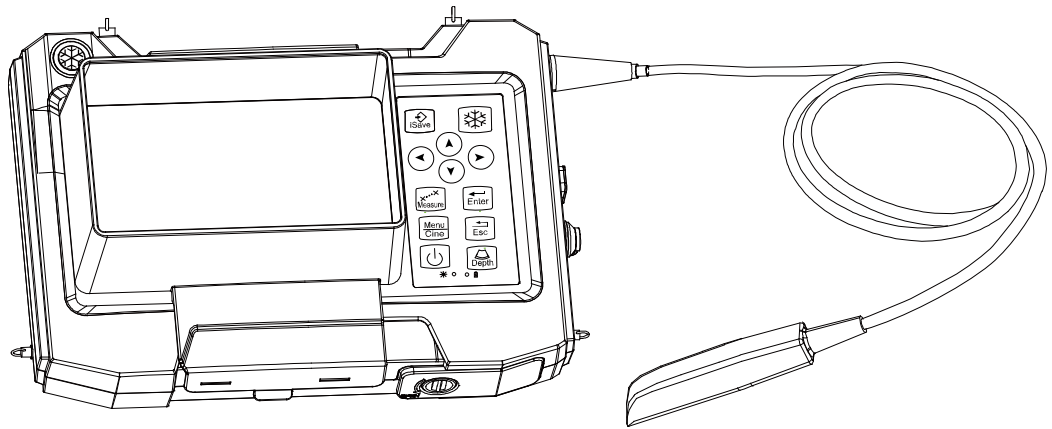


KAIXIN

KX5600E3/KX5600E4

Full Digital Ultrasonic Diagnostic Instruments (Vet)

User's Manual



XuZhou Kaixin Electronic Instrument Co., Ltd.

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Introduction

Thank you for purchasing KX5600E3/KX5600E4 Full Digital Ultrasonic Diagnostic Instruments (Vet).

Users shall carefully read through this user's manual and fully understand the text before operating the product.

Please keep this user's manual after reading so that you can access at any time when needed.

The user's manual issue date: October 29, 2024, Version: V1.05

For the changes of appearance, this user's manual is subject to change without further notice!

Statement

Kaixin was considered responsible for the safety, reliability and performance in case of meeting all the following requirements: all repairs are performed by professionals recognized by Kaixin; all replacement parts and accessories, consumables involved repairs are Kaixin Company.

Warranty and Repair Service

Purchased the product warranty, sees the company's service policies.

Manufacturer's Information



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Product Differences

This user's manual is applicable to the KX5600E3/KX5600E4 Full Digital Ultrasonic Diagnostic Instruments (Vet). KX5600E3 is equipped with a 4.0MHz convex array transrectal probe, and KX5600E4 is equipped with a 6.5MHz animal transrectal linear array probe. Except for the configuration of the probe, there are no other differences in software and hardware. Functions and application in this user's manual take KX5600E4 as an example.

Chapter 1 Product Specifications

1.1 Power Supply

Adapter ratings: 100-240V~, 1.2-0.6A, 50-60Hz

Output of adapter: DC12.8V 3.0A

Main device rating: DC12.8V 3.0A

Internal supply voltage: DC10.95V-12.6V

1.2 Operating Environment

Ambient temperature: 10°C~40°C

Relative humidity: 30%~75% (without condensation)

Atmospheric pressure: 700hPa~1060hPa

1.3 Storage and Transportation

1.3.1 Storage and Transportation Conditions

Ambient temperature: -20°C~55°C

Relative humidity: 30%~93% (without condensation)

Atmospheric pressure: 700hPa~1060hPa

1.3.2 Storage and Transportation

1. If the instrument is stored over 3 months, take out the instrument from the packing case, connect it to power supply for 4 hours, and then disconnect the power and place it in the case again following the direction indicated by arrows on the package. Store the case in the warehouse. Do not pile the case. The instrument case should have adequate space from ground, walls and ceiling of the warehouse.
2. Environment requirement
Ambient temperature: -20°C — 55°C; Relative humidity: 30% — 93% (without condensation);
Atmospheric pressure: 700hPa-1060hPa. The warehouse should be well ventilated and free of direct sunlight and corrosive gas.
3. Shockproof measures have been taken inside the packing case to allow for transport by air, railway, land and sea. The goods shall not be exposed to poor weather conditions like rain and snow, nor shall the goods be placed upside down, bumped, knocked or over-stacked.

1.4 Dimensions and Weight

1. Dimension: 282mm (length) ×200mm (width) ×102mm (thickness) (Installed the hood)
2. Main unit net weight: 1.6 kg (including battery)

Chapter 2 System Configuration

2.1 Standard Configuration

1.	Main unit (included probe)	1 unit
2.	Power adapter	1 PC
3.	Power cable	1 PC
4.	Internal battery	1 PC
5.	Strap	1 PC
6.	Hood	1 PC
7.	Oxford fabric hood	1 PC
8.	Battery lock coin	2 PCS
9.	Ring screw	2 PCS
10.	Probe holder	1 PC
11.	APP software	1 PC
12.	Plastic sealed box	1 PC

2.2 Options

1. Video glasses
2. Wireless monitor
3. Charger

Chapter 3 Product Introduction

3.1 Structure Composition of the Instrument

Full Digital Ultrasonic Diagnostic Instruments (Vet) are composed of main unit, probe and power adapter, etc.

3.2 Components Name

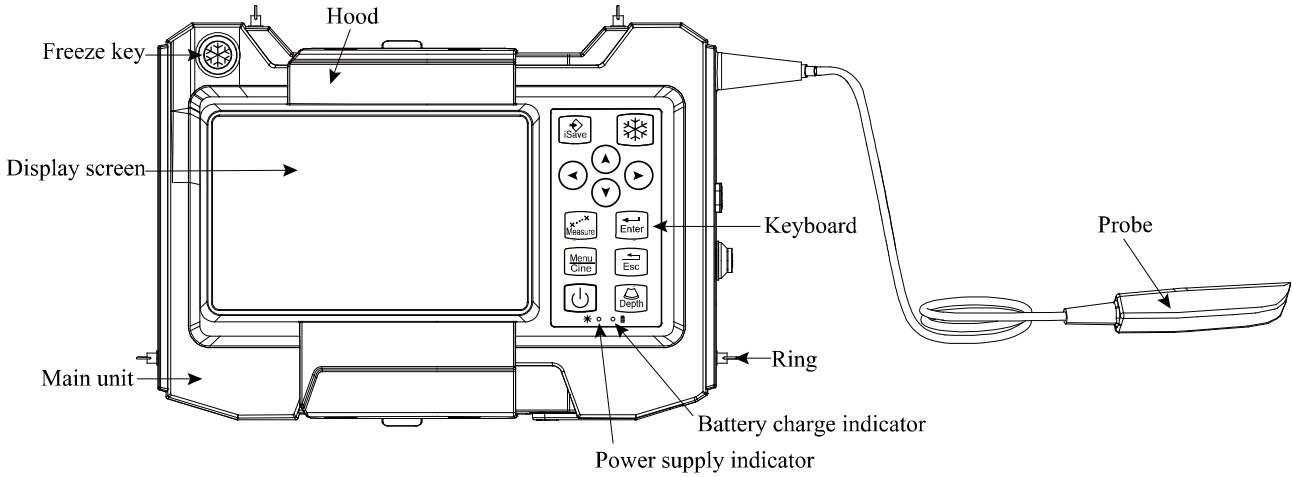


Figure: main unit front view sketch map

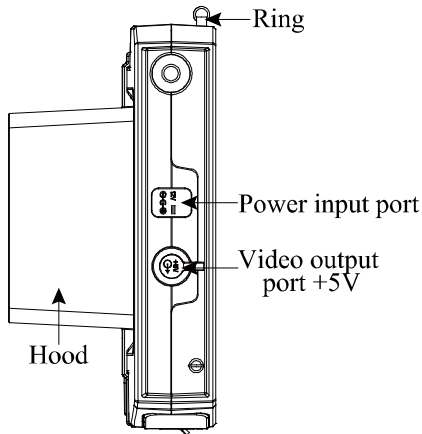


Figure: Side view

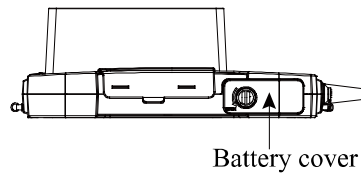


Figure: Bottom view

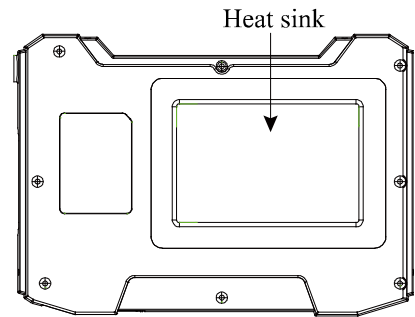






Figure: Rear view




















3.3 Function Keys Description

SN.	Function keys	Function
1		Power switch
2		Direction keys
3		Freeze/Unfreeze
4		In frozen state, press the key to store image
5		During the measurement, press the key to exchange the starting point and end point of the measurement.

6		Enter confirm
7		In real-time state: Main-menu In frozen state: Save and read image, Cine loop
8		Quit
9		In real-time state: Adjust the depth range of the image In frozen state: Transfer images to APP software

3.4 Symbols Description

This instrument uses the symbols listed in the following table, and their descriptions are explained.

Symbol	Description
	Type B applied part
	Follow instructions for use
	Indicates the need for the user to consult the instructions for use for important cautionary information.
	Power switch
	Power supply indicator
	Battery charge indicator
	Direct current
	Polarity of direct current power connector
	Manufacturer
	Date of manufacture
	Serial number
	Up
	Keep dry
	Fragile
	Stacking limit by number
	Temperature limits (Storage and transport)
	Humidity limitation (Storage and transport)
	Atmospheric pressure limitation (Storage and transport)
	Marking for the separate collection of electrical and electronic equipment

Chapter 4 System Installation and Check

⚠Warning: Heat sink at the back of main unit to allow heat release from ultrasound instrument. When main unit is working, the temperature of heat sink may be high. If used, be careful not to touch the heat sink, so as not to burn!

⚠Warning: Do not lift the probe to move the machine.

4.1 System Installation

Please carefully read through and fully understand the use-method before installing the system, and check the goods for its completeness.

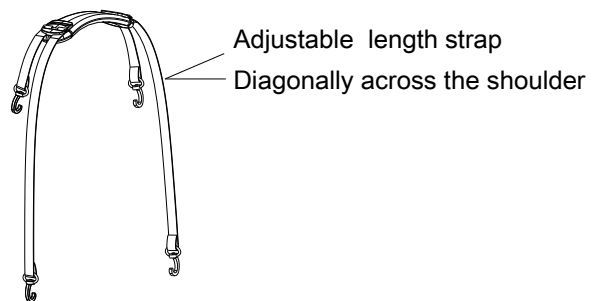
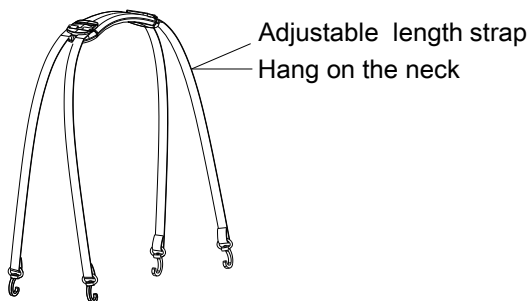
Take out the main unit and strap; install the strap on the ring of machine as figure shown. The instrument can be placed on the chest or placed on both sides of the body.

1. Instrument placing on the chest to use

Take out the main unit and strap; install the strap on the rings of main unit, adjust the length of strap and hang it on the neck to use.

2. Instrument placing on both sides of the body to use

Take out the main unit and the strap; according to the left/right-handed habits, install the strap on the diagonal ring of the main unit, adjust the length of the strap and use it diagonally across your shoulder.



4.2 Video Glasses Installation

Turn off the instrument; connect the video signal line of video glasses to the “Video output port + 5V” on the side of main unit.

4.3 Working Power

The instrument can work when it is connected to the external power supply or the battery capacity is sufficient.

4.3.1 Connect to External Power Supply

1. Connect to power adapter

Insert the output plug of adapter into “Power input port” on the side of main unit.

2. Connect to main power supply

Insert the power plug (jack) furnished with the machine into power input socket of the power adapter, the other end to the mains socket-outlet. The system uses three-core power supply. It connects with the protective earth line when power plug inserts into its socket.

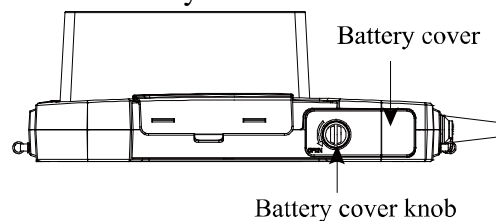
4.3.2 Powered by Battery

When connected to the external power supply, the instrument is powered by the external power supply. If the instrument is equipped with a battery at this time, the battery is charged.

4.4 Installing and Removing the Battery

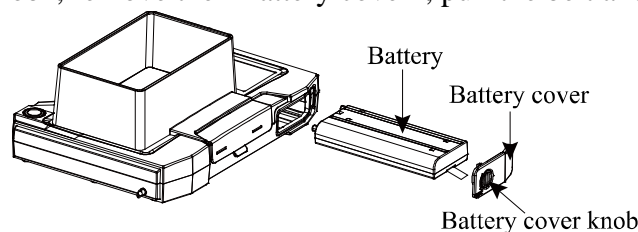
4.4.1 Install the Battery

1. Shutdown the system and disconnect the connection between the power adapter and the main unit;
2. Lay the machine flat, and then put the battery into battery storage of main unit, and arrange the blue belt;
3. Push the "Battery cover" into the corresponding position, and put "Battery lock coin" into the groove of the "Battery cover knob", and then toggle the "Battery cover knob" counterclockwise to lock the "Battery cover".



4.4.2 Remove the Battery

1. Shutdown the system and disconnect the connection between the power adapter and the main unit;
2. According to the "OPEN" direction of the arrow, use the "Battery lock coin" to toggle "Battery cover knob", remove the "Battery cover", pull the belt and take out the battery.



4.5 Use of Wireless Monitor

1. Set the RF according to the section 5.2.5 and select the RF channel, such as "RF: 1";
2. Turn on the wireless monitor's power switch;
3. To set the wireless monitor. First select the source "RF", then search the RF channel;
4. Wireless monitor starts automatic search, after completed search, the wireless monitor automatically synchronizes the display of the main unit screen content.

Note: When selecting the wireless monitor, you need a wireless monitor of receiving a 5.8GHz signal. Wireless reception range is within 4 meters, no obstacles.

4.6 Ultrasonic Probe Check Before and After Operation

Before and after ultrasonic diagnosis to check if there are any exceptionally on the surface of the probe or cable jacket, such as peeling, cracks, bulge, or if the acoustic lens is reliable, disinfected or cleaned.

4.7 Main Unit Check Before and After Operation

4.7.1 Check Before Start-up

Check the following items before starting the machine:

1. The temperature, relative humidity and atmospheric pressure shall meet the requirements of operating conditions.
2. No condensation occurs.
3. No distortion, damage or contamination on system and peripheral devices. Clean the parts as specified in relevant sections, if the contaminant is present.
4. Check the control panel, display screen and enclosure to ensure they are in good working condition and free of abnormality (such as cracks and loosened screws).
5. No damage on cables (power cable, etc.), and hard up on its connection.
6. Check probe and probe cable to ensure they are free of abnormality (such as scuffing, drop-off or contamination). If the contaminant is present, clean the contaminated objects as specified in relevant sections.
7. Check all the ports of the machine for possible damage or blockage.

4.7.2 Check After Start-up

Check the following items after starting the machine:



1. No abnormal voice, strange smell and overheating appear.
2. Check the machine to ensure a normal start-up: The power supply indicator is on and the screen will be automatically display B mode.
3. Check the acoustic lens for abnormal heat when the probe is in use. You can feel the temperature of the lens by touching it with your hand.
4. Check the image to ensure trouble-free display (no excessive noise or flicker).
5. Check the control panel to ensure normal operation condition.
6. Check the machine to ensure that the phenomenon of local high temperature will not appear.



4.8 System Reset

In case of abnormal screen display or no-working for system operation, try to restart the system by turning on/off the main unit power.

Chapter 5 Functional Operation

5.1 Startup and Shutdown










In shutdown state, press  key, machine starts up, power supply indicator  lights.

In startup state, hold down  key, machine shuts down, power indicator  goes out. Please note that when shut down the machine, the time of pressing key is a rather long than normal pressing key.








5.2 System Functions Setting

In real-time state can be set as follows.










5.2.1 Time Setting

1. In real-time state, press  key to enter main-menu, press direction keys   to select “Preset”;
2. Press  key to enter Setup interface;
3. Press direction keys   to select “YY, MM, DD, Hr, Min”;
4. When setting year, month, day, hour and minute, press direction key  to increase value or press direction key  to decrease value;
5. Press  key to confirm the time setting and quit setting interface.










5.2.2 Language Setting

1. In real-time state, press  key to enter main-menu, press direction keys   to select “Preset”;
 2. Press  key to enter Setup interface;
 3. Press direction keys   to select “Language”;
- Note: Language setting function is not available.**
4. Press  key to confirm the setting and quit setting interface.















5.2.3 TV Mode Setting

1. In real-time state, press  key to enter main-menu, press direction keys   to select “Preset”;
2. Press  key to enter Setup interface;
3. Press direction keys   to select “TV Mode”;
4. Press direction keys   to select “PAL” or “NTSC”;
5. Press  key to confirm the setting and quit setting interface.

5.2.4 Key Sound Setting

1. In real-time state, press  key to enter main-menu, press direction keys   to select “Preset”;
2. Press  key to enter Setup interface;
3. Press direction keys   to select “Key Sound”;
4. Press direction keys   to select between “On” and “Off”;
5. Press  key to confirm the setting and quit setting interface.

5.2.5 RF and RF Channel Setting

1. In real-time state, press  key to enter main-menu, press direction keys   to select “Preset”;
2. Press  key to enter Setup interface;
3. Press direction keys   to select “RF”;
4. Press direction keys   to select “On” or “Off”;
5. If select “On”, press direction keys   to select “RF Channel”, press direction keys   again to select RF channels among “1-8”; if select “RF Channel 1”, the RF channel icon in the lower right corner of the screen changes from  to .










Note: When setting the RF, it costs some time to select the channels.

6. Press  key to confirm the RF setting and quit setting interface.










Note:

1. **RF Channel setting must follow steps 1-6 above. If you do not press the Enter key to confirm, RF Channel setting is unsuccessful, and there will be a channel mismatch, which needs to be resolved by disassembling the machine.**
2. **If the signal does not receive properly, please set it according to the available channels labeled on the back of the machine.**










5.2.6 WIFI Setting

1. In real-time state, press  key to enter main-menu, press direction keys   to select “Preset”;
2. Press  key to enter Setup interface;
3. Press direction keys   to select “WIFI”;
4. Press direction keys   to select “On” or “Off”;
5. Press  key to confirm the WIFI setting and quit setting interface.

5.2.7 Animal Type Setting

1. In real-time state, press  key to enter main-menu, press direction keys   to select “Preset”;
2. Press  key to enter Setup interface;
3. Press direction keys   to select “Animal”;
4. Press direction keys   to select “Bovine”, “Equine”, “Llama”, or “Ovine”;
5. Press  key to confirm the setting and quit setting interface.

5.2.8 Formula Setting

1. In real-time state, press  key to enter main-menu, press direction keys   to select “Preset”;
2. Press  key to enter Setup interface;
3. Press direction keys   to select “Formula”;
4. Press direction keys   to select the obstetric formula corresponding to the animal, such as “BPD” for Bovine;
5. Press  key to confirm the setting and quit setting interface.








Note: The above setting items (5.2.1-5.2.8) can be completed all at once after entering main-menu, and then exit.



5.3 Image Adjustment and Control

In real-time state, you can adjust the brightness and contrast, total gain, near field gain, far field gain, dynamic range, frequency, frame average, image post-process, edge enhancement; can control depth range, left/right reverse, up/down reverse, color, filter, space, grid, grid space, focus position.






5.3.1 Image Brightness and Contrast Adjustment

The brightness and contrast level of the screen is one of the most important factors for the image quality. The brightness and contrast adjustment should be done in relation to the ambient brightness. Therefore the actual brightness and contrast level shall be adjusted according to the specific environmental condition.






1. In the startup default status, press  key to quit the main-menu status;
2. Press direction keys  , the “Bright, Contrast” adjustment bars appear on the screen;
3. Press direction keys  , choose “Bright, Contrast” adjustment bar;
4. Press direction keys  , adjust the brightness and contrast of the image;
5. Finish the settings, press  key or automatically later exit the adjustment status.

Note: If the brightness and contrast cannot be adjusted with direction keys  , you must exit current use status for direction keys.






5.3.2 Total Gain Adjustment

In real-time mode, press  key to enter main-menu, press direction keys   to select “Gain”. Press direction key  to increase image total gain and direction key  to reduce total gain so as to control the total gain of the entire image.






5.3.3 Near Field Gain Adjustment

In real-time mode, press  key to enter main-menu, press direction keys   to select “Near”. Press direction key  to increase near field gain and direction key  to reduce near field gain so as to control the gain in near field region.






5.3.4 Far Field Gain Adjustment

In real-time mode, press  key to enter main-menu, press direction keys   to select “Far”. Press direction key  to increase far field gain and direction key  to reduce far field gain so as to control the gain in far field region.






5.3.5 Dynamic Range Adjustment

In real-time mode, press  key to enter main-menu, press direction keys   to select “Dyn”. Press direction key  to increase the value of dynamic range and direction key  to decrease the value of dynamic range so as to control the dynamic range of the entire image.






5.3.6 Frequency Adjustment (Frequency conversion)

In real-time mode, press  key to enter main-menu, press direction keys   to select “Freq.”. Press direction key   to achieve frequency conversion.






5.3.7 Frame Average Adjustment

In real-time mode, press  key to enter main-menu, press direction keys   to select “Frame Avg”. Press direction key   to achieve four levels of frame average.






5.3.8 Image Post-process Adjustment

In real-time mode, press  key to enter main-menu, press direction keys   to select “IP”. Press direction key   to obtain four levels of corrected image.

5.3.9 Edge Enhancement Adjustment






In real-time mode, press  key to enter main-menu, press direction keys   to select “IE”. Press direction key   to obtain four levels of sharpened image.

5.3.10 Depth Range Selection






In real-time mode, press  key to enter main-menu, press direction keys   to select “Depth”. Press direction key   to select eight kinds of depths, and the depth value is displayed at “D” in the lower left corner of the image.

Or, in real-time mode, press  key to select eight kinds of depths.






5.3.11 Image Left/Right Reverse

In real-time mode, press  key to enter main-menu, press direction keys   to select “L/R”. Press direction key   to achieve image horizontal reverse. The image left/right reverse is the change of probe scanning direction. The probe scanning direction is indicated by the arrow on the upper left of the image.






5.3.12 Image Up/Down Reverse

In real-time mode, press  key to enter main-menu, press direction keys   to select “U/D”. Press direction key   to achieve image vertical reverse.






5.3.13 Color Selection

In real-time mode, press  key to enter main-menu, press direction keys   to select “Color”. Press direction key   to achieve the conversion of eight kinds of colors (including a black and white image).

5.3.14 Image Filter






In real-time mode, press  key to enter main-menu, press direction keys   to select “Filter”. Press direction key   to achieve the conversion of two kinds of filters.

5.3.15 Space Compound

In real-time mode, press  key to enter main-menu, press direction keys   to select “Space”. Press direction key   to select “On” or “Off”. Turn on the Space compound to make the image more detailed, but the frame rate is slower.






Note: The space compound function is available only for linear probe.

5.3.16 Grid Setting




In real-time mode, press  key to enter main-menu, press direction keys   to select “GridSet”. Press direction key   to select “Off”, “Point” or “Line”.

“Off” means that no grid is displayed in the image area, “Point” is a dotted grid in the image area, and “Line” is a linear grid in the image area.

5.3.17 Grid Space

In real-time mode, press  key to enter main-menu, press direction keys   to select “GridSpace”. Press direction key   to select “10” or “20” to change the space of dotted/linear grid.





5.3.18 Focus Position Adjustment

In real-time mode, press  key to quit main-menu state, press direction keys   to move the up and down position of the focus.



5.4 Image Freeze/Unfreeze



In real-time state, press  key to freeze the image; in frozen state, press  key to unfreeze the image.











5.5 Ranch Name Input






1. Press  key to freeze the image, press direction keys   to select “Ranch”;
2. Press  key, the cursor is located behind the “Ranch:”, and at the same time characters input menu will be shown at the bottom of the screen:




Caps	0	1	2	3	4	A	B	C	D	E	F	G	H	I	J	K	L	M
Shift	5	6	7	8	9	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Press direction keys to move cursor to point to Caps, and then press  key to achieve capital and small letter conversion; if the cursor point to Shift, press  key to achieve the conversion between the letter and punctuation.





3. Press direction keys to choose “numbers” or “characters” and press  key to confirm;
4. If need modify the content, in the characters input state, press direction keys to move cursor to point to Shift, press  key, the special characters input menu is shown at the bottom of the screen:

Caps											:	:	<	=	>	?	@	[
Shift	!	”	#	\$	%	&	^	()	*	+	,	-	.	/]	{	}



Press direction keys to move cursor to point to character “” or “”, press  key, move the cursor to the position need to deleted character, and then press directions keys to move cursor to character “”, press  key, delete input content and retype.






5. Press  key to quit the character input menu, press  key again to quit the cursor status, press  key to unfreeze the image.

5.6 ID and Check Result Input

1. Press  key to freeze the image, press direction keys   to select “ID”;
2. Press  key, the cursor is located behind the “ID:”, and at the same time characters input menu will be shown at the bottom of the screen:







Caps 0 1 2 3 4 A B C D E F G H I J K L M
Shift 5 6 7 8 9 N O P Q R S T U V W X Y Z

Press direction keys to move cursor to point to Caps, and then press  key to achieve capital and small letter conversion; if the cursor point to Shift, press  key to achieve the conversion between the letter and punctuation.

3. Press direction keys to choose “numbers” or “characters” and press  key to confirm;
4. After inputting ID, press  key to select “Pregnancy”, “Unpregnancy”, “Suspected” or “Disease” check result;
5. Press  key to quit the character input menu, press  key again to quit the cursor status, press  key to unfreeze the image.



5.7 Cine Loop

In real-time state, the system is always saving the scanned image. The playback images are for a period time images before freeze.

Freeze the image, continuously press  key three times to enter the automatic playback status; Press  key to enter pause status when playing back; Press direction keys   to view images frame by frame in pause status; press  key again to quit cine loop status. In the process of saving and playback, the lower right corner of the screen shows the relevant saved and played frames. Press  key to unfreeze and return to real-time status.

Note: If the images appear abnormal, that is without enough storage time and the images have not been stored full.

5.8 One-key Storage Image







Press  key, freeze the image. Press  key, the system emits a beep, and then the current frozen image is stored in the main unit.

Note:

1. **One-key storage can saved the current frozen image into the inter memory of main unit; it can stored up to 420 images.**
2. **For the stored image, its file name is automatically named by the image code.**
3. **When storing images with one-key, you should always pay attention to the remaining frames within the inter memory of main unit to prevent invalid storage. Please delete manually after 420 images have been saved.**








5.9 Image Management

5.9.1 Save the Image

1. Press  key, freeze the image;
2. Press  key, a “Save” prompt appears in the lower left corner of the screen;
3. Press direction keys   to select the image code need to be saved, such as choose “003”;
4. Press  key, the current image is saved in the frame for coded “003”. The saved image code is preceded with asterisk “*”;
5. Press  key to return to real-time state.







Explanation: Images can be saved into the inter memory of main unit; it can stored up to 420 images.

5.9.2 Read the Image







1. Press  key, freeze the image;
2. Continuously press  key twice, a “Read” prompt appears in the lower left corner of the screen;
3. Press direction keys   to select the image code need to be read out, such as choose “003*”;
4. Press  key to read out the image stored in the frame “003*”, “Img” character showed in the lower left corner of the screen;
5. Press  key to quit reading state;
6. Press  key to return to real-time state.


Explanation: When reading images, it must choose the image code with “*”.

5.9.3 Delete the Image





1. Press  key, freeze the image;
2. Press  key to enter saving or reading image state;
3. Press direction key   to select the image code to be deleted, such as choose “002*”;
4. Press  key, the image stored in the main unit will be deleted, “*” will automatically disappear;
5. Repeat the 3-4 steps, delete other images;
6. Press  key to return to real-time state.

5.9.4 Review the Image






1. Press  key, freeze the image;
2. Continuously press  key twice to enter reading image state;
3. Press  key to review the images, the stored images will be automatically played by the fixed time interval;
4. Press direction keys   to select the previous or the next image to review;
5. Press  key to return to frozen state;

6. Press  key to return to real-time state.






5.9.5 Transfer the Current Image to APP Software

1. After successfully connecting the main unit and APP software according to Chapter 7.2, press  key to freeze the image, click the icon  on the APP software to enter Image View interface;
2. Press  key, the current image is transferred to APP software;
3. Press  key to return to real-time state.


5.9.6 Transfer a Stored Single Image to APP Software

1. After successfully connecting the main unit and APP software according to Chapter 7.2, press  key to freeze the image, click the icon  on the APP software to enter Image View interface;
2. Press  key to enter saving image status, such as choose “004*”;
3. Press  key, a symbol “Transmission” prompt appears in the lower left corner of the screen, after the prompt disappear, the image stored in frame “004*” is transferred to APP software;
4. Press  key to return to real-time status.


5.9.7 Batch Images Transfer to APP Software

1. After successfully connecting the main unit and APP software according to Chapter 7.2, press  key to freeze the image, click the icon  on the APP software to enter Image View interface;
2. Continuously press  key twice to enter reading image status;
3. Press  key, a symbol “Transmission” prompt and the frame number appears in the lower left corner of the screen, after the prompt disappear, all the stored images are transferred to APP software;
4. Press  key to return to real-time status.

Explanation:








1. In the transmission process, the lower left corner of the screen shows the number of frames being transmitted, press  key to terminate the transmission at any time.
2. When transferring batch images, the system time displayed in the upper right corner of the main unit is at rest; when the transmission ends, the system time automatically returns to normal. All batch images transmission takes a long time, please be patient!

Attention:

1. When transferring single or multiple images to the APP software, if the image cannot be transferred, the screen prompts “Poor network environment, please try again later!”. Wait until the network is good, and press  key to continue transferring the image.
2. For the connection of APP software and its functions, please refer to “Chapter 7 APP Software Instructions”.













Chapter 6 Measurement

6.1 Distance Measurement










1. Press  key, freeze the image, the cursor is located on the “Distance” position of display area;
2. Press  key, the cursor will show “+”;
3. Press direction keys to move the “+” mark to desired position, press  key to set the “+” mark position as the starting point of the measurement;
4. Press direction keys to move the “+” mark to the end point of the measurement. A lighted dotted line appears between the starting point and the end point as the dashed locus of the measurement. The measured value is automatically displayed at the built-in mark “+ : ---mm” on the right side of the screen;
5. Press  key to exchange the starting point and end point of the measurement;
6. Press  key to finish the first measurement;
7. Press  key again, repeat the steps 3~6 to complete the multi-group data measurement;
8. Press  key to return the real-time status.

6.2 Area Measurement














● Area/circumference/volume measurement with ellipse method

1. Press  key, freeze the image, the cursor is located on the “Distance” position of display area;
2. Press  key to choose “Area(Ellipse)”, press  key, the cursor will show “+”;
3. Press direction keys to move the “+” mark to desired position, press  key to set the “+” mark position as the starting point of the measurement, at the same time the elliptic curve appears;
4. Press direction keys to move the “+” mark to the end point of the measurement;
5. Press  key, the “- +” mark appears on the lower right of the image. Hold down  or  key to change the minor axis of the ellipse so as to satisfy the test area. The measured area, circumference and volume values are displayed at the built-in characters “S: ---mm², L: ---mm, V: ---cm³” on the right part of the screen automatically;
6. Press  key again to quit the minor axis status; Press  key to exchange the starting point and end point;
7. Press  key to finish the first measurement;
8. Press  key again, repeat the steps from 3 to 7 to complete the multi-group data measurement;
9. Press  key to return the real-time status.

● Area/circumference measurement with point method

1. Press  key, freeze the image, the cursor is located on the “Distance” position of display area;
2. Press   key to choose “Area(Point)”, press  key, the cursor will show “+”;
3. Press direction keys to move the “+” mark to desired position, press  key to mark the first point, continue to press direction keys, move the “+” mark to next desired position, press  key to mark the second point; By analogy, to mark all desired points;
Note: The number of points must be within 8 to 32.
4. When completed the marking of desired points, press  key, it appears trace on the screen (trace is automatically drawn along the order of marking point until close the beginning point and end point), the measured area and circumference values are automatically displayed at the built-in mark “S: ----mm², L: ----mm” on the right part of the screen; If continuously marks the thirty-two point, it directly appears trace on the screen, the measured area and circumference values are automatically displayed at the built-in mark “S: ----mm², L: ----mm²” on the right part of the screen;
5. Press  key again, repeat steps 3, 4 to complete the multi-group data measurement;
6. Press  key to return the real-time status.









6.3 Volume Measurement

1. Press  key, freeze the image, the cursor is located on the “Distance” position of display area;
2. Press   key to choose “Volume”, press  key, the cursor will show “+”;
3. Press direction keys to move the “+” mark to desired position, press  key to set the “+” mark position as the starting point of the measurement, at the same time the elliptic curve appears;
4. Press direction keys to move the “+” mark to the end point of the measurement;
5. Press  key, the “- +” mark appears on the lower right of the image. Hold down  or  key to change the minor axis of the ellipse so as to satisfy the test area. The measured area, circumference and volume values are displayed at the built-in characters “S: ----mm², L: ----mm, V: ----cm³” on the right part of the screen automatically;
6. Press  key again to quit the minor axis status; Press  key to exchange the starting point and end point;
7. Press  key to finish the first measurement;
8. Press  key again, repeat the steps from 3 to 7 to complete the multi-group data measurement;
9. Press  key to return the real-time status.

6.4 Obstetric Measurement

Description: The system supports the measurement and calculation of the Gestational Age (GA) and Estimated Date of Confinement (EDC) for Bovine, Equine, Llama, and Ovine. For

the setting of animal types and formulas, please refer to 5.2.7 and 5.2.8.

1. Press  key, freeze the image, the cursor is located on the “Distance” position of display area;
2. Press   key to choose “OB”, press  key, the cursor will show “+”;
3. Press direction keys to move the “+” mark to desired position, press  key to set the “+” mark position as the starting point of the measurement;
4. Press direction keys to move the “+” mark to the end point of the measurement. At the same time, a lighted dotted line appears between the start and the end as the dashed locus of the measurement. The measured value is automatically displayed at the built-in mark “+ : ---mm” on the right side of the screen; G.A and EDC value to be displayed in real time in the right area of the screen;
5. Press  key to exchange the starting point and end point;
6. Press  key to finish the first measurement;
7. Press  key to return the real-time status.

Chapter 7 APP Software Instructions


7.1 APP Software Introduce

The APP software developed by our company needs to be used with the company's Full Digital Ultrasonic Diagnostic Instruments. Users need to install the APP software provided by our company on a smart phone or tablet.

The APP software is suitable for mobile phones or tablets with Android system (supports 10.0 or above versions).



The Full Digital Ultrasonic Diagnostic Instrument and APP software can display ultrasonic images synchronously through WiFi; the images or data can be wirelessly transmitted to APP software. Ultrasound images can be viewed in the APP software and the received images can be transferred to an external USB flash drive; it can also perform general measurement, obstetric measurement, body mark annotation, arrow annotation, text annotation, save image, etc. The APP software has a built-in workstation, and users can browse pictures, manage checklists and obstetric records, etc.


7.2 Preparation Before Using APP Software

 **Attention: When installing the APP software, if the installation is blocked, please allow to continue installing it.**


1. According to the information provided in the APP download method label pasted on the machine, obtain APP software. Install the Station_E.apk file on a smart phone or tablet.
2. When installing the APP software, the application is allowed to be installed. The APP software installation is completed.

After finish the installation, if necessary, set up the phone:

- (1) Go to Settings, tap Display, tap Font size to adjust text size on screen, in order to display completely, should select “Normal”.
 - (2) Go to Settings, tap Permissions to enter permission interface, tap “Station_E”, and open the permission.
3. Start to connect the ultrasonic diagnostic instrument and APP software.
 - (1) First open the WiFi of Ultrasonic Diagnostic Instrument. In the Setup interface of main unit, WiFi is set to “On”.
 - (2) Then connect to WLAN. Go to Settings of phone, tap WLAN, open WLAN, the phone will search and list the available WLAN. In the available WLAN list, select the network ID of the instrument, such as “KX5600E2112321”, and successfully connect to the WLAN.
 - (3) Finally, open the APP software. Tap the icon  to enter ultrasound interface, the phone prompts “The initialization data ends”, WiFi icon in the lower right corner of the main unit screen displays , then you can use the APP software.

 **Attention: After the instrument is connected to the phone or tablet, you open the APP software for the first time, if appear “No Internet access”, please choose to continue to use the current network connection.**

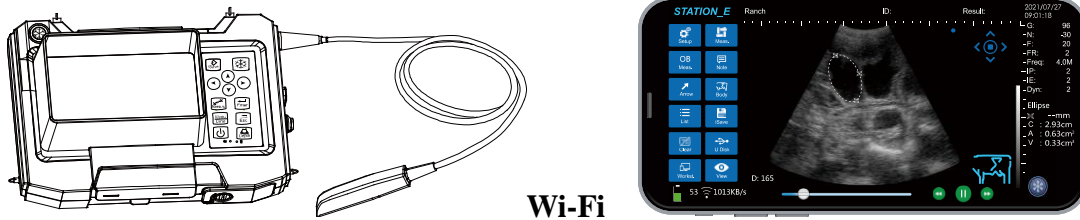
Note:

1. The WiFi network ID of the instrument is the model plus the number displayed on the nameplate of the main unit, such as “KX5600E2112321”.
2. When the network is disconnected, the WiFi icon  on the screen of main unit disappears.




7.3 Use APP Software

All the icons on the APP software may be different due to the display screen of the phone or tablet; the display interface may be slightly different, the actual products shall govern. The usage for the phone and tablet is similar, this article only take Android phone as an example to introduce.

After the Full Digital Ultrasonic Diagnostic Instrument is successfully connected with the APP software, the instrument and APP software can display ultrasonic images synchronously. For details of APP software, please refer to “APP software use instruction”.




7.3.1 Image View

1. After the connection between the main unit and the APP software is successful, the WiFi icon  is displayed in the lower right corner of the main unit screen;
2. Transfer the required images to the APP software in accordance with Chapter 5.9.5, 5.9.6 and 5.9.7.
3. In the Image View interface of workstation, then tap the refresh icon , the received images can be displayed correctly and be arranged according to the internal number of descending order stored in the main unit.
4. Tap the icon , open the mobile album, find the “image”, you can view or delete the received images.

Explanation:

Images are named according to system time. For example: DSC007_20210810134814.bmp
Indicates the 7th image stored inside the main unit at 13:48:14, August 10, 2021.

7.3.2 Store Images/Data on the APP to U Disk

1. Open the APP software;
2. Insert the U disk into the USB port of the mobile phone, the mobile phone prompts “Allow the app “Station_E” to access the USB device?”, choose “OK”, the APP software prompts “U disk has been identified! ”;
3. Tap the icon , the APP software prompts “U disk is storing data, please wait patiently... ”, after the prompt disappears, all images and data on the APP software will be transferred to the “ES_B_Ultrasound” folder of the U disk.

Explanation: When performing to U disk storage, you must first open the APP software and then insert U disk, to ensure that the APP software can identify the U disk.

Chapter 8 System Maintenance

The system maintenance should be performed by the user. Users shall be in full charge of maintenance and operation of the system after purchasing the product. Please check the status of the machine regularly and perform a preventive check for the system.

8.1 Daily Maintenance

Daily maintenance should be performed by the user.

8.1.1 System Cleaning and Disinfection

⚠ Warning: Turn off the instrument and pull out the power cable before cleaning the instrument. It may cause electric shock if clean the system under power is on.

⚠ Warning: The instrument is not waterproof. Do not splash any water or liquid into the instrument when cleaning or maintenance; otherwise it will cause malfunction or electric shock.

1. Clean the probe

- (1) Rinse the probe with water or soapy water to remove all contaminants, or use a soft urethane sponge to wipe the probe. Do not use brushes as it may damage the probe.
- (2) After finishing the rinsing, use a sterilized cloth or gauze to wipe the water on the surface of probe. Do not dry the probe by heating it.

2. High-level disinfection

Please follow the disinfection method provided in this user's manual for disinfection.

- (1) Before disinfection, wear sterilized gloves to prevent possible infection;
- (2) You must clean the probe before disinfection. Recommend the solution to disinfect in the following table.

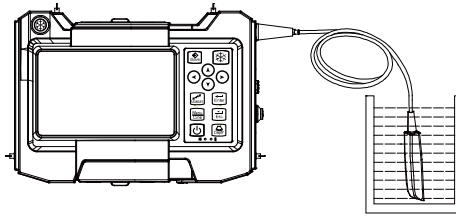
Glutaraldehyde-based disinfectant:

Chemical Name	Reagent Name	Step
Glutaraldehyde (2.4%)	Cidex Glutaraldehyde disinfectant	Please refer to the instructions of the solution for details.

Non-glutaraldehyde-based disinfectant:

Chemical Name	Reagent Name	Step
Phthalaldehyde solution (0.55%)	Cidex OPA	Please refer to the instructions of the solution for details.

- **Please follow the instructions about disinfectant concentration and disinfection method, as well as the precautions about disinfectants provided by disinfectant provider. But do not rinse or soak the probe connector or close to connector cable.**
 - **The soaking time of probe in the disinfectant is limited to the minimum time recommended by disinfectant manufacturer (e.g., Cidex OPA manufacturer recommended minimum 12 minutes).**
 - **Please follow local laws and regulations to choice the disinfectants.**
- (3) After disinfection, rinse the probe with a large number of sterile water (about 2 gallons) for at least one minute to remove the residual chemicals. You may follow the recommended method by the disinfectant manufacturer to rinse.
 - (4) After finishing the rinsing, use a sterilized cloth or gauze to wipe the water on the surface of probe. Do not dry the probe by heating it.



⚠Attention:

- 1. It is a normal phenomenon that color of the acoustic lens may change and color of the probe label may fade away.**
- 2. Repeated disinfection may damage the probe, please check the probe's performance periodically.**

3. Check probe after cleaning and disinfection

- (1) Check the probe enclosure and its cable to ensure they are free of abnormality (such as scuffing, cracks or drop-off);
- (2) The sound window of probe is thin; ensure that there are no any abnormality on the sound window, such as scuffing, cracks, peeling, and bulge and drop-off.

4. Clean the probe cable

- (1) Clean the probe cable with soft, dry cloth.
- (2) In case of die-hard blots, clean with soft cloth dipped in moderate detergent and then air-dry it.

5. Clean the display screen

- (1) Use a soft cloth to clean the display screen;
- (2) In case of die-hard blots, clean with soft cloth dipped in glass cleaner and then air-dry it.

6. Clean the control panel, shell

Clean the instrument surface with soft, dry cloth or with soft cloth dipped in moderate water cleaning media to remove the blots, and then dry the instrument with soft, dry cloth or with air.

Note: If there is oil leakage in the heat radiating area of the rear shell, it is a normal phenomenon and does not affect the performance of the instrument.

8.2 Replaceable Parts

Before replacing the replaceable parts, please contact us; replace the parts under the guidance of our company. Please use the battery, charger, power adapter and power supply cord provided by Kaixin.

8.3 Use and Maintenance for the Rechargeable Battery Pack

8.3.1 Use of the Rechargeable Battery Pack

The battery pack (model HYLB-1614) is charged within main unit or with charger provided by KAIXIN Company. Service personnel or operator can replace the battery pack.

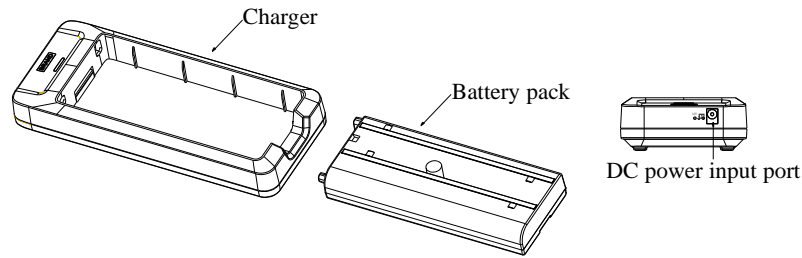
● Charging in the main unit

1. Insert the output plug of adapter into “Power input port” on the side of main unit for charging. When charging, the battery charge indicator flashes green; after fully charged, the indicator is in a green and not-flashing state.
2. The shutdown charging time is about 4 to 5 hours.


● Charging in the charger

1. Insert the output port of adapter into the input port of Charger to charge (see the battery charging sketch map). The charge indicator is green and blinking state when charging; the charge indicator is green and no blinking when fully charged.
2. The charging time is about 4 to 5 hours; over-charging or discharging will shorten the

battery life; the full charged battery can be used about 3 hours.



Battery charging sketch map

⚠ Attention: When the “” icon appears in the middle of the screen, the battery power is low and needs to be charged before continuing to use. Connect the main unit to external power supply and recharge the battery, or turn off the machine to recharge.

8.3.2 Maintenance of the Rechargeable Battery Pack

1. The excess high or low temperature will affect the charging and discharging performance, and short the battery life and capacity.

⚠ Attention:

1. Do not throw the battery into water or be wet, which will lead to the battery leakage, explosion or fire;
2. Do not use or store the battery near the heat source, such as fire or heater, which will lead to the battery leakage, explosion or fire;
3. Do not heat up or throw the battery into fire, which will lead to the leakage, explosion or fire;
4. Do not hammerblow, throw or mechanically shake the battery, which will lead to the leakage, explosion or fire;
5. Do not insert the battery with nail or other spiculate objects; do not hammerblow or trample the battery, which will lead to the leakage, explosion or fire;
6. Do not disassemble the battery in any way, which will lead to the leakage, explosion or fire;
7. Do not charge the battery near the heat source or extra-hot environment, which will lead to the leakage, explosion or fire;
8. Do not put the battery into the microwave oven or pressure vessel, which will lead to the leakage, explosion or fire;
9. Do not use the abnormal battery with particular smell or abnormal heat or distortion or turn colors or abnormal phenomena, which will lead to the leakage, explosion or fire;
10. Do stop the charge and pull out the battery at once if any abnormal phenomenon happens to the battery, such as particular smell or abnormal heat or distortion or turn colors. Otherwise, each of above will lead to the leakage, explosion or fire;
11. Do remove the battery from the near fire if any leakage or particular smell happens, which will lead to the leakage, explosion or fire;
12. If any leakage splash into eye, do not wipe the eye, instead of washing it and get help from the doctor as soon as possible. Otherwise, the eye will be injured;
13. If use the battery beyond the listed environment on the manual, it will worsen its performance or shorten its life, even lead to extreme heat or explosion or fire.

⚠Attention: Battery is consumable; the battery cycle-life is based on the times of charge and discharge as unit. When the use time reduced significantly compared with normal conditions, the battery should be promptly replaced.

⚠Attention: If long-term use external power or do not intend to use the instrument within such a period of time, please remove the battery, to avoid over-charging or discharging the battery which will curtail battery life, or to reduce other risk.

⚠Attention: Don't throw away the exhausted battery anywhere; especially throw it in the fire. Please deal with it according to local statutes.

8.4 Troubleshooting

To ensure normal operation, it is recommended that a maintenance plan.

If the following problems occur on starting up the machine, try to make corrections following the method in the table. If the problem remains unsolved, contact Kaixin for support.

SN	Trouble	Correction
1	Power supply indicator does not light and the screen does not display when starting the machine.	<ol style="list-style-type: none">1. Check power supply.2. Check power supply cord and plug.3. Check power adapter.
2	Intermittent stripe, snow, or far-field interference appears on screen.	<ol style="list-style-type: none">1. Check power supply.(spark interference present)2. Check environment.(source of interference around the machine, such as electric motor, ultrasonic atomizer, automobile, computer or other interference)3. Check power plug/socket of the instrument. They shall be properly contacted.
3	Image display is not clear.	<ol style="list-style-type: none">1. Adjust the total gain, near field gain, far field gain.2. Adjust the brightness and contrast level.
4	Control panel malfunction.	Restart the machine by turning off the main unit power.

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