



USER MANUAL

SD20



720P ☐
1080P ☐



Action Camcorder



Hands free camcorder technology



Hands-free Camcorder

170°

Ultra-wide Angle of View



F2.8
Glass Lens



Remote Control with Clip
and Strap Interface



Optional Cyclic
Recording Function



Waterproof Case



Auto Continuous Shoot



Laser Designator



Digital LCD Screen



720P/1080P
High-definition Images



30-pin Interface for Lots
of Additional Application
Functions



Voice-activated
Recording



Support HDMI output



Maximum
storage capacity

-30°C

Ultra-low Ambient
Temperature

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Precautions

- 1.This camera is a precision product. Please do not drop it or hit it physically.
- 2.Keep the camera away from any object with a strong magnetic field, like magnet or electromotor, or any object emitting strong radio waves, like antenna, as a strong magnetic field may cause failure to SD20 or cause damage to image and audio data.
- 3.Do not expose the camera to high temperature or sunlight direct.
- 4.Keep the Micro SD card away from the strong magnetic field of TV, speaker, or magnet. Do not put it in any place with potential static, or the data stored in it may be lost.
- 5.If the camera overheats, smokes or smell in charging, please disconnect the power supply immediately to avoid the risk of fire.
- 6.Put SD20 beyond the reach of any child for charging, as the power cord may cause an accidental suffocation or electric shock to the child.
- 7.Please keep this product in a cool, dry, and dust-free place.
8. RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

Preface

Thanks for purchasing AEE hands-free mini high-definition digital camera SD20. With small size and integrated design, hands-free SD20 is easy to operate. Supported by high-definition and dynamic image capturing technology, it can record real scenes and various activities anytime anywhere, so that you can share wonderful recording experiences with your family and friends.

This Manual specifies how to use and install SD20 and provides detailed information, including the instructions on use, operation and installation as well as the technical specifications. Please read this Manual carefully to understand it before use and keep it well for long-term reference.

Product Certification

As certified by such authoritative organizations as FCC and CE, this product complies with the recommended standards and thus guarantees the user's safety.

Product Overview

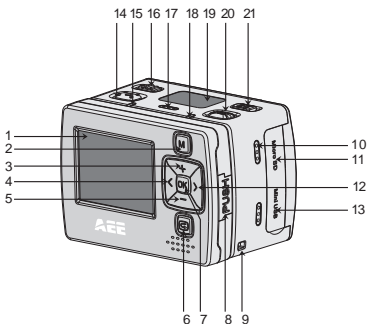
As a multifunctional non-handheld high-definition digital sports video camera, this product can perform many leading functions such as high-definition digital photographing, voice storage, real-time display, voice-activated video recording, photo shooting, time display, remote control, digital zoom, TFT color screen, multi-functional keys, laser indicating, high-speed USB data transmission, HDMI high-definition output function, low power prompt, memory card space prompt and USB charging. Supplemented by the accessories, this product integrating multiple patented technologies can be used to photograph anything, anytime, anywhere.



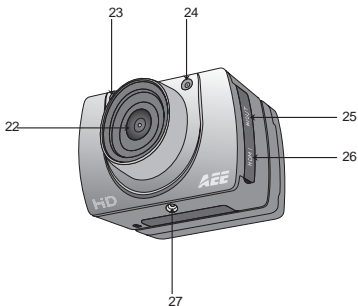
Do not litter! Please recycle them!



Product Structure (outline drawing)



- | | | |
|---|---|-----------------------|
| 1 TFT display screen | 10 Buzzer | 19 LCD segment screen |
| 2 .MENU key | 11 SD card slot | 20 Shutter |
| 3 .Up key | 12 Right key | 21 .VOX switch |
| 4 .Left key | 13 .USB output interface | |
| 5 .Down key | 14 Record | |
| 6 .Recall key | 15 .Green indicator of
video/voice recording | |
| 7 .OK key | 16 .Power switch | |
| 8 Push button of TFT
display screen clip | 17 Microphone | |
| 9 Lanyard hole | 18 Red indicator of working/charging | |



22 .Camera Lens

23 .Indicator (red) of video recording/shooting

24 .Laser transmitter

25 .AV output interface

26 .HDMI output interface

27 .Thread interface

Functions & Features

- > 170°extra-large wide-angle lens;Aperture f/2.8;
- > 5.0 mega high-definition camera, supporting 720P/1080P high-definition video recording;
- > Photo shooting function, supporting a maximum resolution of 3200x2400;
- > Laser indicating function;
- > 4X digital zoom function; Applicable for 720P mode or below
- > Laser synchronous video recording function;
- > Video loop coverage function;
- > Voice recording function;
- > With LCD segment screen and split TFT main screen ,to display various working states in real time;
- > With waterproof case, the waterproof grade is IP68, the waterproof depth is up to 60 meters, and it has two back cover designs;
- > TFT display screen, to play and recall videos, and shoot;
- > Voice-activated video recording function, to support voice-activated recording function and only record the selected videos, supporting a longer standby time;
- > With built-in dismountable high-capacity lithium battery, it can be re-charged;
- > Better image effect, three video output modes available for your selection:
 - 1080P(1920x1080) 30fps/s, Applicable for 1080P models
 - 720P (1280x720) 60f/s, Applicable for 1080P models
 - 720P (1280x720) 30f/s, Applicable for 720P models
 - WVGA (848x480) 60f/s,
 - QVGA (320x240) 30f/s;
- > Battery power detection and Micro SD card free space detection;
- > High-speed dynamic video recording, supporting an instant response to bright and dark environments;

- >Auto exposure, auto white balance, easy to operate;
- >Delicate and stylish exterior design;
- >HDMI high-definition interface and AV output interface, to connect a high-definition display device or TV to view files;
- >Supporting a Micro SD card of 64G max.;
- >High-quality color fidelity, clearer and more realistic image;
- >It can remote control video recording, stopping and shooting of SD20 by using wireless remote control; unique code pairing function, avoiding interference of other remote control;
- >Recording MOV videos, to be directly played by PC or uploaded onto video websites;
- >Auto standby power-saving function;
- >Supporting fast forward and fast rewind, and skipping of contents in the next segment (when connecting with TFT screen player);
- >Supporting time setting (RTC function) and time superposition function;
- >Supporting USB2.0;
- >Built-in microphone, forming high-quality voice recording effect;
- >Various sport accessories, truly realizing the video recording of sports;
- >Good seismic resistance;
- >Various shooting modes available: Single shooting, three photos continuous shooting, continuous shooting;
- >Settings auto saving.

Installation

1:SD20 can be either handheld or realized non-hand-held use combining with various non-hand-held accessories.

The camera can be installed in where you want; or the camera can be installed in the water by the waterproof case to photograph scene in the water.

The installation is shown as follows:

1 Installation and removal of TFT display screen and main body



TFT display screen



Main body



Install TFT display screen onto the main body



Pull out display screen: Please pull out the display screen after pressing Push key .

2 Installation of waterproof case and main body



Main body



Waterproof case



Install main body into the waterproof case



Note to use waterproof case

- * :Handle with care to avoid damaging waterproof case caused by drooping or physical shock.
- * :Please clean with clear water as quickly as possible after using and dry out to avoid rusting.

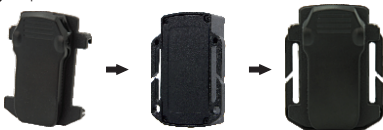
2. Installation of remote control

There is a separate remote control attached to SD20. Please install the remote control onto the correct position based on the accessories below:

1 Velcro



2 Clip



3 Binding tape (optional)







Operating Instructions:

Preparations before use:

(1) Start up and check the power of SD20


Turn the power switch to "ON", the system comes into play. After the red indicator is bright constantly, the corresponding icons on LCD segment screen will be lightened to enter normal preview state.

At this time, it can view the following items on LCD segment screen:

- A. Record mode: The current record mode can be viewed on the top left corner of LCD segment screen, " " indicates the video recording mode and " " indicates the voice recording mode;
- B. Photo shooting prompt: The shooting icon " " can be viewed on the LCD segment screen. The icon will twinkle once when shooting one photo;
- C. Power icon: The power icon " " can be viewed on the top right corner of LCD segment screen. The icon will be bright constantly after the system coming into play; and the disappearance of the icon means SD20 is shut down or enters the standby state;
- D. Video recording duration: Duration of the current video recording file is displayed on the middle line of LCD segment screen, such as "**005:20**". The video recording duration will start displaying when pressing "Record" key once, and it will stop when pressing "Record" key once again.


Note:


The video recording duration respectively on LCD segment screen and TFT display screen is displayed synchronously;

E. Indication of battery power: The battery power icon “” can be viewed on the bottom left corner of LCD segment screen and it will indicate the current battery power after starting up. More black grids indicate the higher power, and it is lower conversely.


Note:


The battery power indication icon will not display under standby or shutdown state;

F. USB connection: The USB mode icon “” can be viewed on the LCD segment screen and it indicates whether the machine is connected with the computer. The green indicator light on the left twinkles slowly. The icon will be lightened after connecting with computer in startup state and it will not be displayed when not connecting with computer;



G. TF card capacity indication: The TF card capacity icon “” can be viewed on the bottom right corner of LCD segment screen to indicate the capacity of TF card. More black grids indicate the higher spare capacity, and it is lower conversely. The green indicator light on the left remains on when the card is out of memory.

At this time, it can view the following items on TFT display screen:


A. Work mode: The video recording icon “” on the top left corner of TFT display screen indicates that it is in video recording standby state;

B. Battery power: The battery power icon “” on the bottom left corner of TFT display screen indicates the spare power of battery;

C. Resolution of video recording: 1080P/720P/WVGA/QVGA on the bottom left corner of TFT display screen indicates that the system is in 1080P/720P/WVGA/QVGA resolution video recording standby state;

- D. Spare storage capacity: Information of whether it has external card "" and spare storage capacity "" can be viewed on the bottom right corner of TFT display screen;
- E. It cannot respond to operations of "<" and ">" under the preview state;
- F. SD20 can be charged with the attached power supply or USB cable. The "Red Indicator of Working/Charging" on the top of the machine will twinkle slowly in charging and it will be bright constantly after fully charging. The charging duration is about 3.5h;

Note:

Before use, please check if there is enough battery power. In case of a low battery power, please charge SD20 via the attached power supply or USB cable. The "Red Indicator of Working/Charging" will twinkle slowly in charging and remain red with the battery icon "" displayed on the TFT display screen after charging.


(2) Format the Micro SD card

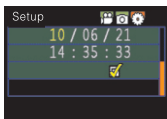
Please select a high-speed Micro SD card only and format it on SD20 before recording any video and voice or shooting any photo. If the Micro SD card has ever been used on other devices, please format it on SD20 before any operation for normal usage.

Note:


Please confirm whether files in internal memory of SD20 and in Micro SD card are needed before operating; Locked files of SD20 also can be formatted to remove;

(3) Set the date/time

In preview mode, press "M" key to enter the menu interface, press ">" key to shift to the setup interface "", press "-" key to select the menu "Date/Time", and then press "OK" key to enter the setup interface of "Date/Time". (Note: To press "M" key can exit from the setup interface)



The yellow number indicates the current cursor position. To press “<” or “>” key can move the cursor and select date or time. Press “OK” key to confirm, and this number will turn red and value of date or time can be changed.

Then press “OK” key again to finish; Finally, move the cursor to “” via “<” or “>” key and press “OK” key to confirm date or time changed.

Parameter Settings:



In preview mode, press “M” key to enter the menu interface, press “<” or “>” key to move the cursor left and right, and press “+” or “-” key to move the cursor up and down. After selecting the menu, press “OK” key to set the selected menu and to press “M” key again can exit.

(1) Setting of camera parameter:

a. Video image resolution: Select 1080P, 720P, WVGA or QVGA;

(720P models do not contain the setup options of 1080P models)

b. Laser synchronous shooting: Turn on or turn off the laser transmitter;

c. Shooting mode: Select video recording “” or voice recording “”;

Notes:

a. Under the voice recording mode, Press “Record” key once, the system starts recording, voice recording duration is displayed on the bottom of TFT display screen and the green indicator twinkles slowly; if press

“Record” key again, the system will stop and save the current audio file recorded, the green indicator is off and the red indicator remains bright (the corresponding operating prompt is on LCD segment screen), and it returns to the preview mode.

- b. The voice recording process only responds to operations of “Record”, “Shutdown” and “VOX Switch” key; if turn on “VOX Switch” in voice recording, the voice recording will be stopped and the file will be auto saved.
- c. The laser icon will be displayed on the top left corner of the preview interface when turning on the function of laser synchronous shooting, which indicates the system is in this shooting mode. At this time, the laser will be turned on when starting recording and it will be turned off when stopping recording.

(2) Setting of camera parameter:

- a. Single shooting: The shooting mode is auto set in single shooting when starting up every time; To press “Shutter” once can take one photo;
- b. Three photos continuous shooting: To press “Shutter” once can take three photos continuously;
- c. Continuous shooting: Take one photo every 2s/3s/5s/10s/20s/30s, till to press key to stop or the card is full, or the power is run out;
- d. Self-timer: Select the self-timer delay time (0s, 5s or 10s). Press “M” key to return to “Preview” state after selecting; press “Shutter” once, the system will start the timer and the self-timer indicator twinkles at the end of the delay time and it takes one photo. After finishing the self-timer for one time, the system will auto recover the shooting mode to single shooting.

If the 'Self-timer Delay Time' has been set, but the machine is restarted without pressing "Shutter" key, the machine will auto set the 'Self-timer Delay Time' at the state of 0s;

e. Image resolution: Select 3M, 5M or 8M;

(3) Setting of system parameter:

a. Key tone: Turn on or turn off the key tone;

Note:

Voice of photo shooting and video recording cannot be turned off through this item. It only turns off the key operation voice and there is no switch to turn off voice of photo shooting and video recording in the machine system.

b. Time display: Please set before using; the machine will auto record the shooting date and time when shooting image and display on the bottom right corner of the file;

c. Loop coverage: The video/audio file will be auto saved in segment once every 15 minutes when setting "Loop Coverage"; and if it is not set, the video/audio file will be auto saved in segment once every 30 minutes.

Note:

The current actual segment file is determined by the file size set, but not determined by the true time, that is to say, the file will be segmented more than 15/30 minutes at a dark environment.

d. Auto standby: Select the auto standby time of 0, 2 minutes, 5 minutes or 10 minutes. In case of no any mission and operation after selecting, the system will start timing and SD20 will turn off input and output to enter the standby mode at the end of the time set. If there is any operation in timing, the system will re-time. If the video recording or shutter is operated in the

standby process, SD20 will be waked up. The default standby time is 5 minutes when selecting to restore the factory default;

- e.TV output format: NTSC or PAL; the video format outputted to TV can be selected. If the selected format is changed, please unplug the AV cable and then reinsert it to update the parameters;
- f.Format: After confirming that all files recorded are not needed to be saved, all files can be removed by formatting.

Note: If there is no card inserted, the memory of the machine will be formatted; after inserting card, the system will format the card inserted, but not format the memory of the machine;

- g.Factory default: The operation restores the parameter settings to factory default. After restoring, the system will set the display mode of submenu of the "Menu" in English state. Press "M" key to enter the menu selection, press "<" or ">" key to enter the menu "Setup", press "-" key to select the option "Language", and then it can set in Chinese state. The system will set the time at 2011.01.01 after restoring factory default;
- h.Language: "English", "Simplified Chinese" or "Traditional Chinese" can be selected via left or right key;
- i. Light source frequency: Select the light source frequency 50Hz or 60Hz, depending on local grid frequency, in order to avoid the screen flickering in preview mode or in video recording;
- j. Date/Time: Time can be adjusted and changed. It will be displayed on the bottom right corner of the video file or photo file when recording or shooting;

Note: To press "M" key under the submenu may exit from it;

Operations:


1.Insert the Micro SD card.


Note:

Please select branded Micro SD card such as SD card of Toshiba and Kingston

2.Turn the power switch to “ON” to turn on SD20, and the red indicator will be lightened and SD20 will enter the preview mode.

Note:

a.In case of low battery power, you will find the battery icon “” and the message “Low Power” on the TFT screen.

b.If no Micro SD card is inserted, you will find the Micro SD card icon “” on the TFT screen.

3.Video recording:

(1)Manual recording:

Press “Record” key once in preview state, the system will start recording, the video recording duration will be displayed on the bottom right of TFT display screen, the “Green Indicator of Video/Voice Recording” and the frontal “Video Recording/Shooting Indicator (Red)” will twinkle slowly, and the recording duration on LCD segment screen is displayed normally. The video recording process only responds to operations of zoom in (“+” key)/zoom out (“-” key) function; if press “Record” key again, the system will stop and save the current video recording file, the frontal green indicator of video recording will be off, SD20 will return to the preview state, and the recording duration on LCD segment screen will be stopped displaying.

Note:


a.Turn the power switch to “OFF” in video recording, the system will save the current file recorded and then shut down;

- b.If the battery power is low in video recording, the system will save the current file recorded and give the message “Low Battery” on TFT display screen until SD20 is turned off or auto enters standby mode;
- c.If the memory space gets full in video recording, the system will save the current file recorded, give the message “Insufficient Memory” on TFT display screen, and go back to the preview mode. The video recording duration on LCD segment screen also will be stopped displaying;
- d.In cyclic recording mode, the system will auto save a file every 15 minutes and the capacity is about 500MB(720P)/650MB(1080P)
- e.After it is fully charged, it can continuously record 720P/1080P and the record time is about 2 hours and 30 minutes; it can continuously record WVGA and the record time is about 3 hours; it can continuously record QVGA and the record time is about 3 hours and 30 minutes. The continuous voice recording time is about 3.5 hours;
- f.In voice control mode, the system will start recording when the environmental voice is higher than 65dB and the green indicator will twinkle slowly; if the environmental voice is lower than 65dB and it lasts for 2 minutes, the system will auto save the 2-minute file recorded, the green indicator will be off, the red indicator will remain bright (the corresponding record stopping prompt will be displayed on LCD segment screen), and it returns to the preview state;
- g.To press “+” or “-” key in voice recording mode cannot execute voice increasing/reducing operation; however,

to press “+” or “-” key when recalling audio file can execute voice increasing/reducing operation;

- h. Connect the machine to high-definition display device with HDMI cable in preview state, the basic operation of the machine can be finished on the high-definition display device; however, the digital zoom function cannot be realized in 720P/1080P mode;

4. Photo shooting


You can set the image resolution before shooting photos. Press “M” key to enter the setup interface, press “>” or “<” key to move the cursor to “”, select the menu “Image Resolution”, and press “OK” key to enter the resolution setup menu. There are three resolution modes available for your selection:

- 3M: Photo shooting resolution of 2048x1536;
- 5M: Photo shooting resolution of 2560x1920;
- 8M: Photo shooting resolution of 3200x2400;


a. Manual shooting:

In preview mode, press “Shutter” once to shoot a photo with a “Click” sound, and the frontal red indicator will twinkle once (the photo shooting icon on LCD segment screen will twinkle once) and it will return to the preview state.

b. Three photos continuous shooting:

Press “M” key to enter the camera setup interface, press “>” or “<” key to move the cursor to “”, select the menu “Three Photos Continuous Shooting”, and press “OK” key to confirm. Press “M” key to exit the setup interface after setting. Press “Shutter” once at this time, and SD20 will continuously shoot three photos.

c. Continuous shooting:

Press “M” key to enter the camera setup interface, press “>” key to move the cursor to “”, select the menu “Continuous Shooting”, and press “OK” key to set the continuous shooting interval time as 0s, 2s, 3s, 5s, 10s, 20s, 30s. Press “M” key to exit the setup interface after setting the interval time. Press “Shutter” at this time, and SD20 will start shooting one photo every 2s, 3s, 5s, 10s, 20s, 30s, till to press “Shutter” key again to stop.


d. Self-timer:

Press “M” key to enter the camera setup interface, press “>” key to move the cursor to “”, select the menu “Self-timer”, and press “OK” key to set the delay time as 0s, 5s or 10s. Press “M” key to exit the setup interface after setting the delay time. Press “Shutter” once at this time, and SD20 will start the timer and shoot a photo at the end of the delay time.

Note:


- a. If the memory space gets full, the system will give the message 'Insufficient Memory' (viewing on TFT display screen), and go back to the preview mode ;
- b. The setting of self-timer delay time is in effective once.

5. Voice recording

Press “M” key to enter the camera setup interface, select the menu “Shoot Mode”, press “OK” key to enter the selection interface, press “<” or “>” key to select “”, press “OK” key to confirm your selection, and finally press “M” key to exit the setup interface. Press “Record” key to start recording, and the green indicator twinkles slowly, the TFT screen displays the voice recording icon, and the timer is started.

Note: In case of re-starting or the system is waked up, it will recover to video recording mode.


6. File recall

You can view the audio files, video files and photo files on SD20. Press "" key to enter the recall selection interface and press it again to exit. Select the menu "AV File" to view the audio and video files or select the menu "Photo File" to view the photo files. In case of many recalling files, time entering the preview interface will be extended.


(1) AV File


Select the menu "AV File" and press "OK" key to view the recorded audio or video files. Press "-" key to enter the thumbnail preview mode.

You can press "Menu" key to delete or protect them when viewing video or audio files.

- Delete: Delete the current file;
- Delete all: Delete all audio and video files under no protection;
- Protect: Lock files to protect them; the icon "" will appear on the upper left corner of each protected file; repeat this operation to unprotect the protected files; no operation can delete the protected files except formatting.


a. Audio file

Press "<" or ">" key to select an audio file, and to press "OK" key can play/stop it. In playing, you can press "+"key and "-" key to adjust the volume and press "" key to pause/ play the file.

Note: No function of fast forward and fast rewind in audio file. In playing video/audio files, to press "OK" key can enter file preview state; at this time, press "" key to exit from file recall mode.

b.Video file

When playing a video file, you can press the following keys to execute operations:





- “+”: Increase the volume;
- “-”: Reduce the volume;
- “<”: Fast rewind;
- “>”: Fast forward;
- “”: Press it to pause playing and press it again to resume playing;
- “OK” key: Start/stop playing video file.



Note: Fast rewind can be set as twofold or fourfold

(2)Photo file

Enter the photo file recall interface, press “-” key to preview the photo file thumbnails, and then press “OK” key to view the selected file.

When viewing a photo file, you can press the following keys to execute operations:

- “+”: Zoom in the current photo;
- “-”: Preview the photo file thumbnails or zoom out the current photo;
- “<”: Select the left photo, or press it to move the photo up in zoom-in mode;
- “>”: Select the right photo, or press it to move the photo down in zoom-in mode;
- “OK” key: To press “OK” key after zooming in the photo can move the photo horizontally and vertically via combining with “Up”, “Down”, “Left” or “Right” key.
- “”: Press it to exit the photo view interface;
- Press “Menu” key in view mode to execute the operations below:
 - ◆ Delete: Delete the current photo file (The deletion selection of “” and “” will appear after pressing “OK” key twice and select “” to delete) ;
 - ◆ Delete all: Delete all photo files under no protection;

- Protect: Lock files to protect them; the icon " " will appear on the upper left corner of each protected file; repeat this operation to unprotect the protected files; no operation can delete the protected files except formatting;
- Auto play: Auto play the photo files in the folder at an interval of 5s;
- DPOF: When viewing a photo file, if you press "M" key to enter the setup interface and select the menu "DPOF", the icon " " will appear on the upper left corner of this file.

About DPOF

As a standard to record the print orders sent to the Micro SD card, DPOF (Digital Print Order Format) is applicable to the photos shot by digital cameras. You can designate the photos to be printed and the number of their copies. The following operations can be executed if your digital camera is DPOF compatible:

Insert the Micro SD card into a DPOF compatible printer to output the photos as ordered.

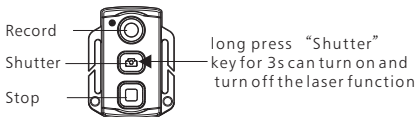
The printer compatible with your camera can follow the DPOF orders to print the photos.

Note:

- (1)The DPOF printing requires a Micro SD card with preset DPOF information. It will fail if you simply select the photos from the Micro SD card and try to print them.
- (2)Some DPOF compatible printers and digital photo developing shops may fail to print the photos based on the specific settings. If this is the case with your printer, please refer to the User Manual attached to it. In another case, please check the DPOF compatibility with the digital photo developing shop.
- (3)If the DPOF information of the Micro SD card has been set by another camera, please do not insert this card into SD20 to reset the DPOF information, or the DPOF information may be invalid or covered. Sometimes, special photo types make it impossible to set the DPOF information.

7. Remote control

You can use the attached remote control of SD20 to control the video recording, photo shooting, stopping and laser function turning on/off. The red indicator on the remote control will twinkle once when you press any of the following keys:



Please follow the steps below to code the remote control before use to realize the correspondence of remote control and SD20:

1. Turn off SD20, press and hold "Record" key, turn the power switch to "ON", and then release "Record" key. Press both "Record" and "Stop" key on the remote control once within 3s to finish the remote control code pairing process. SD20 will tick twice after coding the remote control successfully.

Note:

- a. Use wireless remote control to control SD20 can check whether the code pairing is successful. The control functions include: Video recording starting/stopping, photo shooting, waking in standby mode, and laser light turning on/off; SD20 will tick once for each operation. In case of video recording stopping or laser light turning off, SD20 will tick twice;
- b. Remote control range: Remote control within 15 meters in any angle horizontally without barriers;
- c. To press "Record", "Shutter" or "Stop" key on the remote control in standby mode can wake up the system;

8.Standby mode:

A.Non-voice control standby:

Push the VOX switch to “OFF” and turn the power switch to “ON”, the system will start working and it will enter preview state after finishing initialization. In case of no any mission and operation, the system will auto enter standby power-saving mode at the end of the auto standby time set. Press “Record” or “Shutter” key at this time, or remote control any key on the remote control, the system will be waked up.

Note:

- a:To press keys on TFT screen in standby mode cannot wake up the system;
- b:The LCD segment screen does not display anything in standby mode.

B.Voice control standby:

Push the VOX switch to “ON” and turn the power switch to “ON”, the system will start working and it will enter preview state after finishing initialization. In case of no any mission and operation, and the environmental voice is lower than 65dB continuously, the system will auto enter standby power-saving mode at the end of the auto standby time set. Press “Record” or “Shutter” key at this time, or remote control any key on the remote control, the system will be waked up. When the environmental voice is higher than 65dB, the system will wake up and enter video recording state.

Note:

- a:To press keys on TFT screen in standby mode cannot wake up the system;
- b:The LCD segment screen does not display anything in standby mode.

9.AV output connection:

In preview state, connect SD20 with the display device with AV cable, and then all functions of SD20 can be operated.

Note:

After connecting with audio and video display device, TFT screen on SD20 and the voice will be turned off, and the audio and video will be displayed on the display device. LCD segment screen on SD20 will display the corresponding function operations normally.

10.HDMI output connection:

In preview state, connect SD20 with the high-definition display device with HDMI cable, and then functions of SD20 can be operated; however, digital zoom function cannot be operated in 720P/1080P mode.

Note:

- a. After connecting with HDMI display device, TFT screen on SD20 and the voice will be turned off, and the audio and video will be displayed on the display device;
- b. SD20 may be in abnormal state if the HDMI cable is inserted or unplugged improperly when connecting. It can be recovered after re-starting and LCD segment screen will display the corresponding function operations normally.

11.USB connection:

- a. When there is no preset battery in SD20, use USB power adapter to connect with SD20, all functions can be operated (meanwhile, LCD segment screen and TFT display screen will display the corresponding operation prompts);

- b. In startup state, use USB cable to connect with the computer, data stored in SD20 memory and the Micro SD card can be read (at this time, LCD segment screen will display the USB connection state icon);
- c. SD20 may be in abnormal state if the USB cable is inserted or unplugged improperly when connecting, and re-start to recover.

12. Prompt of key tone

- a. Press "Record" or "Shutter" key once in normal using, SD20 will tick once to indicate the effective operation;
- b. When stopping video recording, SD20 will tick twice;
- c. SD20 will tick twice to indicate the successful code pairing;
- d. Press "Shutter" key in video recording, SD20 will not give prompt;
- e. When operating on TFT display screen, press "Menu" key in preview state, press ">" or "<" key to enter the menu "Setup", press "+" or "-" key to select the menu "Key Tone", and then you can turn on or turn off the key tone;
- f. If the system is in video recording, press "Stop" key on the remote control once, SD20 will tick twice to indicate the video recording stopping;
- g. If the system is in video recording, press "Shutter" key on the remote control once, SD20 and horn on TFT display screen will not give any prompt;
- h. Press any key on the remote control in standby state, SD20 will tick once to wake up the main system;

13.Prompt of laser light

- a.After starting up, long press “Record” key for 3s in any state, the system will lighten the laser light;
- b.Long press “Record” key for 3s when turning on laser light, the system will turn off the laser light;
- c.The laser light turning on/off also can be operated in standby state;
- d.The wireless remote control can execute laser light turning on/off operation.

Note:

The function of long pressing “Record” key for 3s to turn on/off laser light does not interfere with the setting of turning on “Laser Synchronous Shooting” under the camera parameter setting.

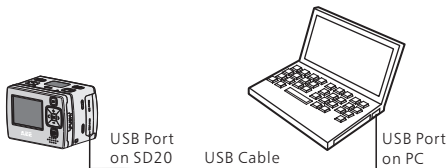
14.Turn On/Off TFT Display

- a.In any status, long pressing Shutter key for 3 second to turn on or off TFT display;
- b.TFT display can't be turned on or off by pressing Shutter key on remote control;

File Storage and Play

(1)USB Cable

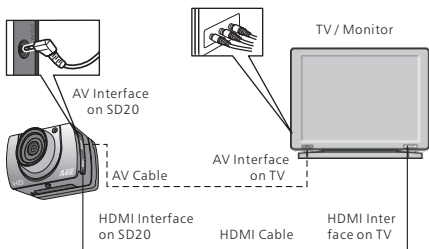
You can copy or cut the recorded video files to your computer via the USB cable, or remove the Micro SD card and insert it into a card reader to read the video data. Then, you can select our software from the attached CD or such recommended softwares as Media Player and KM Player to play the videos.



Note:

- (1) Please turn off the SD20 before inserting or unplugging the USB cable.
- (2) Turn the power switch to "OFF" before charging SD20. The red indicator will twinkle slowly in charging.
- (3) You can directly copy or cut the recorded files to your computer when the power switch is turned to "ON".

. HDMI Cable and AV Cable You can also use the HDMI cable or AV cable to connect SD20 to a TV or monitor with HDMI interface, in order to play the recorded files.



Note:

- (1) After connecting SD20 to the monitor via the HDMI cable, please select the input source for the monitor to display the data from SD20.
- (2) If you select the AV cable, please connect each of its terminals to the relevant TV or monitor terminal in the same color.
- (3) Please adjust the parameters of the monitor to optimize the image effect.

Adapter

This product always conforms to the authenticated AC adapter. The adapter should be marked one of the following:



UL Mark

American power
supply authentication



C-TICK

Australia power
supply authentication



CE Mark

European Union power
supply authentication



GS Mark

German power
supply authentication



CCC Mark

China power
supply authentication



PSE Mark

Japan power
supply authentication



BS Mark

British power
supply authentication

NOTICE:

When using the power adapter, make sure the rating voltage on it is compatible with that of the device to avoid potential damages resulting from incorrect usage of power supply.

Standard Accessories

Main body



TFT display screen



Remote control



Waterproof case



Battery



Accessory for flat installation



Flat accessory



Bracket



AV Cable



USB Cable



Pouch



Chain for main unit



CD



User Manual



Note:

- (1):The actual items may be different from the pictures. Package is subject to change without prior notice.
- (2):The actual accessories may vary with configuration listed here, depending on the configuration of the product you purchase.

Optional Accessories

Portable power supply
(2500mAH)



Portable power supply
(850mAH)



Accessory for installation
onto bicycle



Accessory for installation
onto bicycle



Accessory for soft plastic
flat installation



Clip for main unit



Accessory for installation
onto helmet top



HDMI cable



Specifications & Parameters

View Angle	170 °
Pixel	5.0 Mega CMOS SENSOR (2592*1944)
Battery	1000mAh Lithium Battery
Power Consumption	350mA@ 3.7V (MAX)
Video Recording Duration	About 2.5h
Voice Recording Duration	About 3h
Voice Control Standby Duration	About 250h
Storage Temperature	-20 ° C — 60 ° C
Operating Temperature	-10 ° C — 50 ° C
Operating Humidity	15—85%RH
Memory Card	Micro SD/MMC
Charging Duration	About 3.5h
Micro SD Card Capacity	64GB SDHC Max.
File Storage	Normal: 30 Minutes/Segment; loop: 15Minutes/Segment
Video Recording	1080P(1920x1080), 720P (1280*720), VWGA (848*480) , QVGA (320*240)
Photo Shooting	Resolution Available: 3M, 5M, or 8M JPEG
Video Format	MOV
Voice Format	WAV
USB Port	USB 2.0
Remote Control Range	15 Meters
Operating System	Windows XP /Vista or Above/Win 7/ Mac OS
Weight	82g (without screen)/108g (with screen)
Dimension	60mm x 51mm x 42mm

NOTICE:

Specifications are subject to minor change with upgrade and update.
Please base on real object.

FCC Notices

1. The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

2. This device complies with Part 15 of the FCC Rules. (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notices for Waterproof Casing

The water-proof casing shall be installed precisely. Please notice following items during operation.

1. Do not disassemble and refix the sealing ring of casing, keys and lens cover by yourself. Otherwise, the sealing of water-proof casing may be affected.
2. Do not place the casing in those environments where exist corrosive gas such as strong acid or alkali; and keep it away from chemicals and other corrosives.
3. Do not put water-proof casing in high (above 50°C) or low (-10°C) temperatures for long period of time to avoid casing deformation.
4. Do not expose the casing under direct sunshine for a long time to avoid deteriorating its waterproofing performance.
5. Before using the casing, it's advised to check whether the seal rings are under good condition, whether there are foreign objects at the sealing joints, whether the casing is well sealed and tightly buckled.
6. After using the casing in sea water, please clean and flush it by fresh water firstly, and then use a dry cloth to wipe the surface and put the device in a cool and ventilated place.

Tips

1. The surface of camera might be warmed up after a long working time;
2. If the camera would not be used for a long time, it's advised to take out batteries and charge every six months to keep them in good working condition;
3. The function of digital zoom shall reduce the image quality slightly;
4. The angle of view might vary with different working modes;
5. It's advised to play larger video files by computer or other professional players to realize smooth playing.



Please read this user manual carefully and thoroughly before any attempt to install and operate this product and re-tain it for your future reference.



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