Industrial Videoscope
Users Manual

COANTEC C50 Series

Before using，do read the manual

Copyright declaration

Attention:

Our company is committed to improving the function and the quality of the service of the product constantly, so the right to change the contents of any product and software described in this manual, as well as the content of this manual, is reserved without prior notice. We have carried out strict collation and repeated checking of this manual, but we can not guarantee that we can avoid errors and omissions completely. This manual is only used as a guide to help you correctly use Coantec products, but does not represent any description of the hardware and software configuration of the product.

Any questions,please contact our after-sales personality by tel:+**86-755-89728626**

Catalog

1. Users notice

1.1 Uses and scope of application

This product can only be applied to the real-time detection and analysis in the industrial field. It can directly observe whether there are defects or anomalies on the inner surface of the pipe, turbine, cylinder, engine and other devices. This product has direct visual characteristics, can take photo and video in real time, providing users with appropriate data collection.

1.2 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,Shenzhen Coantec Automation Technology Co., Ltd. will not bear any responsibility. The maintenance service of this product is only provided by Shenzhen Coantec Automation Technology Co., Ltd. and authorized dealers.

1.3 Safety precautions

⚠ **It is not appropriate to control the operating handle for a long time in the maximum bending angle during operation, which will make the equipment in high load state and affect the service life of the equipment.So please control the maximum bending angle within 40 seconds.**

⚠ **When using this product, please comply with the following contents:**

1) Prohibit use this instrument to observe human body or animal body，our company does not bear any relevant risk.；

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 contact 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) If there is any abnormality in the angle adjustment operation, stop the current operation and turn off the machine, then contact the supplier；

8) Keep the insertion tube away from any liquid other than water, brine, oil and light oil；

9) When the instrument is used up, please clean the front end of the insertion tube in time to prevent corrosion.

2. COANTEC C50 Product instruction

COANTEC C50 (hereinafter referred to as C50) series industrial videoscope is a portable and easy to use,360 degree arbitrarily oriented industrial videoscope, researched and developed by the Shenzhen Coantec Automation Technology Co., Ltd. This product adopts a hand-held design,Bright 5 inch LCD sunscreen, high definition image sensing technology.The image is more HD and can be photographed and taped.The probe is corrosion resistant, wearable, waterproof and dust-proof, meeting the requirements of IP67. It can be widely used in many industrial fields such as special inspection, electric power, automobile, machinery, aviation, pipeline and container.

2.1 Operation Environment

Host System Working Temperature	-10°C~40°C (when 0°C below, the display needs preheating)

Camera Working Temperature	-20°C~75°C， when 0°C below, please reduce oriented operation.
Store Temperature	-20°C~60°C
Relative Humidity Maximum	80%, non-condensing

3. Operation process

1) Take out the instrument:Press the lock to open the instrument case,take out of the instrument main unit while drawing out the tube and holding the probe,to avoid impact the probe and scratch the lens.

2) Ready to start: install battery and SD card.

3) Insert the pipeline: insert the insertion tube into the equipment.

4) Adjust the brightness: adjust the brightness of the light source to get the appropriate illumination to make the picture achieve the best 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: confirm that the probe of the industrial endoscope inserted tube is in the unlocked state, so that it can automatically restore to the straight position and then slowly extract it.

7) Storage instrument: After use, turn off the power switch, remove the battery, put the instrument into the carrying case, and insert the insertion tube to ensure that no part will be squeezed by the cover and close the upper cover.

4. Operation guide

4.1 Button Introduction

C50 button and function interface schematic diagram is shown below （Figure1）。

Figure1

① Power switch: switchgear for control equipment.

② Storage card slot: you need to install a storage card for storing JPEG/BMP pictures and MP4 video files. If you do not install the storage card, press the photo key / look back key will prompt "no SD card was detected, please insert SD card".

③ HDMI high definition output interface: used for external display.

④ Preview key: back to the JPEG/BMP picture file and MP4 video file, this mode can take full screen view / play, file delete, file name editing, add notes and so on.

⑤ Menu Setting key: for function settings.

⑥ Lock bit step key: set the movement mode of the front end probe, switch the lock

step / unlock follow mode.

⑦ Control rocker: control the motion direction and angle of the front end probe, this key has the function of direction navigation, and also has auxiliary function under different operation mode, and press the middle OK button to express it.

⑧Photo / video switch key: switch camera mode / video mode.

⑨Brightness adjustment key: adjust the brightness of the LED lamp on the front end probe.

⑩Speed adjustment key: adjust the movement speed of the front end probe.

⑪Photo / video key: take pictures in the photo mode, take video or long press to capture in video mode.

⑫Charging port: the power adapter can be used to supply the equipment directly or to charge the battery in the device.

4.2 C50 Work Mode Quick Start Guide

C50 industrial endoscope system mainly has 3 working modes, which are real-time detection mode, playback mode, and system setup mode. After the system is switched on the system, the real-time detection mode is entered by default. Please refer to figure 1 button function list for details of button functions under different modes and sub modes.

Figure 1 Button function list

Button shape	Button name	Real-time detection	Playback	Video play	system setting	time setting
	Setup Menu	Entry system and setting	return	return	exit setting	exit setting
	Locking step	Lock step /Unlocking and following	---			

		probe motion mode				
	Playback	Enter into Playback	Enter into real-time detection	---	---	---
	 UP	Control the probe to move up	the previous option	---	select the previous setup item	increase the number
	 Down	Control the probe to move down	the next option	----	select the next setup item	reduce the number
	 Left	Control the probe to move left	the previous file	Fast forwar d ---	---	confirm and move the previous
	 Right	Control the probe to move right	the next file	fast back---	---	confirm and move the next
	 OK	---	Confirm selection	video play start / pause	select settings	confirm and move the previous
	photo/video swift	photo/video swift	---			

 On the back of the endoscope	photo/ video	Photo or video	When the photo / video switching key is taken in the photo mode, it can be photographed as a photo key; when the photo / video switching key is in the video mode, it acts as the video key. Press the video immediately and press the video once again. In the process of video recording, press this key and can be caught.
	Brightness adjustment	adjust the luminance of the probe LED lamp	---
	Speed regulation adjustment	Adjust the motion speed of the front end probe	---

4.3 Battery disassembly

C50 uses 3 pcs 18650 rechargeable lithium batteries to supply power. Please follow the following steps to remove and install the battery.

1) Press the battery button on both sides of the main engine at the same time, open the battery back cover, and remove the battery along the arrow direction (Figure. 2).

2) Install the battery according to the positive and negative pole instructions

(Figure 3).

Figure 2

Figure 3

3) Align the buckle of the battery cover with the slot of the body and firmly cover the back cover (Figure 4)

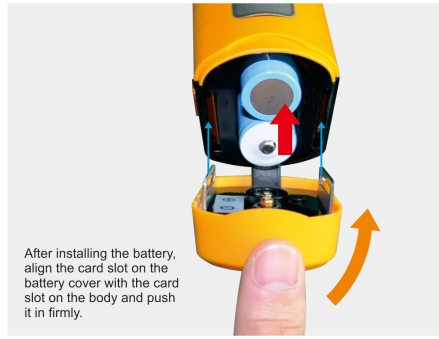

Figure 4

4.4 Boot preparation

1) Make sure that the insertion tube and lens are in the straightened state before starting the work; the steering operation is strictly prohibited when the insertion tube is in the collapsed state.

2) Press and hold the power button for 3 seconds to turn on the host, display the boot interface (Figure 5). After the boot screen is displayed for a few seconds, the password window will pop up (Figure 6). This password function can be selected in the menu settings.

3) If the SD memory card is not detected by C50, the icon without memory card will appear in the upper right corner of the screen (Figure 7). Please insert the memory card and make sure the contact is good.

Figure 5

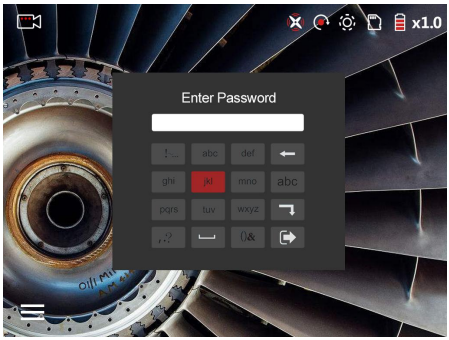

Figure 6

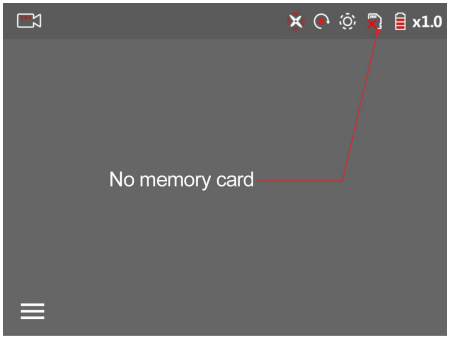

Figure 7

5. Function Introduction

5.1 Menu Settings

In the real-time detection mode, press the setup menu button MENU to enter the system setup mode (Figure 8), in which the image and system parameters can be set. Image zoom, image display, reference line, watermark information, browsing mode, picture format, browsing navigation, image flip, image size,time and date, power-on password, system upgrade, etc. can be set as needed.

1) Picture zoom function, which can adjust the real-time detection screen by 4.0 times (Fig. 9)
2) The image display is divided into three different effects: color, black and white, and negative.
3) The coordinate reference line can be selected to be on/off. When turned on, the screen will display the coordinate reference line (Figure 10).
4) The watermark information function can be selected to be turned on/off. When turned on, the watermark information will be displayed in the lower right corner of the screen (Fig. 11), and the captured photo will automatically display the watermark.
5) Browse mode is divided into list mode (Figure 12) / nine-square grid mode (Figure 13).
6) Image format selectable JPEG/BMP.
7) Browsing navigation function can be selected to be on/off. After opening, the

picture is viewed in full screen in the look back mode, and the middle picture in the upper right corner guides the enlarged position.

8) Image size can be selected from 1280*720/960*720

9) Real-time detection screen up and down flip function (Figure 14).

10) Time and date setting.

11) Language selection.

12) Format memory card.

13) Restoring the default settings will restore all device settings to their factory state.

14) Power-on password function can choose to set power-on password / cancel power-on password.

15) Upgrade the system, mainly for manufacturers and customers to upgrade the system.

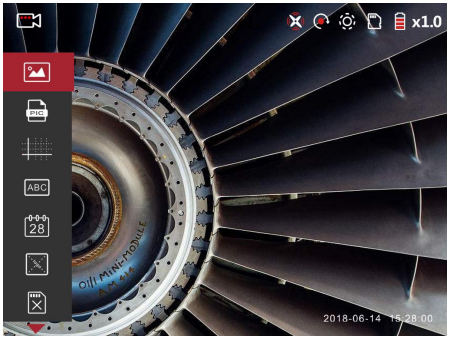

Figure 8

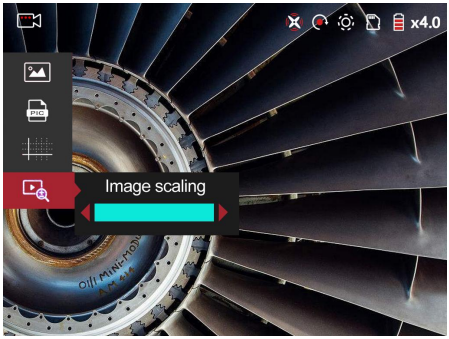

Figure 9

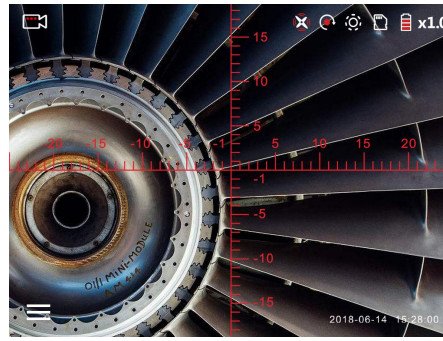

Figure 10

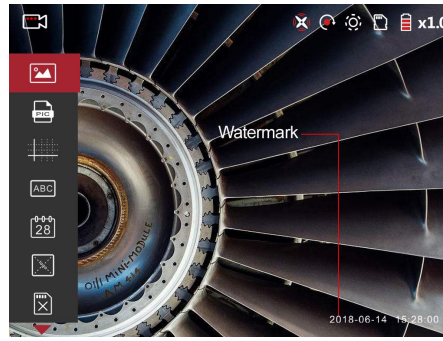

Figure 11

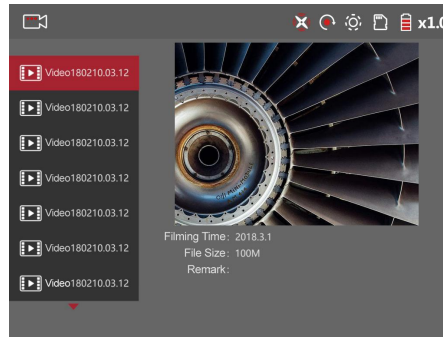

Figure 12

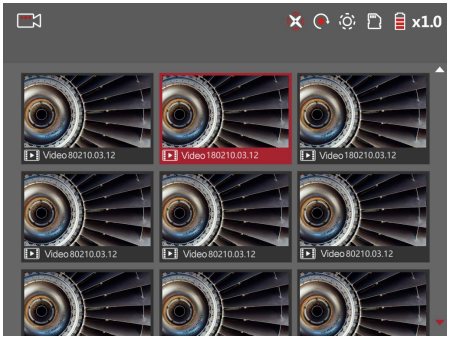

Figure 13

Figure 14

5.2 Lock/bending control

The control rocker in the middle of the instrument can realize 360 degree arbitrary angle steering control of the front end probe. When operating, be sure to slowly move the rocker for bending control to extend its life. The movement of the probe is divided into two movement modes: follow and lock step. The lock step button  is used to switch. The small icon in the upper right corner of the screen will display the current status:

1) Follow mode  : the probe follows the direction of movement of the rocker, and the rocker is released, and the probe is automatically reset. This mode helps the user to quickly find the target to be tested;

2) Lock step mode  : the rocker is moved, and the probe performs micro-step movement to realize precise control of the movement direction of the front end probe, and is convenient for fine observation of the measured object.

Note: If the bending control mechanism stops rotating, or if there is any abnormality in the operation of the endoscope, stop the observation immediately, unlock it, release the rocker, and confirm that the probe is in the follow mode, the probe should be in the reset state, and then carefully take out the endoscope insertion tube from the device under test; if you hear the harsh current inside the instrument when you move the joystick, do not force it to bend further.

5.3 Playback mode:

Press the playback preview button  to enter the playback mode. If there is no file in the memory card, it will be prompted on the screen; when there are files in the memory card, you can view JPEG, BMP image files and MP4 video files. Image/video files are automatically sorted and stored (Figure 15) and can be previewed as needed. Move the joystick up or down to switch the picture/video preview. Press the OK button  in the middle of the joystick to select the following operations:

1) View the picture in full screen. In this mode, the picture can be zoomed 8 times. When zooming, the picture-in-picture guides the enlarged area (Figure 16). The PIP function can be selected to be on/off within the settings.
2) Play video files (Figure 17).
3) Delete files (Figure 18).
4) Edit the file name (Fig. 19), add a comment (Fig. 20), and so on.

If too many files are stored, the device will need longer time (600 files at least 10 seconds)

to initialize the file system at start up. If you press the playback preview  at this time, the system prompts the file is in loading mode. This prompt box can exit by pressing the setup menu key 

. After the system initialization is finished, users can operate normally.

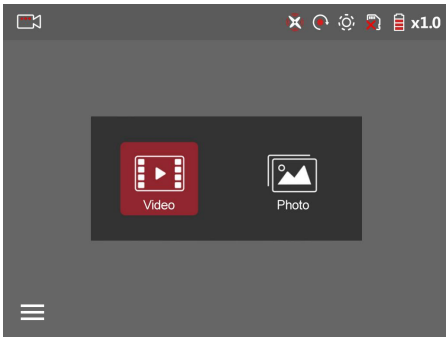

Figure 15

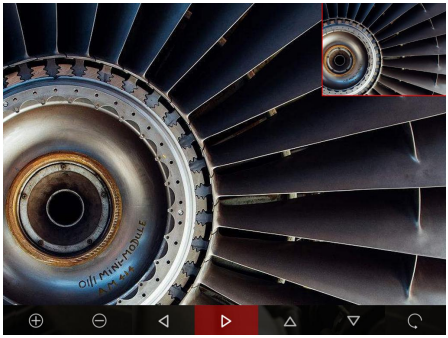

Figure 16

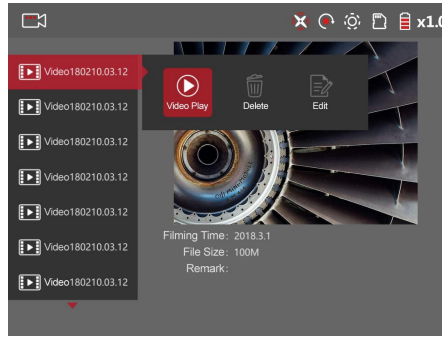

Figure 17

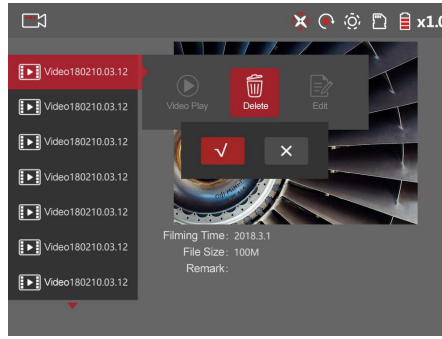

Figure 18

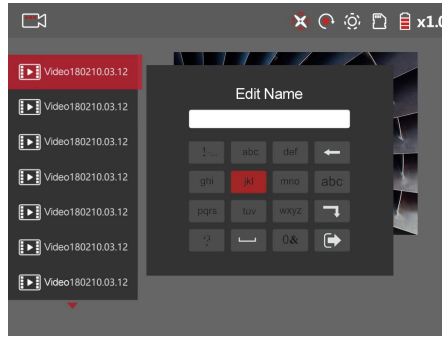

Figure 19

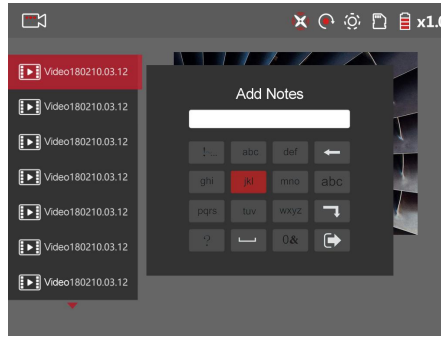

Figure 20

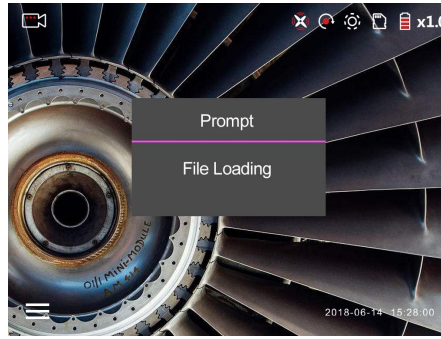

Figure 21

5.4 Photo/Video switching

1) Photo: Press the camera/video switch button  to adjust to the camera mode. The icon in the upper left corner of the screen displays the camera mode (Fig. 22). Press the camera button  at the handle of the instrument to take a photo.

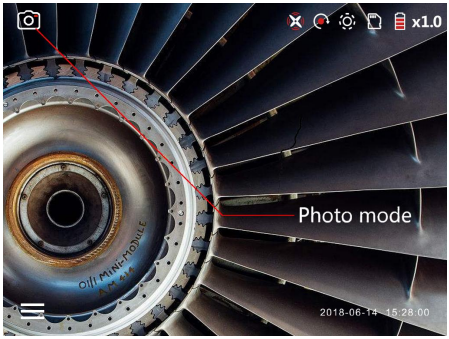

Figure 22

2) Video: Press the camera/video switch button  to adjust to the recording mode. The icon in the upper left corner of the screen shows the recording mode (Fig. 23).Press the camera/record button at the handle of the instrument  to start recording. At this time, there is a recording time prompt in the upper left corner of the screen. In the video mode, long press the camera/record button  to capture the video during the recording process, and short press to end the recording.

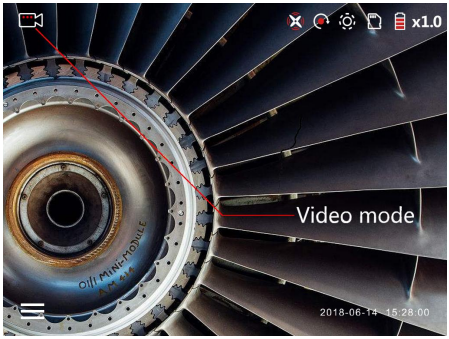

Figure 23

To prevent file loss due to excessive recording time, the C50 limits a recording time to no more than 15 minutes. When a recording time reaches 15 minutes, it will be automatically stored and the next recording will start automatically.

5.5 LED brightness adjustment

In real-time detection mode, the brightness adjustment key can adjust the brightness of the front LED light. Press  , the brightness changes sequentially (Figure. 24). The brightness of the LED light can be adjusted to 8 levels, and the current level is displayed in the upper right corner of the screen (Figure. 25), and will be automatically extinguished in the playback mode.

Figure 24

Figure 25

5.6 Speed adjustment

In the real-time detection mode, press the speed adjustment key  , can switch the motion speed of the front end probe. The speed adjustment has two mode: fast  and

slow  which is displayed on the upper right corner of the Figure.

5.7 Battery state detection

The battery icon on the upper right corner of the C50 will display the current battery state when it is turned on. When the battery power is running out, the system will display a low battery warning (Figure 26) and automatically shut down after 5 seconds. Please replace the 3 full battery of 18650 batteries or charge the battery, then continue to use after full electricity.

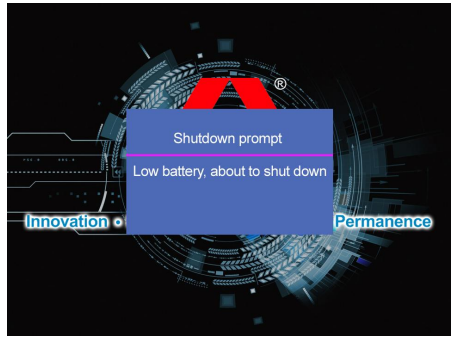

Figure 26

5.8 Reading photos and video files

Remove the SD memory card from the storage slot of the C50 device and insert it into the SD card slot of the computer or the card reader (Figure 27), and read the data in the card.

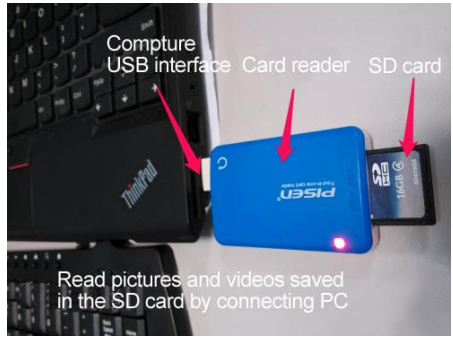

Figure 27

5.9 HDMI external output

Using the HDMI data line, one end is connected to the HDMI output port of the C50 device (Figure 28), the other end connects the HDMI input end of the external display (Figure 29), and choose HDMI signal on the external display. At this time the image of the C50 real-time detection is closed, and the image inspected by the probe is displayed directly on the external display (Figure 30).

Figure 28

Figure 29

Figure 30

5.10 Shutdown

After the operation is finished, long press the power key for 1~2 seconds, and the shutdown screen will be displayed (Figure 31). The system will be closed. Shutdown usually takes a few seconds to save system parameters or image data files.

Figure 31

6. Instrument storage

- Please keep the instrument at regular room temperature, keep it clean, dry and stable,and keep the instrument in a horizontal state;
- It is prohibited to store the instrument in high temperature, high humidity, strong light, strong shock, high dust, pollution or corrosive environment;

- Do not collide the instrument with other objects during storage;
- When the product is not in use for a long time, please take out the battery and regularly check the operation of the instrument.

7. Solutions to common problems

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 recorded or found	the capacity of TF card is not enough	replace TF card or delete useless files
Forget power-on password	/	connect the manufacturer
Inserting SD card,indicate "card error" or "format"	deviation in the card position	reinsert the SD card