

Preface

Dear users:

Hello! Thank you for purchasing the new handheld oscilloscopes from Jin Han electronic. In order to use this instrument properly, please read the full text of this manual carefully before using it, especially for the "safety precautions" part. It's better to keep the manual for proper custody after you have finished reading it, please put it together with the instrument or the place you can access at any time for future inspection during use.

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If the product is proven defectively in applicable warranty period, Jin Han has discretion to repair the defective product without charge for parts and labor costs, or replace the defective product with an equivalent product (determined by Jin Han). The parts, modules and replacement products, used for warranty by Jin Han, may be new or reconditioned with performance as new. All replaced parts, modules and products will become the property of Jin Han.

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- a) Repair the damage caused by other service personnel's installation, repair or maintenance for the products, not by Jin Han service personnel.
- b) Repair the damage caused by improper use or connection to incompatible equipment

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- d) Repair the products that has been modified or integrated with other products (if such modification or integration increases the time or difficulty of servicing the product).

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General safety requirements

The following safety precautions are to avoid injury and prevent this product or any other product connected to it damage. To avoid possible danger, be sure to use this product in accordance with the provisions.

Only trained personnel could perform maintenance procedures.

1. Avoid fire and personal injury

- Correct plug and pull

Do not plug and pull when the probe or test leads are connected to a voltage source.

- Properly connected probe

Probe wire and the ground potential are same, do not connect the ground wire to a high voltage. And during the test, do not touch exposed contacts and components.

- View all terminal ratings

In order to avoid the impact of fires and excessive current, please view all ratings and markings of this product. Please refer to the product before connecting the product instructions for more information about ratings.

- Do not Operate Without Covers

If the cover or panel has been removed, do not operate this product.

- Avoid circuit exposed

Do not touch exposed connections and components after boot.

- Suspected product malfunction, do not operate

If you suspect that the product has failed, Please check it by qualified personnel or contact.

- Maintain adequate ventilation

- Do not operate in wet conditions

- Do not operate in flammable and explosive environment

- Please keep this product surfaces clean and dry

2. Safety Terms and Marks

Terms in this manual, the following terms may appear in this manual:

Warning: Warning statements indicate conditions and behaviors which might endanger the safety of life.

Note: Note the statement pointed out conditions and behaviors that may cause this product and other property damage.

Terms on the Product: These terms may appear on the product

DANGER: Indicates that there is a direct risk of harm exists near the mark.

WARNING: Indicates a potential risk of injury near the mark.

Note: indicate a potential danger to the products and other property

Symbols on the Product: These symbols may appear on the product



High pressure



Protective earthing



Attention



Measurement of ground

Foreword

This manual introduces the operation of JHJDS30 series handheld digital storage oscilloscope. The manual includes the following chapters:

- ◆ User guide: a brief introduction to handheld digital storage oscilloscope's front panel, user interface, functional check and probe compensation.
- ◆ Features and Operation: a detailed presentation for functions and operations of oscilloscope, signal generator, multimeter, recorder, the center of the serial port.
- ◆ Application example: provide some measurement examples, for reader reference.
- ◆ System prompts and troubleshooting:
- ◆ Service and support:

This manual contains the following five handheld digital storage oscilloscopes; specific models are shown in the table below:

Model	Channel	Bandwidth	Real-time sampling rate	Storage depth
JHJDS3034	Four channels + recorder	30Mhz	250MSa/s	16Kpts×4

JHJDS30 series handheld digital storage oscilloscope provides users with simple and clear front panel function, for basic operation. Each buttons are marked with letter or symbol for appropriate functions, the user can operate more intuitively, conforms to the use of traditional instruments, the user can have skilled use without spending a lot of time to learn and be familiar with it. To speed up adjustment, easy to measure, the user can press the "AUTO" button; the instrument will show suitable waveforms and gear position.

Except for ease of use, JHJDS30 series handheld digital storage oscilloscope has high performance indicators and powerful functions for faster measurement task. Through 250 MSa/s-1GSa/S real-time sampling rate, can observe faster signal on the JHJDS30 series handheld digital storage oscilloscope. Powerful trigger and analyzes makes it easy to capture and analysis waveform. Clear liquid crystal display and function of mathematical operations makes it easy to observe more quickly and clearly and analysis the signal problems for users.

In addition, JHJDS30 series handheld digital storage oscilloscope has signal generator function and digital channel, the user can bring up the usual signal waveform for need, and user can analysis data by digital channel, greatly satisfy user's requirements.

JHJDS30 series digital oscillographic table provides unique waveform display interface and a variety of measurement functions. It can be widely used in engineering survey, out testing, automotive electronics, frequency converter, research, design, education, training and other fields, including virtual circuit measurement and fault solution.

From the performance characteristics given below, can understand how the handheld digital storage oscilloscope series satisfy your measurement requirements.

- ◆ Isolated oscilloscope/oscillographic table with oscilloscope, signal generator, multimeter functions.
- ◆ Can observe signal data through serial port center
- ◆ Recorder function
- ◆ A serial port center
- ◆ With digital channels
- ◆ 4.3 inch 16-bit true color TFT 400*272
- ◆ Maximum 100MHZ bandwidth, sampling rate 1Gsa/s, 16 KPTS storage depth
- ◆ Support USB firmware upgrade
- ◆ Have the edge trigger function, can automatically detect support (50Hz—60MHz)
- ◆ A variety of waveform mathematical functions together
- ◆ Support Chinese and English menu display
- ◆ Support time, voltage cursor measurement

- ◆ Automatic, normal, single trigger mode
- ◆ Support automatic shutdown function and power saving mode, the time can be set up
- ◆ The cursor measurement function
- ◆ Screenshot of waveform can be retained and put into the computer through USB
- ◆ With holder for easy placement
- ◆ Power supply through USB
- ◆ Super-long standby: single battery can work continuously for 4 hours

JHJDS30 series handheld digital storage oscilloscope Accessories:

JHJDS3034 Oscilloscope

- ◆ Instruction
- ◆ certificate
- ◆ Four 1: 1/10: 1 probes
- ◆ Two lithium batteries
- ◆ A lithium battery charger

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The First Chapter Introductory guide

JHJDS30 series handheld digital storage oscilloscope is small, lightweight portable instruments. Provide customers the front panel with convenient and easy to operate, can perform basic tests.

This chapter mainly elaborates how to perform the following tasks:

△General inspection

△The front panel and the user interface

△Holding a storage oscilloscope connected input

△Functional check

△The probe compensation

1.1 General inspection

When you get a new JHJDS30 series oscilloscope, it is strongly recommended that you follow the steps below to check the oscilloscope.

Check whether there is damage caused by transportation:

If it is found that packaging carton or foam cushion serious breakage, please keep, until the whole machine and accessories pass electrical and mechanical tests.

Check accessories:

About provided details of accessories, in front of this manual has instruction. You can refer to it to check if accessories are missing or damaged. If you find accessories missing or damaged, please contact our dealers.

Check the machine:

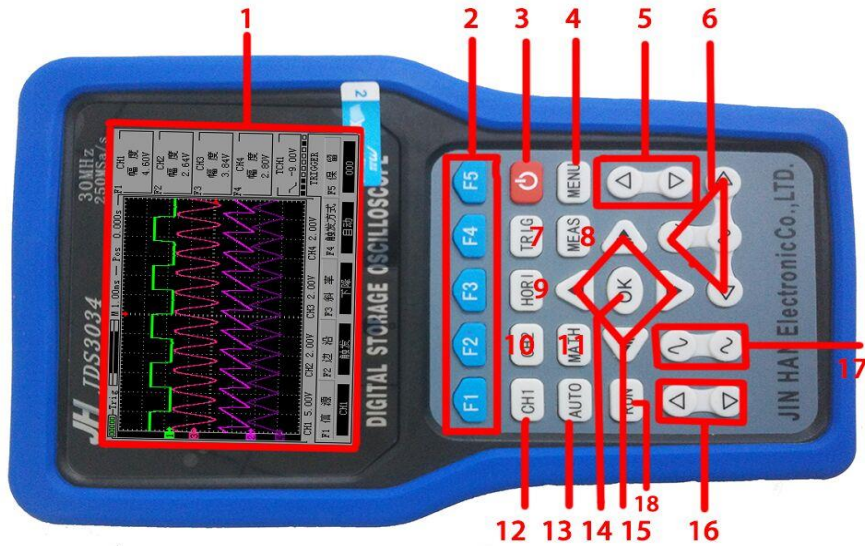
If it is found that the appearance of instrument damaged, the operation of the instrument failed or never pass the performance test, please contact sales or dealers. If the instrument damaged caused by the transport, please keep the package. Notify the transportation department and sales or dealers. We will arrange repair or replacement for you.

1.2 The front panel and the user interface

When you get an oscilloscope, you need to be familiar with its front panel. This chapter will introduce the front panel keys of oscillographic table layout and how to use. Please read this chapter carefully before any operation.

The front panel and key layout (picture 1-1) :

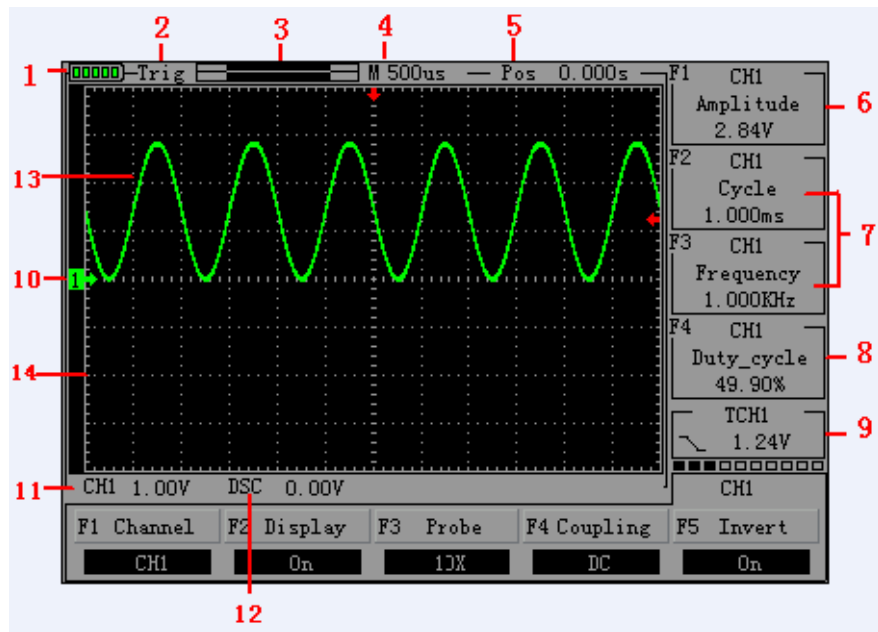
The front panel of buttons can be used some function directly, except for displaying menu on the interface. The menu shown on the interface provides all of the advanced features.



Picture 1-1

Function description:

1. Display screen
2. F1~F5: Multi-function selection buttons
3. PRW: Power on/off button
4. MENU: The menu button
5. Adjust the trigger level
6. Set the time base and horizontal displacement waveform
7. TRIG: Display the TRIG menu
8. MEAS: Display the measurement menu
9. HORI: Display the HORI menu
10. CH2: Display CH2 and CH4 menu
11. MATH: Display the MATH menu
12. CH1: Display CH1 and CH3 menu
13. AUTO: Automatically set
14. OK: Identify key
15. The cursor keys
16. Adjust the horizontal position
17. Adjust the vertical voltage notch
18. RUN: Run/stop



Picture 1-2

Oscilloscope interface description:

1. Display the power
2. Display trigger

3. Display the current waveform in memory location
4. Display the level of time
5. Displays the wait time of trigger signal
6. Display signal amplitude
7. Display signal cycle and frequency
8. Display duty ratio
9. Display trigger position
10. Display channel 1
11. Display channel 1 voltage notch
12. Display the relative horizontal displacement
13. The waveform
14. The grid

1.3 Holding a storage oscilloscope connected input

Instructions :

1. The oscilloscope probe
2. Oscilloscope input
3. Oscilloscope digital channel input
4. The signal generator output

- 5. stents
 - 6. probe clip
 - 7. Multimeter pen
 - 8. Multimeter input pin
- four round pins are respectively 10 a current
current mA stall, grounding, voltage



picture 1-3

Note: picture 1-3 is for single channel oscilloscope connected input, dual-channel oscilloscope connected input is from left to right CH1 and CH2 and CH3, OUT (i.e., channel 1, 2, digital channel and signal generator output)

1.4 Functional check

Perform a quick functional check to verify that the oscilloscope is working properly. Please proceed as follows:

- 1.confirm the oscilloscope has been installed on the battery, Long press on the oscilloscope panel "PWR" button to let go when the interface to be displayed.
- 2.Switch oscilloscope probe on the set to 10X and connect the probe with oscilloscope channel 1.The probe

connector slot on the convex keys aligned on CH1 coaxial connectors, Press down to connect, and then rotated to the right to tighten the probe.

3.The probe and the probe ground clip connected to the signal generator corresponding connectors(Recommended input 1KHZ, about 3V peak-peak square wave).

4. Set the CH1 menu attenuation coefficient of the probe is 10 x (CH1 - > F3 key order Select 10 x). Press the AUTO button and wait for a moment, this screen will display frequency 1 KHZ, peak value to 3 v square wave signal.

5. Select CH2, CH3 and CH4 , repeat steps 2 and 3.



Picture 1-4

1.5 The probe

1. The safety of the probe

Probe body surrounding protection Settings can protect the fingers to prevent electric shock.

Prior to any measurement, connect the probe to the oscilloscope and grounding terminal.

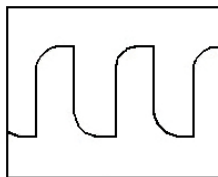
2. The probe compensation (see the probe specification)

In the first connect the probe to any input channel, adjustment is required, make the probe to the input channel. Without compensation correction probe will lead to a measurement error or mistakes. If adjust probe compensation, please click the following steps:

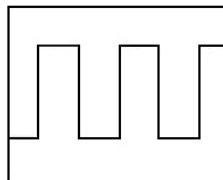
(1) The channel attenuation is set to 10 x, the switch on probe options menu is also set to 10 x, and the oscilloscope probe connected to channel 1. If using the probe hook-tip, ensure reliable contact with the probe.

(2) Connect the probe tip and the signal generator output connector, Grounding clip and signal generator is connected to the ground connector, Display Channel, Then press the "AUTO" (automatic) button.

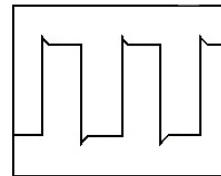
(3) Check the shape of the waveform display. As Figure 1-5.



Under compensation



Appropriate compensation



over compensation

Figure 1-5

(4) If necessary, adjust the probe, repeated operation when necessary.

1.6 Preliminary using oscilloscope display signal automatically

Figure 1-6 boot screen

JHJDS30 series hand held digital storage oscilloscope has the function of signal automatically set. According to the input signal, can automatically adjust parameters such as voltage, time base and trigger mode, so as to achieve the best state of signals. Automatically set to work, the requirements of the measured signal frequency is greater than or equal to 50 Hz.

This part mainly do a demonstration of automatic display signal to the customer who preliminary use oscilloscope, but do not introduce all the functions of oscilloscope. The specific steps are as follows:



- (1) after equipped with batteries, long press the red "PRW" key in the top right corner of the oscilloscope, until I heard a buzzer sound can let go, oscilloscope is into Boot screen at this time, as shown in figure 1-6
- (2) enter the boot screen, choose instrument working mode by selecting the button F1 ~ F5, the default is

selected "oscilloscope", then entered into the oscilloscope operating interface automatically selected after about 3s.

(3) Connect probe to channel 1 (CH1) and put probe to 10x, then grounding clip to receive the signal

(4) Press the "CH1", then press "F3", set probe to 10 x

(5) Probe needle contact with signal source need to test, press the "AUTO" button, at this point, the oscilloscope is automatically set vertical, horizontal and trigger system, and will be display the best effect of waveform for the signal.

The second chapter Oscilloscope operation

The user from the previous chapter have probably learned how to set the JHJDS30 series oscilloscope from the menu bar. This chapter will introduce each function settings of the oscilloscope. The content of this chapter is as follows:

- △ End connections
- △ Automatic measurement
- △ Display system
- △ Vertical system
- △ Level system
- △ Trigger system

- △ Storage system
- △ Secondary system
- △ Cursor measurement
- △ Mathematical functions

2.1 End connections

As shown in figure 2-1: from left to right in the order:

CH1、CH2、CH3、CH4

CH1-CH4 : Used to display signal input connection



Figure 2-1 connection

2.2 Automatic measurement

JHJDS30 series handheld digital storage oscilloscope/oscillographic table has an automatic setting function. According to the input signal, automatically adjusting the voltage stall, time base, and triggering the best way to form display.

"AUTO" is for automatically setting.

- If there is more than one channel signal, the channel with the lowest frequency signal as the trigger source.
- Found no signal, connect the channel 1 to a signal, press "AUTO" button.

2.3 Display system

Table 2-1 display system function menu

Function menu	Set	Instructions
Display type	Vector	Showed by means of connection between the sampling points
Display mode	Y-T	Display vertical voltage relative to the time scale (horizontal)
	X-Y	Display (no this part for single channel oscilloscope)
Display brightness	Back-light	Can be set from 1 to 5
Color	/	Color or monochrome display
Language	/	Chinese or English

Display system Settings

1. The backlit Settings: press "MENU" button, find the backlight Settings, press "F5" key set the backlight, the brightness.
2. Language: press "MENU" button, find language setting, press "F2" setting language, can be set both Chinese and English display interface.
3. The color Settings: press "MENU" button, find the color Settings, press "F3" button to set the color, can be set color and monochrome display
4. Mode: press "MENU" button, find the mode setting, press "F1" setting mode, can be set Y - T or x-y mode display
5. Long press "MENU" button, can enter the instrument function interface, can choose by F1 ~ F5 select button. As shown in figure 2-2

F1 Oscilloscope			F4 Recorder	
-----------------	--	--	-------------	--

Figure 2-2 Instrument selection function interface

2.4 The vertical system

JHJDS30 series handheld digital storage oscilloscope, every channel has an independent operating menu. When press the CH1 and CH2 bond, the operating menu will be displayed at the bottom of the screen.

To change the CH1 and CH2 vertical Settings, follow these steps:

1. Press the CH1 and CH2 bond, function menu will be displayed at the bottom of the screen.
2. Press the F1 ~ F5 to choose various states.

Now you can see the below menu:

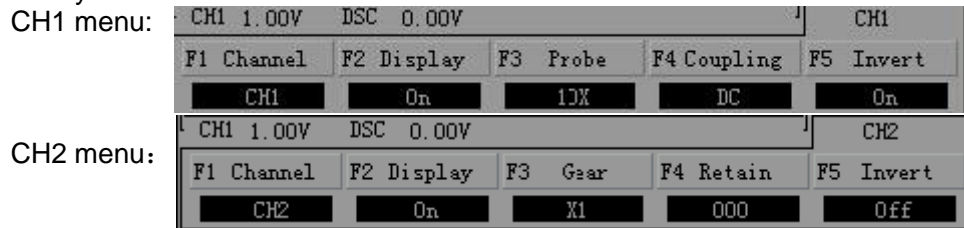


Figure 2-3 channel 1, 2 menu item

Table 2-2 in detail the function of each menu item

channel	CH1	channel 1 and 3
	CH2	channel 2 and 4
According	open	Open the display waveform
	close	Close display waveform
The probe	1X	Select one data according to the probe attenuation coefficient, to keep vertical deflection coefficient correctly.
	10X	

	100X	There are three types: 1X、10X、100X
coupling	ac	Stop the dc component of input signal
	dc	the ac and dc component of input signal
Reverse phase	open	Open the inverse function
	close	Close the inverse function

1.Set the channel coupling

Take signal to CH1 channel for example, measured signal is a square wave signal containing ac component.

- CH1, for example, enter a signal contains the dc component.

Press the "CH1"→"F4" select Settings to AC. Only allow ac component to pass, dc component is filter. Waveform display as shown in figure 2-4.

- Press the "CH1"→"F4" select Settings to DC. AC and DC components are allowed to pass. Waveform display as shown in figure 2-5.

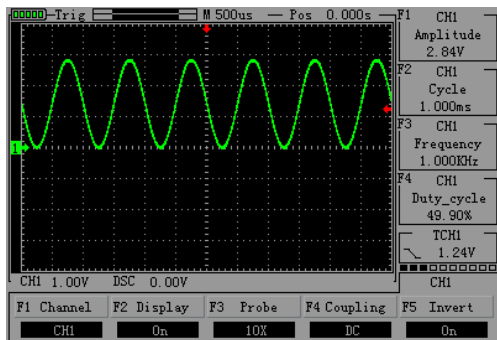


Figure 2-4 coupled dc

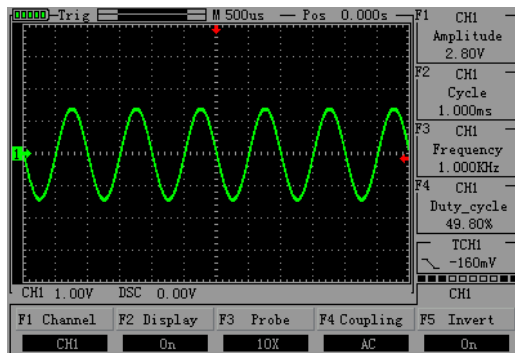


Figure 2-5 coupled ac

2. Probe scale setting

To cope with the attenuation factor of the probe set, User need adjust the probe attenuation scale factor in channel operation menu. If the probe attenuation coefficient ratio is X10, Oscilloscope input channel ratio should be set to 10X, to avoid the display of information and measurement data errors occur.

Press CH1 and CH2 key, press the F3 choose appropriate Settings, the Settings will be saved to you to change the Settings again. As shown in figure 2-6

- Press "CH1"→"F3" set the probe for 10 x

3.Waveform reverse setting

- Press the "CH1"→"F5" will reverse phase can be set to "on" see waveform inverse, as shown in figure 2-7

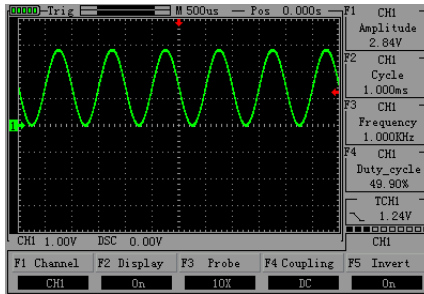


Figure 2-6 set probe 10 x

4. Waveform display Setting

By setting allows any channel of waveform display or not. for example: To set the waveform does not display the CH1 channel

- Press "CH1"→"F2", set the CH1 channel does not display The waveform. As shown in figure 2-8

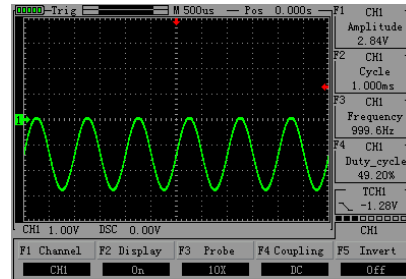




Figure 2-7 waveform inverse

5. Vertical volts/division adjustment setting

When adjusting the vertical volts/div, the range is 100mV/div-50V/div (probe 10X), Stepping way to 1-2-5, Or 10mV/div-5V/div (probe 1X), 1V/div-500V/div (probe 100X). Take the CH1 for example:

- If you set the vertical direction 2.00V/div, probe is set to 1 x gear as an example, Press "  " to adjust the vertical v/case, at the same time can press "  " to move the entire waveform up, down. As shown in figure 2-9

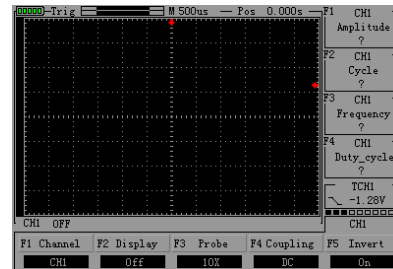


Figure 2-8

- If you set the vertical direction 1.00V/div, the steps in the above example. As Figure 2-10
- Set the waveform relatively level move up or down. As figure 2-11

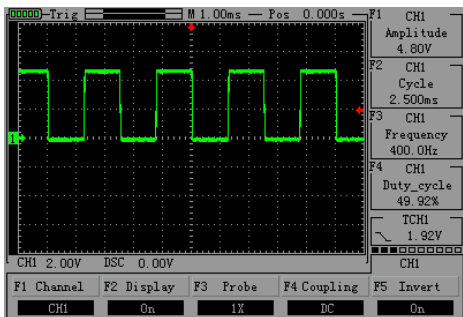


Figure 2-9

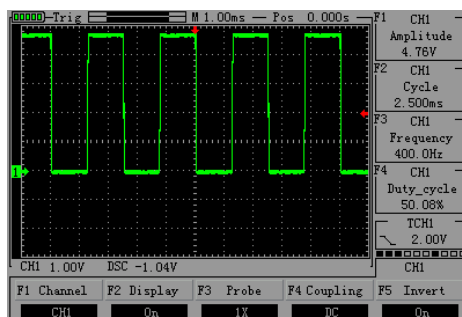


Figure 2-10

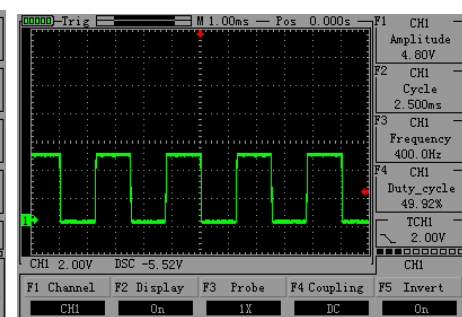


Figure 2-11


2.5 Horizontal Systems

Horizontal System Set level scale and level trigger point position, level center of the screen calibration is waveform time benchmark (reference). Changing the horizontal scale causes the waveform relative to the screen center expansion or contraction, Change the horizontal position relative to the change point of the waveform trigger position.

the change of Horizontal position is to display waveform changed position relative to the level of trigger point.

- Time base (TIME/DIV)

Use the buttons below to change the base size, base show horizontal on each of the big length of time

- Press the "  button to change the level of scale, in order to enlarge or reduce waveform.

If you want to stop the waveform acquisition, then press "RUN" button can be realized. As figure 2-12,2-13

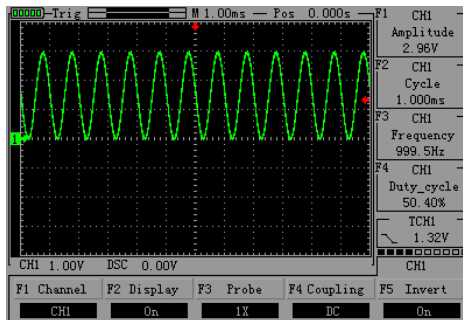


Figure 2-12

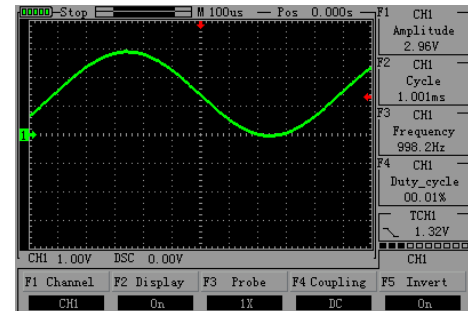




Figure 2-13

- Press the " 
- to adjust the channel waveforms of horizontal position. The amplitude changes according to the change of the time base. As figure 2-14

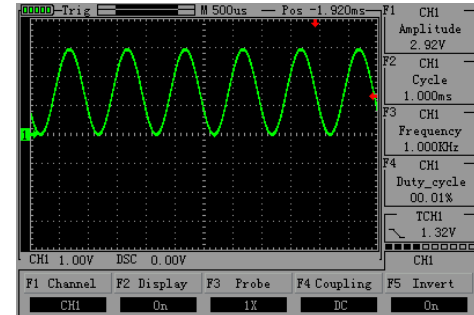


Figure 2-14

2.6 Trigger system

The trigger determines when the oscilloscope starts to acquire data and display waveforms. Once the trigger is set up correctly, it can convert the unstable display into meaningful waveforms. Trigger Control menu button



- Trigger Control

Trigger: The oscilloscope trigger mode is edge triggered.

- Edge Trigger: When the edge of the trigger signal reaches a given level, trigger occurs. Edge trigger is triggered on the input signal edge trigger threshold. When "Edge", that is input at the rising edge, falling edge triggered.

Table 2-3 edge-triggered menu function table

Source	CH1-CH4	Set CH1-CH4 as trigger source.
--------	---------	--------------------------------



slope	up	Select the trigger signal to trigger on the rising edge
	down	Select the trigger signal to trigger on the falling edge
triggered	automatic	Set in the absence of detectable also can collect waveform trigger conditions
	normal	Set only a triggering condition is satisfied only waveform
	single	Set capture a waveform when a trigger is detected, then stop


Instructions:

Set the source:

1, press "TRIG" to display trigger menu, according to the signal input, press "F1" choose "CH1" or "CH2".

Set the trigger level

2, press the "CH1" button, then press "s"

mark; Click "TRIG" and press "

" button on the right side panel again adjusting trigger flag arrow, according to the trigger marks relative channel 1 position and the current vertical per division on behalf of the voltage value to set the trigger level size.

Set up the slope

3, press "F3" button to choose the slope for the "up" or "down".

Set the trigger mode:

4, press "F4" choose "automatic", "normal" or "single".

As figure 2-15, 2-16

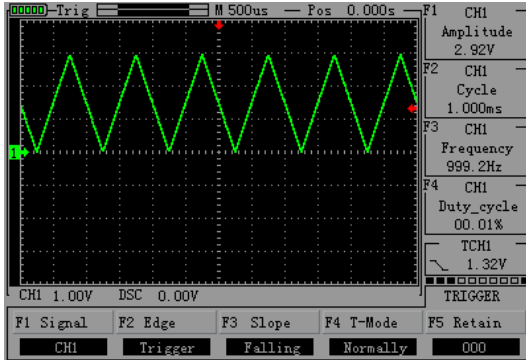


Figure 2-15 normal trigger

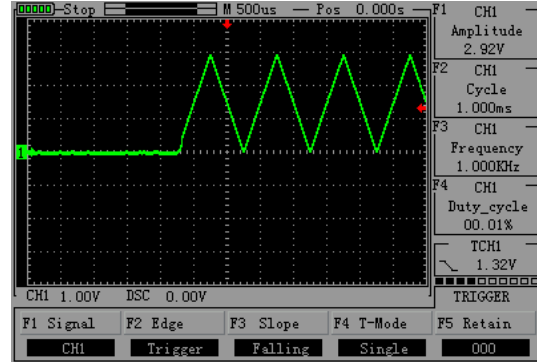


Figure 2-16 single trigger

2.7 The storage system

JHJDS30 series handheld digital storage oscilloscope can save two reference waveforms(Ref - A, the Ref - B)、 six screenshots at internal memories

- First, find a screen shot interface by press "MENU"→"F4" Screen shot is set to "off"
- Reference waveform storage: press the "MATH" find reference waveform Settings→"F1" Settings stored reference waveform Ref - A, then press "OK" button, which shows "SAVING" reference waveform is saved
- See the reference waveform: according to the "MATH"→"F1"→"F3" open the Ref - A reference waveform, as figure 2-17

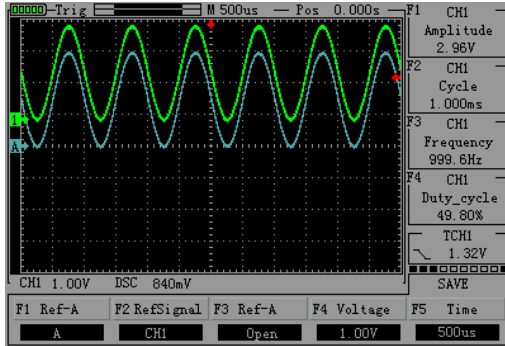


Figure 2-17

- Intercepting waveforms images: press "MENU" can be set to find the screenshot of the page - "F4" the screenshot is set to "on", then press "OK" to save screenshots, need to save a screenshot, press "F5" set the screenshots serial number. The waveform images used in this manual are from oscilloscope screenshots.

- Check capture images:

Turn off the oscilloscope first, and then connect the oscilloscope and computer with USB, and at the same time, press the "OK" button and "PRW" button let go when screen is bright; At this point, the computers will be prompted to have U disk inserted, open the U disk can see pictures of interception. After the operation, please click on the computer to exit the U disk mode, then disconnect the cable, long press oscilloscope "PRW" button to turn it off.

2.8 Auxiliary system

- Auxiliary function can be set by pressing the "MENU" kry and F1 ~ F5 selection function key. "MENU" button pop-up auxiliary system function set MENU. Table 2-4

Table 2-4 auxiliary function table menu

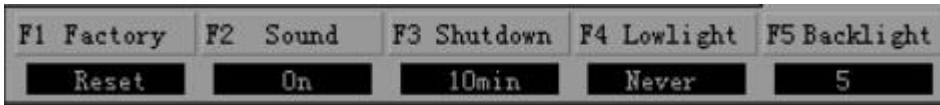
The function menu	Directions
voice	Set the voice "on" or "off"
Automatic shutdown	Can be set up "ten minutes", "30 minutes after shutdown or" Never "(Never) to turn off
Save electricity	Can be set up for 20 seconds, "40 seconds," 60 seconds "and" enter power saving mode after the "300 seconds" or "Never" mode
Factory pattern to restore	Restore the factory Settings

Settings voice: press "MENU" find auxiliary function MENU page, → Press "F2" set the voice "on" or "off".

Set automatic shutdown: press "MENU" find auxiliary function MENU page, →Press "F3" set the automatic shutdown time.

Settings save electricity: press "MENU" find auxiliary function MENU page, →Press the "F4" set time to save power.

Set up the factory pattern recovery: press "MENU" find auxiliary function MENU page, press "F1" →"F5" the recovery of oscilloscope.



- MEAS: Press the "MEAS", the screen will display the current measurement menu

2.9 The cursor measurement

In this mode, the cursor X or Y way come in pairs, and can be manually adjust the spacing of the cursor. Reading is the measurement of voltage or time value. Manual cursor measurement, follow these steps:

- When using the cursor, needs to set the source into the channel you measure first. Press the "HORI"→"F2" select source channel (setting for CH1)
- Press the "F1" choose "time", "voltage" or "off"
- By clicking on the "◀", "▶", "▲", "▼" button to adjust the cursor position. as figure 2-18.2-19

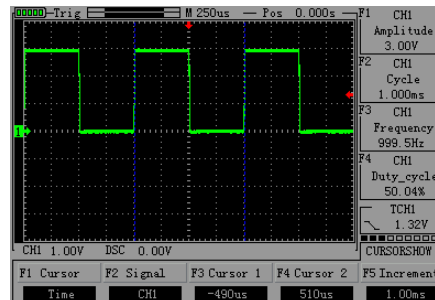
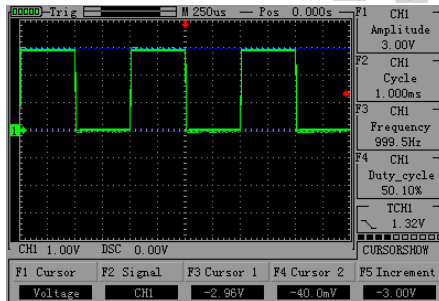


Figure 2-18

2.10 Mathematical function

Mathematical function is to display the function of addition, subtraction by CH1 and CH2 channel wave forms.

Figure 2-19

Table 2-5 math menu functions

Function menu	set	instructions
Display	On or off	Set the waveform operation on or off
Operation	CH1+CH2	Channel 1 waveform + Channel 2 waveform
	CH1-CH2	Channel 1 waveform - Channel 2 waveform
	CH2-CH1	Channel 2 waveform - Channel 1 waveform

- Press the "MATH" button, then press "F2" set the display "on", press "F3" choosing operation mode.

The third chapter The recorder using

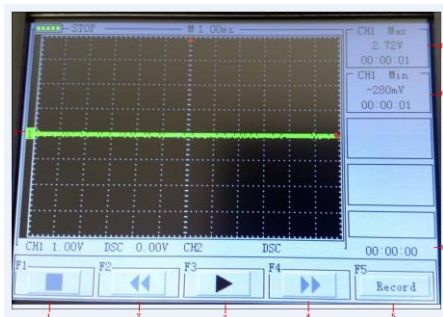
This hand-held oscilloscope has recorder function, greatly convenient for all aspects of customer's demand. Recorder can record the waveform automatically. This chapter's main content is as follows:

△ The use of the recorder

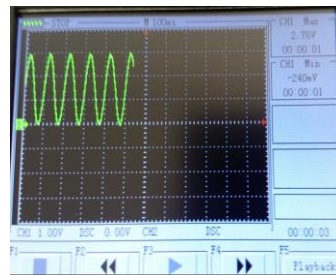
3.1 The use of the recorder

- First enter into the recorder interface: press the "PRW" button, press "F4" key to enter the recorder interface after boot (can be long press "MENU" -> "F4" if the oscilloscope in other interface). Figure 3-1
- Enter the interface, the horizontal line in the middle of screen is in the state of moving from left to right, connect the probe to the oscilloscope, and then contact to the signal recorded, press "F3" can enter into record state, then press "F1" button to stop recording.
- After recording the waveform, can press "F5" to playback waveform record. As figure3-2

Note: the range of recorder to record waveform frequency is below 20 Hz waveform, waveform can be displayed when adjust the time base for above 100 ms manually in oscilloscope interface.



3-1 The recorder interface



3-2 Record playback

3.2 Four channels display
Four channels work at the same time
(As figure 3-3)

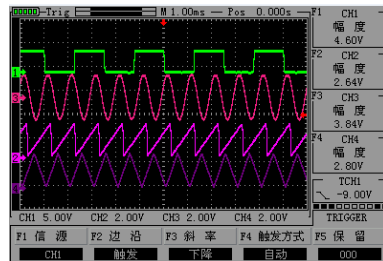


Figure 3-3

The fourth Chapter System prompts and troubleshooting

4.1 Prompting Message

SAVEING: When stored waveform or screenshot, the system will have the prompt show, and in the middle of the screen has a progress bar.

CLOSING: After startup when long press "PRW", when the battery is too low, or when to oscilloscope set off time, system will have the prompt, and in the middle of the screen has a progress bar.

USER1 RUNNING: Waveform signal generator can run

USER3 NO FILE: Signal generator no have waveform file

4.2 Fault handling

1. If you press the "PRW" oscilloscope still have black screen, no any display, please follow the steps below:
 - (1) Open the instrument battery back cover, and check whether there is a battery power supply or leakage, bilge gas, etc
 - (2) if you have a multimeter, can measure the lithium battery voltage on both ends (not lower than 3.0 V is normal)

(3) When finished check, restart the instrument.

(4) If this product still can't use normally, please contact us.

2. After collecting signal, the signal waveform does not appear in the picture, please follow the steps below:

(1) Check whether the probe is normal connection on the signal cables.

(2) Check whether signal cable is normal connection on the BNC.

(3) Check whether the probe is normal connection to object under test.

(4) Check whether the object under test has signal.

(5) Collect the signal again.

3. the measured voltage amplitude value is 10 times greater or smaller than the actual value 10 times:

Check whether the channel attenuation coefficient is consistent with actual use of probes attenuation ratio.

4. Waveform can display, but can not be stabilized:

Check whether trigger source set of triggering menu is consistent with the actual signal input channel.

5. Press the "RUN" button without any display:

Check whether the trigger mode of trigger menu is in a "normal" or "single", and whether the trigger level is beyond waveform range. If yes, make trigger level in center, or set the trigger mode to "AUTO".

6. Waveform display in ladder shaped:

This phenomenon is normal. Maybe the level time base gear is too low, increase the level of time base can improve horizontal resolution, can improve the display.

The fifth Chapter Service and support

5.1 Warranty description (JHJDS3034 series handheld digital storage oscilloscope)

We guarantee the production and products on sale will not appear material and process defects within two years from the delivery date by authorized dealer. If it is proved defective in the detailed rules of product warranty, we will supply repair or replacement service.

Except for the warranty in the profile or usage guarantee, we do not make any express or implied warranty, including but not limited to implied warranties of merchantability and special applicability. Our company is not responsible for indirect damage, special damage, or damage caused by this.

Appendix A: technical specifications

Unless otherwise specified, all technical specifications are used to set the attenuation switch as 10 x of the probe and the series oscilloscope. To verify the oscilloscope is in line with the technical specifications, the oscilloscope must meet the following conditions:

- Oscilloscope must run continuously more than thirty minutes within the specified operating temperature.
- If the operating temperature range reach or exceed 5 degrees, must be calibrated, except for the specifications marked "typical", all specifications are guaranteed.
- The oscilloscope must belong to the factory calibration period.

Technical specifications

Input	
Input coupling	AC、DC
Input impedance	1MΩ _{+2%} 20pF _{+5pF}
Maximum input voltage	40 v (X1 probe); 400 v (probe X10) measurable voltage 220 v; (probe X100) 1000 v voltage can be obtained
Probe attenuation	1X、10X
Probe attenuation coefficient setting	1X、10X、100X
Signal acquisition system	
Sampling types	Real-time sampling and random sampling
The depth of the storage	16K
Acquisition mode	Sampling, peak detection
Vertical system	

Vertical sensitivity	1 x 10 mv - 5 v (probe), 100-50 mv v (probe 10 x) 1 v to 500 v (100 x) probe (1-2.5-5 step)
Vertical accuracy	+3%
Vertical resolution	8bit
bandwidth	30MHz
Horizontal system	
Real-time sampling rate	250 MSa/s
Horizontal scanning range	10 ns - 50 ms (1,2.5,5 step), 100 ms -5 s (Scan)
Trigger system	
Model	Automatic, normal and single
Type	Rising and falling edge
Automatic detection	Support (50 HZ to 60 MHZ)
Mathematical operations	CH1+CH2、CH1-CH2、CH2-CH1

Measurement system	
The cursor measurement	The cursor support time and voltage
Measuring way	Automatic ,manual
Measurement	Amplitude, frequency, duty cycle, Duty ratio
Equipment	
Screen	4.3 -inch 16-bit true color TFT 400 * 272
Battery	3000 + mA lithium batteries (single battery for 4 hours)
Size	220*128*37 (mm)
Recorder	
Time base	100ms-5s
length	To be determined

Appendix B: Daily maintenance and cleaning

Daily maintenance

Please do not store or place your instrument in where the LCD display will be exposed to direct sunlight for a long time.

Please do not let the instrument or probe touch spray, liquid and solvent, in order to avoid the instrument

and probe damaged.

Please charge battery in time when the battery is finished using.

Cleaning

Examine instruments and probes usually according to the operation situation. Please clean the surface of instrument as following steps:

1. Use soft cloth to wipe the dust out of the instrument and probe. When clean LCD screen, be careful not to scratch the transparent plastic protective screen.
2. Use a piece of wet soft cloth but not dripping to wipe instrument, please remove the battery before wiping. Use downy detergent or clean water to scrub. Do not use any corrosive chemical reagent, to avoid damage to the instrument and probe.

Warning: Before reinstalling the battery, please make sure the instrument is completely dry to avoid the damage of electrical short circuit caused by moisture to instrument.