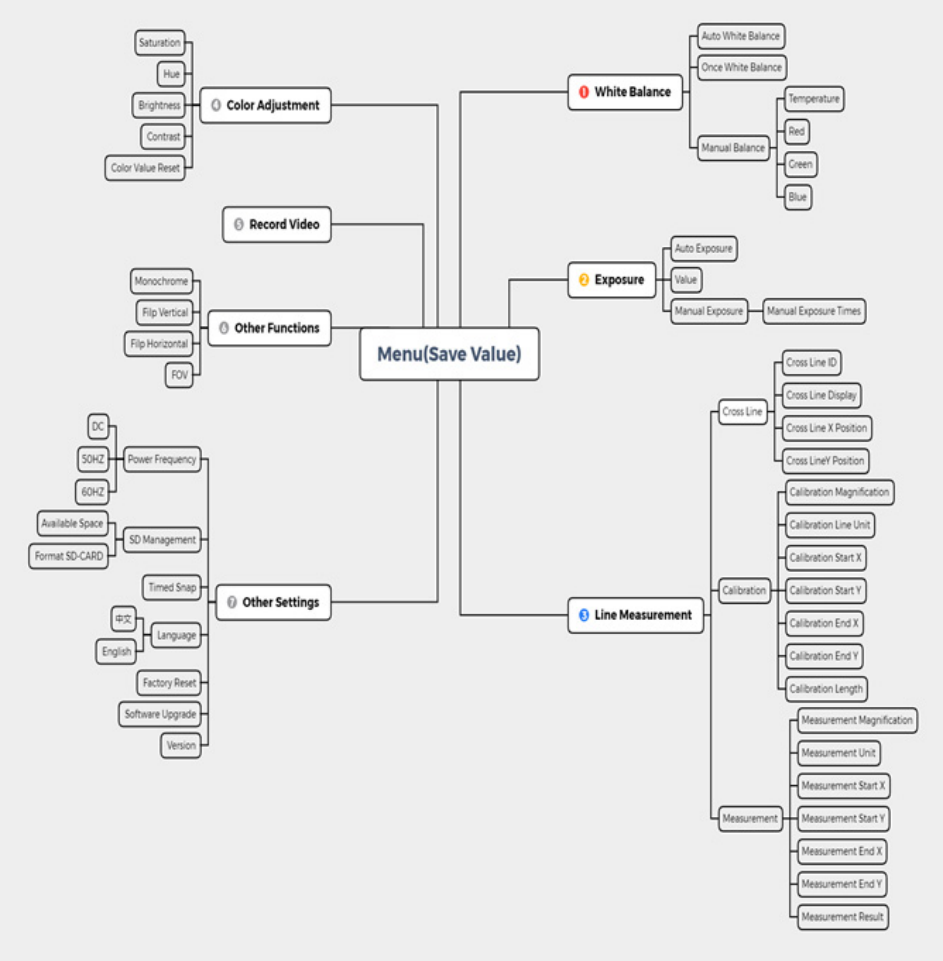

Figure 4-2.Function Block Diagram

5 INSTRUCTIONS FOR USE

5.1 White balance

After entering the white balance menu, the default setting is “Auto White Balance”, as shown in Figure 5-1. When the effect of the automatic white balance is not ideal due to the difference in colour temperature between different light sources, manual white balance can be used to adjust the red, blue and green colour temperature settings respectively. This is shown in Figure 5-2.

Figure 5-1

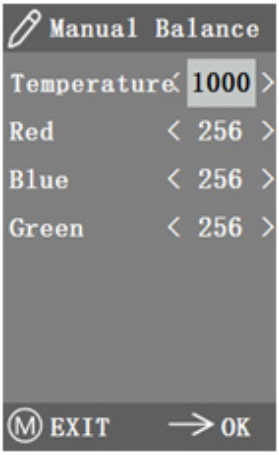

Figure 5-2

5.2 Exhibition

After entering the exposure menu, the default option is “Auto Exposure”, as shown in Figure 5-3. In auto exposure, you can adjust the target “value” to adjust the exposure degree. In manual exposure, you can also adjust the exposure by adjusting the exposure “time” value, as shown in Figure 5-4.

Figure 5-3

Figure 5-4

5.3 Line measurement

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

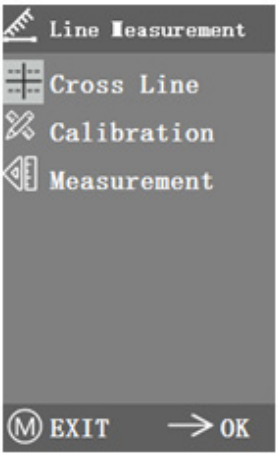

Figure 5-3

5.3.1 Transversal line

Four groups of crossed lines are provided in red, blue, green and white. You can choose according to your needs.
Access the Crosshair menu, as shown in Figure 5-6. “ID” refers to the number of each crosshair group. Display” sets whether to display the crosshair. “X Position” and “Y Position” sets the position of the crosshair centre point.
You can select and press “Deactivate all crossed lines” to close all crossed lines.

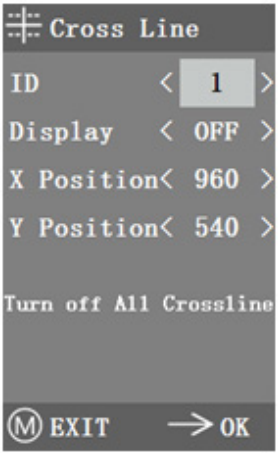

Figure 5-6

5.3.2 Calibration

There are default calibration values for this product. However, due to the different objective standards of the microscope, the calibration value may have errors and recalibration is suggested. The calibration process is described below.

1. Calibration requires a micrometer. Place the micrometer on the object platform and adjust the microscope so that the micrometer scale appears clearly on the screen. To facilitate calibration, it is suggested to rotate the camera so that the micrometer is positioned horizontally on the screen without being blocked by the menu.

2. Access the Calibration menu, as shown in Figure 5-7.

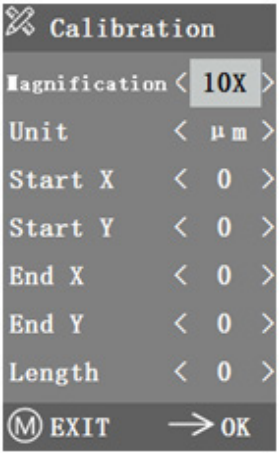

Figure 5-7

3.Adjust the positions of the calibration start and end points so that the calibration line coincides with the micrometer scale and try to select the length that contains as many multiple scales as possible, to make the measurement more accurate.

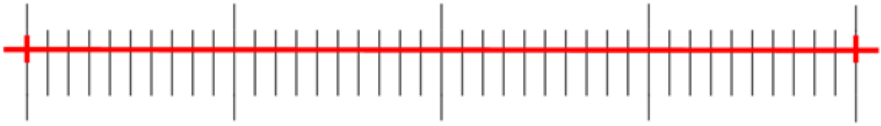

Figure 5-8

4.The minimum range of the selected micrometer is 0.01 mm (10 microns). Figure 5-8 shows the image under a ten-magnification objective lens. Currently, the “magnification” is set to “10X”, the “unit” is marked as “μm”, and the “length” is set to “40”.

5.After adjusting the parameters, exit the calibration interface, and the calibration is completed.

5.3.3 Measurement

It is necessary to calibrate the image before it can be measured. And the calibration rule of different magnifications is different, so it needs to be calibrated separately under different objective lenses.
Access the Measurement menu. Select the measurement magnification, set the start and end point, and the measurement length will be displayed at the bottom in real time, as shown in Figure 5-9.
Changes in the field of view did not affect the measurements.

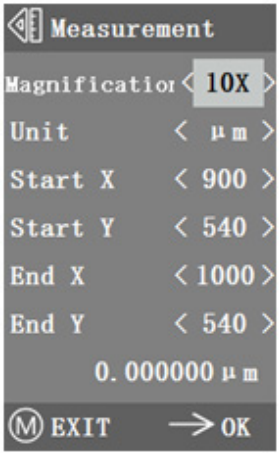

Figure 5-9

5.4 Colour adjustment

After entering the colour adjustment menu, as shown in Figure 5-10, Saturation, Hue, Brightness and Contrast can be adjusted to bring the image to the desired level. To facilitate colour adjustment, a “Reset Colour Value” option has been added to the menu. When selected and pressed, all colour values in the menu will be reset to the default value.

Figure 5-10

5.5 Video recording

Before recording video, you must check if you insert an SD card with FAT32 file system and free space. It is not possible to take a picture during the recording process. The recording time is shown in Figure 5-11.

Figure 5-11

5.6 Other functions

The menu includes Monochrome, Flip Vertical, Flip Horizontal and FOV functions. The numeric option can be set with the ← → key and the switching options can be opened and closed with the → key. After the adjustment is completed and the main menu is closed, the function states shall be saved. The function states will be retained when the next start-up is initiated. As shown in Figure 5-12.

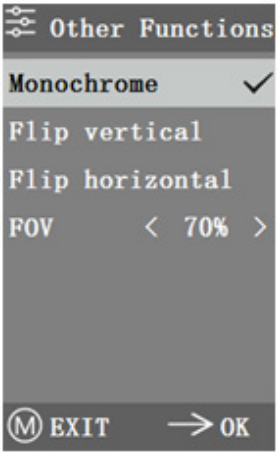

Figure 5-12

5.6.1 Monochrome

The function produces visual images in varying shades of a single colour (such as grey).

5.6.2 Flip

This function is divided into vertical tumbling and horizontal tumbling.

5.6.3 Field of vision

This function can adjust the range of the field of view. Use the ← → key on the menu to adjust the size. When the menu does not appear, press the ↓ ↑ key to adjust, and 70% similar signs will appear in the upper left corner.

5.7 Other adjustments

This menu contains Power frequency, SD management, timer image capture, Language, Factory Reset, Software Update, Version. As shown in Figure 5-13.

Figure 5-13

5.7.1 Frequency of feeding

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

1.DC: for DC light source, there is no light fluctuation, so there is no need to compensate for the flickering light source.

AC (50Hz): AC (50Hz) radio to eliminate the dark band of the lamp shade caused by the 50Hz fluorescent lamp.

3.AC (60Hz): AC (60Hz) radio to eliminate the dark band of the lamp shade caused by the 60Hz fluorescent lamp.

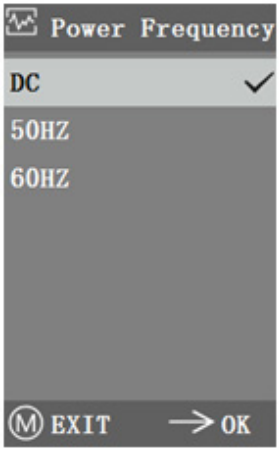

Figure 5-14

5.7.2 SD card management

After inserting the SD card, the remaining space and the total space of the SD card can be seen in "Available Space", as shown in Figure 5-15.
If "0.00 Gb /0.00 GB" appears as shown in Figure 5-16, the SD card has not been mounted correctly, try re-inserting it.
Access "Format SD-CARD" to format, as shown in the picture 5-17. Back up important files on your computer before formatting the SD card.

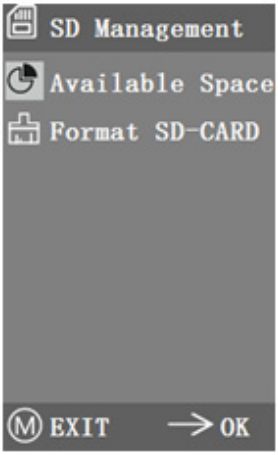

Figure 5-15

Figure 5-16

Figure 5-17

5.7.3 Timed image capture

"Hours, minutes and seconds" refers to the time interval of the timed snapshot, and "counts" refers to the number of timed snapshots. After setting the parameters, move the cursor to "Timed Snap Start" and press → to start the timed snapshot. At this point, the number jumps below. This is the number of snapshots 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 timer snapshot process, the timer snapshot will be closed.

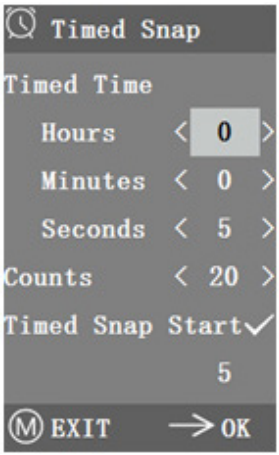

Figure 5-18

5.7.4 Language

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

Figure 5-19

5.7.5 Factory Reset

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

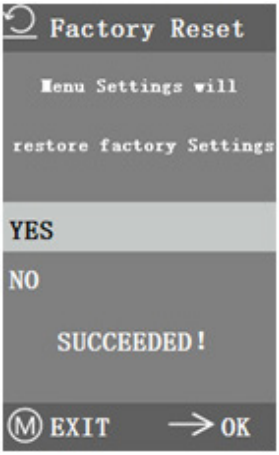

Figure 5-20

5.7.6 Software update

After the system upgrade, the menu settings will be reset to factory defaults, so it is necessary to register the settings before the upgrade to restore them after the upgrade.

■ The system is updated normally

When the system update files are published, the update files can be put on the SD card and the system update can be carried out on this page. Where, the need to update the file name corresponds to the match, for example:

main_app_v1.0.bin , rootfs_uclibc_64k_v1.0.jffs2

Select "Yes" to upgrade and the following message will appear:" **UPDATING**..." while upgrading the system, as shown in Figure 5-21.
WARNING: Wait patiently for 2-3 minutes, during which time do not use the device and keep the power on.

If "**FILE ERROR"** or **"NO FILE"** appears, check if the update file is missing and if the version number is correct. After checking, update the system again.

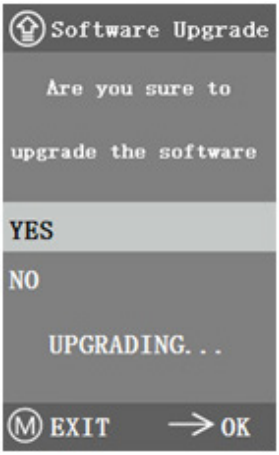

Figure 5-21

■ System update failed

When a system update fails, it switches to the tiny system, which is used for emergency updates.

1.After logging into the tiny system, **"Update failed. Please try again following the instructions".**

2.Insert the SD card with the update files, then the display shows **"Files detected, press Menu to update".**

3.When you press the Menu key Ⓜ the display will show **"Updating...". Please do not turn off the system."** When the upgrade is finished, the system will automatically reboot to complete the upgrade.

4.If the screen displays 'Version is illegal, please check the file' it means that the update file is missing, or the version number does not match. Check the version number of the file and update it again.

5.7.7 Version

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

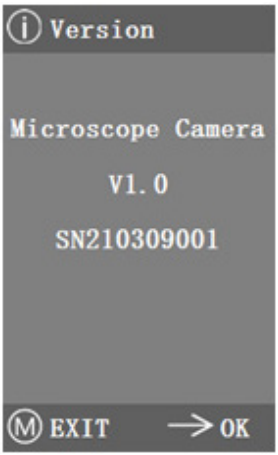

Figure 5-22

6 FAULT ANALYSIS AND TROUBLESHOOTING

1.When pressing the snapshot button, recording videos, taking pictures at a fixed time or entering the SD card management menu, “NO SD-CARD” will appear, as shown in Figure 6-1. Please insert the SD card with FAT32 file system into the SD card slot on the right side of the camera, and then perform the corresponding operations.

Figure 6-1

2. When pressing the snapshot button, recording videos and taking pictures at a fixed time, the message “insufficient available space” will appear, as shown in Figure 6-2. Please order the SD card space on the computer before inserting the camera for use.

Figure 6-2

3.The image on the camera screen appears with a wavy pattern phenomenon, open “Other settings” - “Power frequency”, select the appropriate power frequency.

4.The image is blurred and out of focus. Please change the objective lens or microscope to observe again.

5.If an unknown problem occurs and cannot be solved by yourself, please press the power button for 10s to reset. If it can be reproduced successfully, please contact your dealer for technical support.