BETEX
MAINTENANCE TOOLS ®

USER MANUAL

Monitoring
BETEX® Endoscope

HURYZA

C E

Contact

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ISO	ISO 9001: 2015

Warning!

Read the manual and safety instructions before operating the device
Check all parts for possible damage during transportation. In case of damage, please contact the carrier immediately. Because our products are continuously subject to improvements, we reserve the right to make changes.

Vor inbetriebnahme die betriebsanleitung und die sicherheitsvorschriften aufmerksam lesen
Alle teile auf möglichen transportschaden kontrollieren. Eventuelle schäden umgehend der spedition melden. Da unsere produkte ständig verbessert werden, behalten wir uns änderungen vor.

Antes de la primera puesta en marcha, lea atentamente el manual de uso y las instrucciones de seguridad
Revise todos los elementos para detectar posibles daños sufridos durante el transporte. En caso de observar algún daño, avise inmediatamente a la empresa de transporte. Debido a que nuestros productos están continuamente sujetos a mejoras, nos reservamos el derecho de realizar cambios.

Lisez le mode d'emploi et les consignes de sécurité avant la mise en service
Vérifiez pour l'ensemble des pièces que celles-ci n'ont pas été endommagées pendant le transport. En cas de dommages, avertissez immédiatement le transporteur. Nos produits étant constamment améliorés, nous nous réservons le droit d'apporter des modifications.

Lees voor ingebruikname eerst de gebruiksaanwijzing en de veiligheidsvoorschriften
Controleer alle onderdelen op mogelijke transportschade. Waarschuw bij schade onmiddellijk het transportbedrijf. Omdat onze producten voortdurend worden verbeterd, behouden wij ons het recht voor om wijzigingen aan te brengen.

ENGLISH

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1. Introduction

This product adopts 3.5-inch TFT daylight display, 0.69MP ultra-clear camera, the probe can bend at a maximum angle of 210° in one direction, the waterproof level of the insertion tube is IP67, oil and corrosion resistance, and the standard model can withstand a maximum temperature of 60°C. Optional high-temperature cooling device can withstand high temperatures of 200°C, can be used in harsher environments.

2. User notice

2.1 Uses and scope of application
This product has the characteristics of real-time image display, suitable for detection, repair and maintenance and other related fields, can observe the parts in real time without disassembling, and can observe other confined, curve, dark and space which human eyes couldn't see directly.

2.2 Repair and refit
This product has no spare parts for the user to maintain, do not try to disassemble, refit and repair. So if the damage and loss to the users caused by that, Bega Special Tools will not bear any responsibility. The maintenance service of this product is only provided by Bega Special Tools and authorized dealers.

2.3 Safety precautions
1. Prohibit use this instrument to observe human body or animal body;
2. Prohibit work under charged condition in order to avoid electric shock;

3. Do not contact the end of the lens directly in the process of use, especially pay attention to the use of endoscope in the high temperature environment, at this time the touch end may cause burns;
4. Do not look closely at the strong light source emitted from the endoscope lens at the end, avoiding the influence of strong light on eyesight;
5. Do not force excessive bending, stretching, twisting and rolling the pipeline, otherwise it may cause damage to pipelines or equipment;
6. Long term use of this product will cause the lens to stain, resulting in blurred picture and affecting data collection. Please wipe the lens with alcohol before use;
7. Keep the insertion tube away from any liquid other than water, brine, oil and light oil;
8. When the instrument is used up, please clean the front end of the insertion tube in time to prevent corrosion.
9. If the outer braid of the insertion tube is hooked by burrs, etc. During use, do not pull the insertion tube outwards violently. Try to push forward firstly and carefully pull out the insertion tube.
10. During the operation, please move the joystick slowly. If the equipment is abnormal, stop the observation immediately. After adjusting the joystick to the middle position, carefully remove the insertion tube from the device under test and shut it down. Please contact the manufacturer or dealer in time.
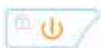
3. Method of operation

1. Take out the instrument: loosen the lock of the instrument outer box, take out the instrument host at once. Please discs out and cling to the probe, avoiding collision probe and scraping probe lens.
2. Start-up preparation: check whether all parts of the equipment are in good condition,then install battery and TF card.
3. Insert the tube: insert the insertion tube into the equipment gently.
4. Adjust the brightness: adjust the brightness of the light source to get the appropriate illumination to make the picture achieve the most obvious effect.
5. Detection operation: during observation, the direction of the probe is controlled through the operation of the joystick, and the images and videos are taken at the same time.
6. Insertion tube recovery: move the joystick to the middle position, make sure the inserted tube is in straight state, then pull it out slowly.
7. Receiving instrument: after use, turn off the power switch, remove the battery, put the instrument in the portable box, insert the tube plate well, ensure that no part will be squeezed to the lid and close the case.

4. Operation guide

The BETEX Endoscope mainly has 3 working modes, they are: "Real time detection mode", "Playback mode", and "System settings mode". When turning on, it enters to the "real time detection mode". Details of the various modes and the key functions, please refer to the "Figure 1. Button function list".

Figure 1. Button function list

Button	Name	Real time detection mode	Playback	Video play	System setting	Time setting
On/Off	Real-time detection / Image freezing	-				
Upward	-	Page up	-	Upward	Number increase	
Return / Playback	Preview photo / video	Return	Exit	Return	Exit	
Menu / OK	Enter menu	-	-	Confirm	OK	
Downward / Switch for photo and video	Switch for photo and video	Page down	-	Downward	Number reduction	
Brightness controll	Adjust the brightness level of the LED light					
Joystick	Control the direction of the probe: Up / Down / Left / Right					

Real-time detection mode:
Press and hold the power button for 3 seconds, and the device will enter the realtime detection mode by default. Under this mode, the user can observe the image detected by the camera through the host screen; control the probe movement and speed by joystick.

1. Press ⬙ button to adjust the brightness of LED lights, 7-level adjustable, the icon "⬙" in the upper right corner of the screen shows the current brightness.
2. Press the "🔴" button on the back of the main unit to take a photo. The "📷" icon is displayed by default in the upper left corner of the screen, indicating that the camera is currently in the camera mode. The icon "📹" indicates that the recording mode is currently in progress. The "⬙" button on the main unit panel can switch between the photo / video recording mode.

System setting mode
In the real-time mode, press the setup menu to enter the system setting mode, in which the following system parameters can be set:
3. Image zoom: The up button presses the real-time image to zoom in, the down button image zooms out, and the number in the upper right corner of the screen indicates the current zoom factor, which can be magnified up to 4 times.
4. The watermark information function could be selected to turn off/on.
5. Image forma could be stored in JPEG / BMP.
6. Time and date setting.
7. Language: Simplified Chinese, Traditional Chinese, English, Japanese, Korean, French, German, Portugese, Spanish, Russian, available in ten languages.
8. Format the memory card, please use it with caution.
9. Restoring the default settings will restore all device settings to factory state.
10. Select the current version information of the system and perform system upgrade settings.

Playback mode
In the real-time detection mode, please press the return / preview button "⬙" to enter the playback mode. Images and videos are stored separately and previewed in a list. The current file information will be displayed at the same time as the preview. After the file is selected, the icons "▶" and "⬙" appear on the interface, and the current file can be viewed or deleted in full screen.
1. In full-screen viewing mode, there are 7 icons at the bottom of the screen: "+ / -, Left, / Right, Up / Down, Return", which can zoom in / out, move to the Left / Right, Up / Down, and return to previous menu. The Left / Right. Up / Down keys are only available under the enlarged images and view the images.
2. First select the file you want tot remove. When "√" and "X" appear on the inferface, "X" means cancel the deletion operation, file will be deleted directly when you select "√".

5. Reading photos and videos files

Please remove the TF card from the host card slot, insert it into the card reader. The data could be read directly through the computer. Storage path: "My Computer\ Removable Disk\DCIM". Note: Please do not pull out the TF card when reading data, otherwise abnormal errors may occur.

6. HDMI external output

The device host can be connected to the display through the mini HDMI cable, and the display will directly show the image detected by the camera.

7. Shutdown

Press and hold the power button for 1~2S, the screen will display the shutdown screen. It usually takes a few seconds to save the system parameters and files. The device will shut down after saving.

8. Charging

The " 🔋 " in the upper right corner of the screen displays the current battery level. When the battery is running out, please charge the device online through the Micro USB interface of the host. Note: This interface does not have a data transfer function.

9. Replace the insert tube

Part 1: Installation of insertion tube
- Step I: Please insert the tube from the opening at the top of the main unit so that the triangular arrow on the top cover is aligned directly above the opening.
- Step II: Lock the main unit and the tube with a nut to complete the installation.

Part 2: Removing the insertion tube
- Remove the nut by rotating it and push the cushion rubber sleeve up by hand to remove the insertion tube.

10. Configuration

- Videoscope host X 1
- Detachable magnetic base X 1
- Instrument case X 1
- Card reader X 1
- 8G TF card X 1
- Rechargeable lithium battery X 1
- Charger X 1
- Lanyard X 1

11. Maintenance

- Please keep the device horizontally in the instrument case and store it at room temperature for clean, dry and stable place.
- It is strictly forbidden to store the instrument in a high temperature, high humidity, strong light, strong earthquake, high dust and strong radiation, pollution or corrosive environment.
- Do not collide the instrument with other objects during storage.
- When the product is not used for a long time, please take out the battery and check the function of the instrument regularly.

12. Trouble shooting

Problem	Reason	Solution
Boot without reaction	No battery or power shortage	Charge or install battery
Auto shutdown	Battery power shortage	Charge or change battery
Boot screen freezing	System boot failure or battery power shortage	Remove the battery to re-install and restart or charge
The image cannot be recorder or found	The capacity of TF card is not enough	Replace TF card or delete useless files

13. Technical data

Camera	
Probe diameter	Φ6±0.1mm
Probe material	Titanium alloy protective shell
Pixels	690,000 pixels
Depth of field	25-100mm
Field of view	70°(120°high temperature lens optional)
View direction	Front

System	
Compatibility	Replaceable consumable tungsten braided insertion tube
Tube length	1 meter
Probe Control	Mechanical 360°all-way articulation
The minimum bending angle of the insertion tube in a straight state	≥210°
Illumination Type	Front-LED light guiding(LED light life ≥30,000 hours)
Illuminance	Maximum 20000lx
Digital zoom	Supports 4x zoom in real time, 8x zoom when playback
Brightness Level	Manual 7-level adjustment
White balance	Automatic white balance
Display	3.5 inch TFT daylight display, visible under sunlight
Image resolution	960x720
Photographing and recording function	Yes
Document format	Image: BMP/ Video: MP4
Image preview	List preview mode, full-screen view optional / time watermarking.
Memory	Standard 8G capacity TF card, maximum support 32G
Equipment durability	Buffer protection device for connecting main engineand
Protection device	Wear-resistant pipe
Insertion tube	Oil resistant and anti-corrosion
Menu language	Chinese, English, Russian and other eight languages

Host	
Host Dimension	240mm*102mm*126mm
Host weight	≤0.45kg(with battery)
Instrument Case	411mm x 321mm x 165mm
Water proof	Host IP55, Probe IP67
Falling grades	1m drop
Input and output port	HDMI

Battery	
Power	18650 rechargeable lithium battery,real-time online charging.
Battery	4.2v, 3200mAH
System operating time	≥4 hours (1 battery)

Operation Environment	
System operating temp	-10 ~ 50°C
Tip operating temp	-20 ~ 60°C
Storage temperature	-20 ~ 60°C
Relative humidity	15 ~ 90%

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