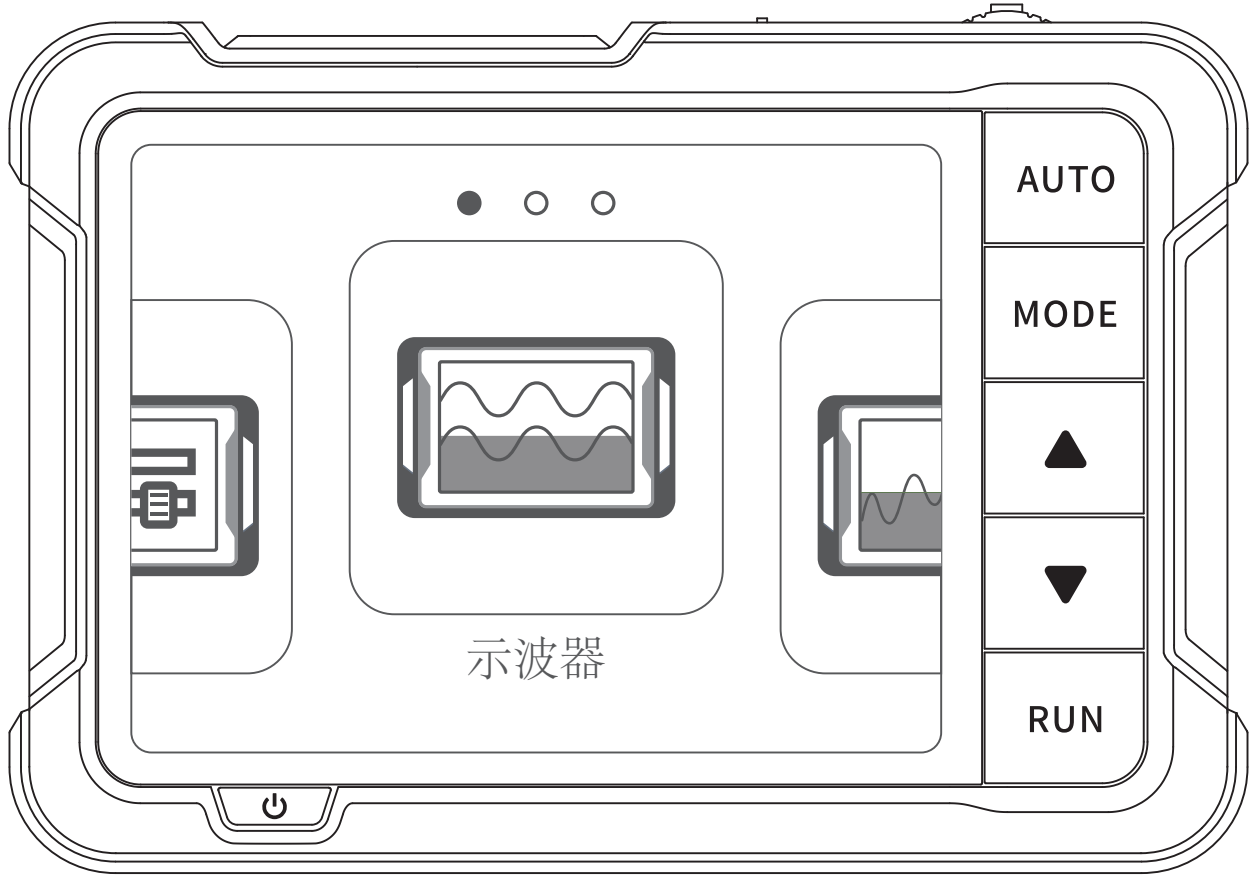
FNIRSi 菲尼瑞斯

DSO510

数字示波器使用说明书

DIGITAL OSCILLOSCOPE INSTRUCTION MANUAL



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用户须知

●本手册详细介绍了产品的使用方法、注意事项以及相关事项，在使用产品之前，请详细阅读手册，以便发挥产品的最佳性能。

●不要在易燃、易爆的环境中使用仪器。

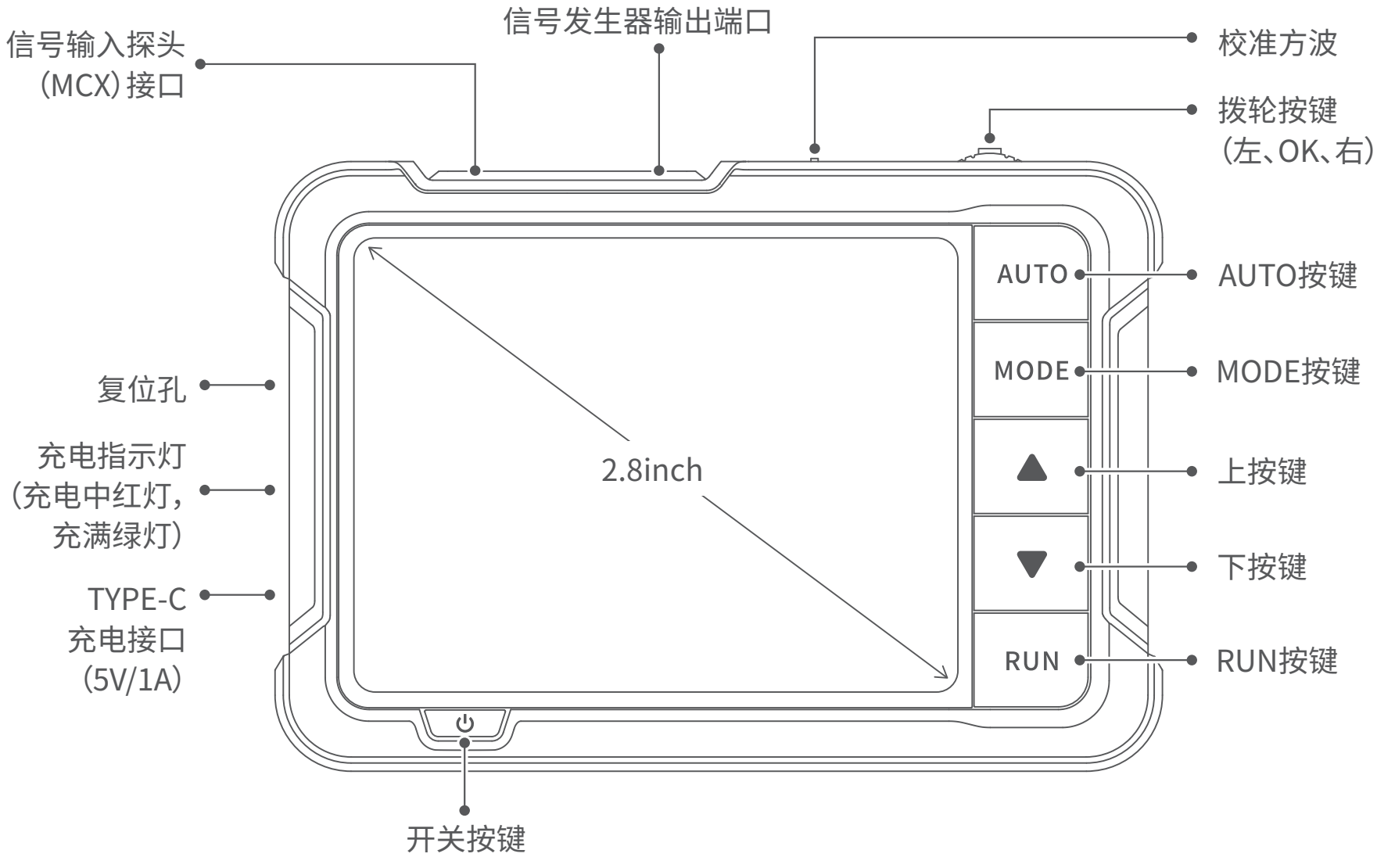
●仪器更换的废旧电池和报废的仪器不可与生活垃圾一同处理请按国家或者当地的相关法律规定处理。

●当仪器出现任何质量问题或者对使用仪器有疑问时，可联系“菲尼瑞斯-FNIRSI” 在线客服或厂家，我们将在第一时间为您解决。

一、产品简介

“DSO-510”是我司推出的一款高实用性,高性价比,针对于维修行业和研发教育行业人群的高性价比手持示波器。该示波器具有48MS/s的实时采样率、10MHz带宽、完整的触发功能(单次,正常,自动)。对于周期模拟信号及非周期的数字信号都能运用自如,最高可测量±400V的电压配备高效一键AUTO,无需繁琐调节即可显示被测波形。另外还带有多种函数信号发生器(50KHz)。搭载2.8英寸320*240分辨率的高清液晶屏,内置1000mAh高品质锂电池,充满电后可连续使用4小时左右。

二、面板介绍

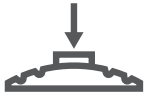

信号输入探头
(MCX)接口
信号发生器输出端口
校准方波
拨轮按键
(左、OK、右)
AUTO
AUTO按键
MODE
MODE按键
复位孔
充电指示灯
(充电中红灯，
充满绿灯)
2.8inch
上按键
TYPE-C
充电接口
(5V/1A)
下按键
RUN
RUN按键
开关按键

三、按键功能

按键	操作	主界面	示波器	信号发生器	设置
	左拨动	向上选择	控制各参数 功能调节选择	数值位选择	降低音量/ 亮度
	短按	进入界面	/	进入/退出数值	进入当前设置/确定当前设置参数
	长按	返回主界面			
	右拨动	向下选择	控制各参数 功能调节选择	数值位选择	提高音量/ 亮度

按键	操作	主界面	示波器	信号发生器	设置
AUTO	短按	/	自动测量	/	/
	长按		自动校正		
MODE	短按	/	切换测量模式	返回	返回
	长按	/	参数设置界面	/	/
▲	短按	/	向上选择/调节参数		
▼	短按	/	向下选择/调节参数		
RUN	短按	/	运行/暂停波形	开启/关闭输出	/
	长按		保存波形	/	
⏻	短按	开/关机			

示波器参数设置界面按键说明

按键	操作	波形	参数	余晖	图片
	短按	切换参数	打开/关闭参数	/	打开图片
	左拨动	向左选择			向左查看图片
	右拨动	向右选择			向右查看图片
▲	短按	向上选择(参数界面可选择至上一列)			
▼	短按	向下选择(参数界面可选择至下一列)			
MODE	长按	进入/退出参数设置界面			

*示波器参数设置界面见09页

四、参数指标

采样率	48MS/s
带宽	10M
垂直灵敏度	10mV/Div-10V/Div
时基范围	50ns-20S
电压范围	X1:±40V (Vpp:80V)
	X10: ±400V (Vpp :800V)
触发方式	自动/常规/单次
触发沿	上升沿/下降沿
耦合方式	AC/DC
校准方波	频率:1K;占空比:50%;幅值:3.3V

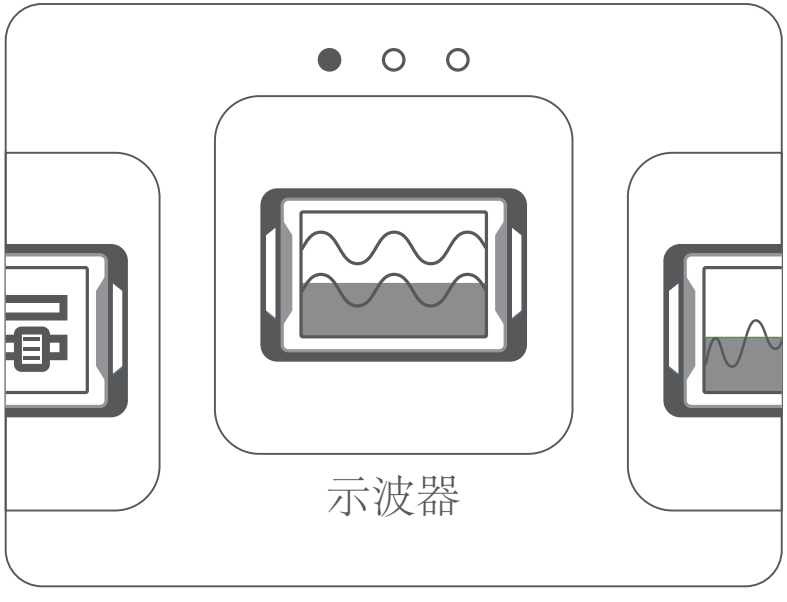
*尺寸和重量均为人工测量，存在些许误差，
请以实物为准

信号发生器	
频率	0-50KHz
占空比	0-100%（矩形波和锯齿波）
幅值	0.1-3.0V
波形	正弦波, 矩形波, 锯齿波, 半波, 全波, 正阶梯波, 反阶梯波, 指数升, 指数降, 直流信号, 多音频, 辛克脉冲, 洛伦茨波

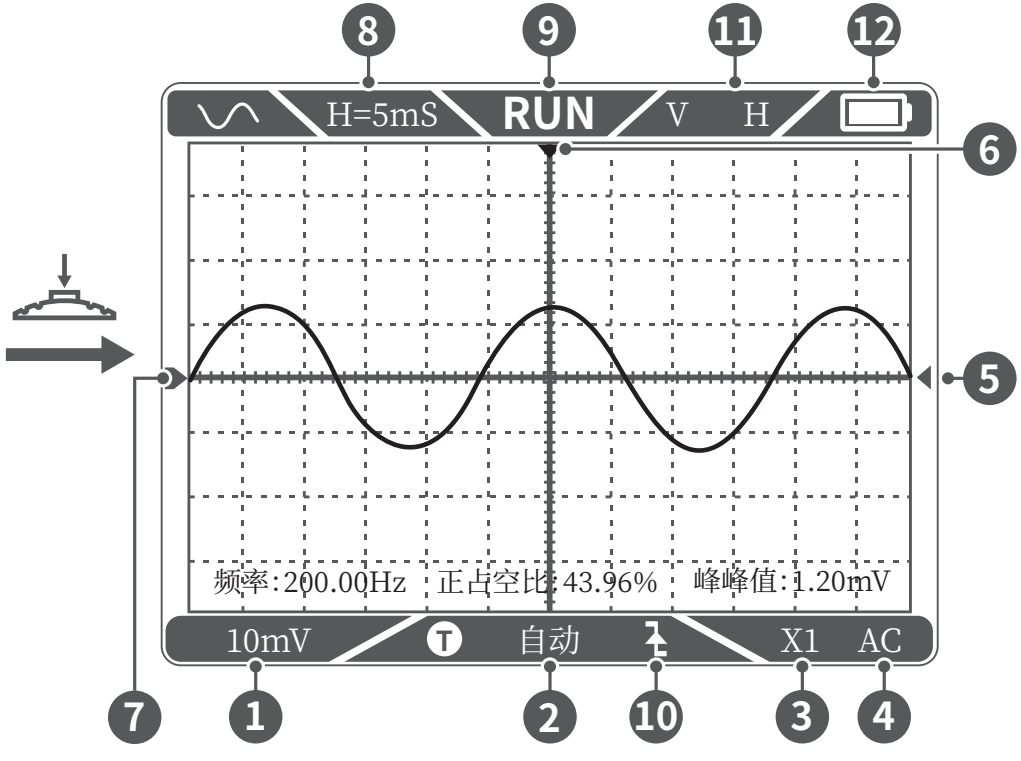
其他	
显示	2.8英寸/PPI:320*240
USB充电	5V/1A
锂电池容量	1000mAh
尺寸	99x68.3x19.5mm
重量	104g

五、屏幕指示

5.1 示波器界面



主界面



示波器界面

①垂直单位:表示垂直方向一大格代表的电压

②触发模式指示图标:Auto表示自动触发,Single表示单次触发,Normal表示正常触发

③探头比例:这个必须和探头手柄上的1X/10X开关设置保持一致,若探头是1X档,那么示波器也要设置为1X档,1X测量±40V电压,10X测测量±400V电压

④输入耦合方式指示图标,AC表示交流耦合,DC表示直流耦合

⑤触发电压指示图标　　⑥触发位置指示图标

⑦基线指示图标,此图标指示位置表示当前位置为 0V 电压

⑧水平时基,表示水平方向一大格代表的时间长度

⑨触运行暂停指示图标,RUN表示运行,STOP表示暂停

⑩触发边沿指示图标

⑪ V　H :左右控制时基,上下控制通道的垂直灵敏度;

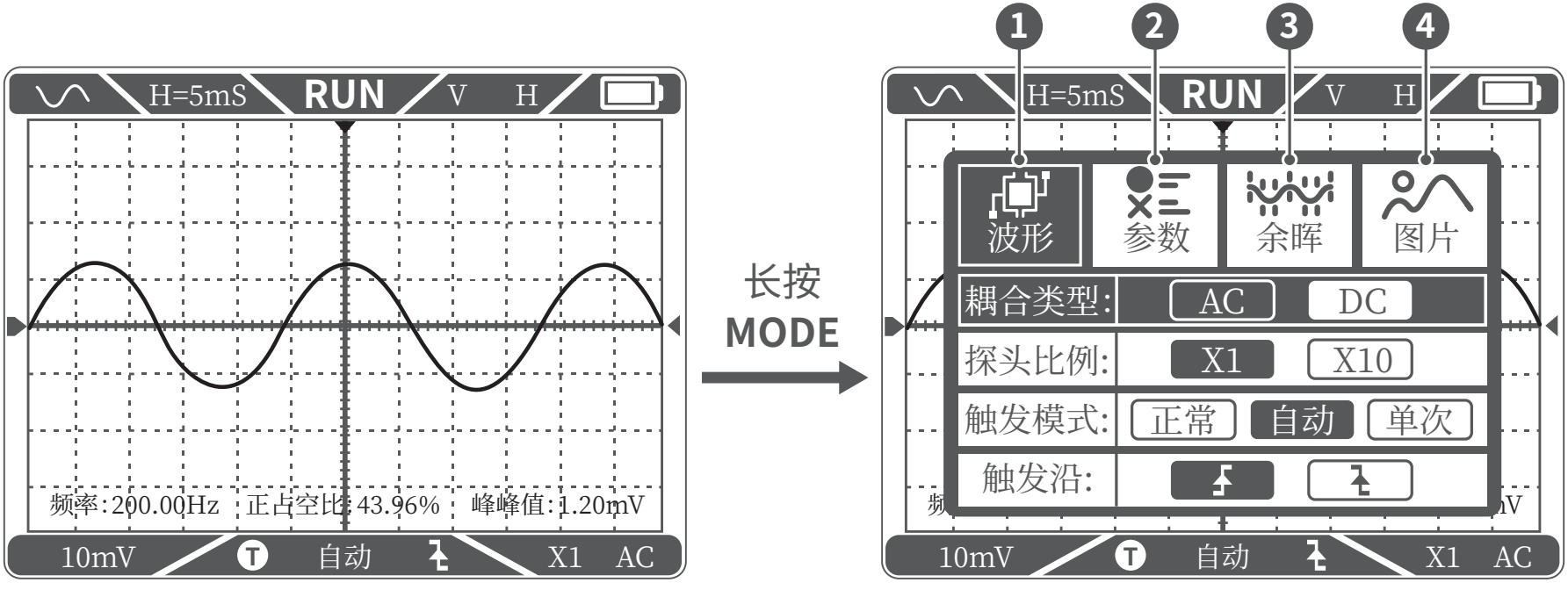
▶ ▼ :左右控制水平触发移动,上下控制通道波形上下移动;

◀ ▼ :左右控制水平触发移动,上下控制触发电平移动

*按 MODE 控制切换

⑫电池电量

5.2 示波器参数设置界面



示波器界面　　**示波器参数设置界面**

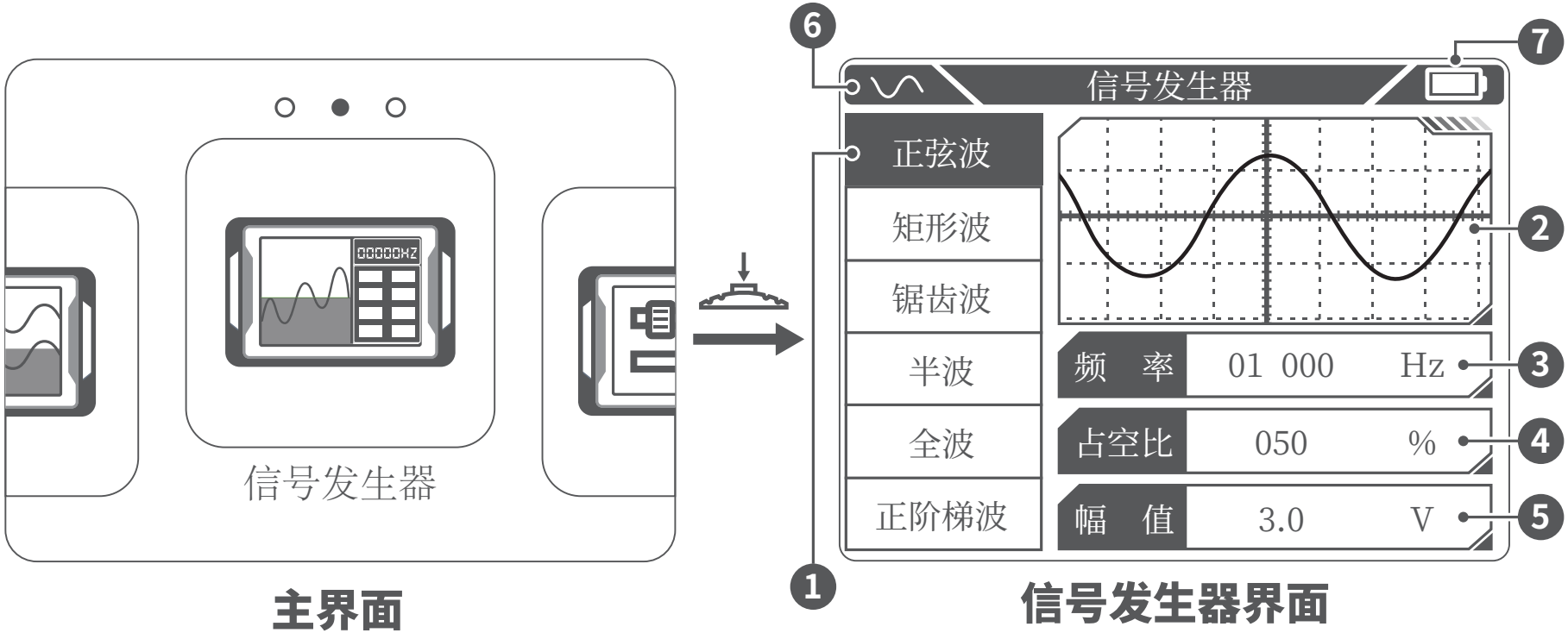
①**波形**：设置耦合类型、探头比例、触发模式、触发沿

②**参数**：打开/关闭参数显示（频率、周期、正占空比、负占空比、正脉宽、负脉宽、最大值、最小值、峰峰值、幅值、有效值、平均值）

③**余晖**：设置余晖：off、500ms、1s、∞

④**图片**：查看图片

5.3 信号发生器界面



主界面

信号发生器界面

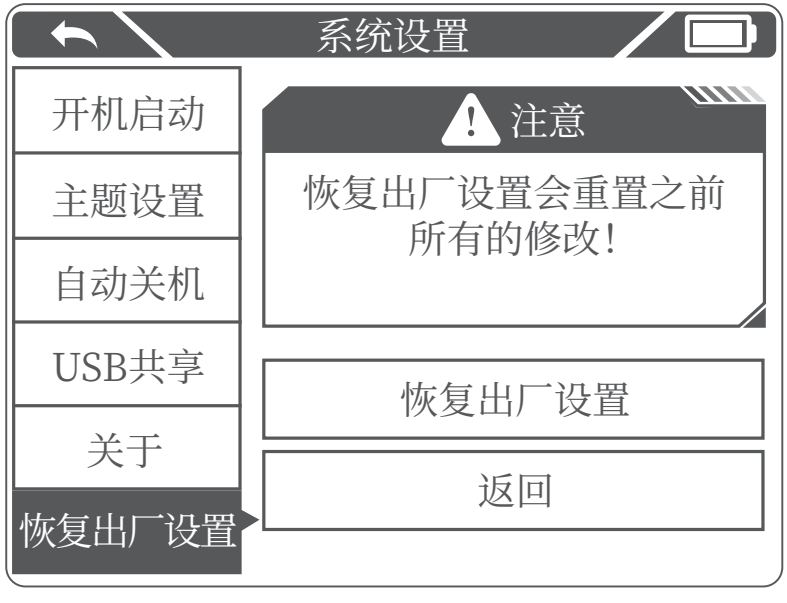
①波形的选择　②波形的显示　③频率设置

④占空比设置　⑤幅值设置

⑥信号发生器的开启与关闭(关闭变红)　⑦电池电量

5.4 设置界面





1、设置单项选择：

语言、声光设置、开机启动、主题设置、自动关机、关于、恢复出厂设置

2、具体设置详情：

①语言：中文,English

②声光设置：亮度：25~100；声音：0~10

③开机启动：关、示波器、信号发生器。该设置用于设置开机自动启动哪个功能模块

④主题设置：蓝色、黄色。

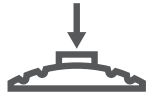
⑤自动关机：关、15分钟、30分钟、1小时。

⑥USB共享:开启后可通过USB接口连接电脑传输图片等

⑦关于：品牌信息、版本号

⑧恢复出厂设置。

六、固件升级

①在关机的情况下，先按紧  后，然后按住 ⏻ 。

②使用Type-C线连接板子上的Type-C口至电脑端,此时电脑会弹出一个名为“IAP”的U盘。

③将固件拉入到U盘里，如果固件升级完成，会自动跳到APP。

⚠ 注意

·固件升级只支持在电脑 Windows 10及以上系统使用

·升级过程中需一直按紧开机键，直至文件传输完成

七、注意事项

●收到设备后，请在充满电后使用。

●使用示波器的时候要注意档位的选择，示波器的档位跟探头的档位要保持一致。

●测量高压时，禁止碰触示波器任何金属部位，以免造成触电风险。

●尽量不要在充电时，进行高压测试。

●校准时，需要拔掉BNC探头，或者探头正负极短接。

●USB固件升级仅支持WIN10及以上，禁止拖入除发布固件以外的文件，否则极可能造成不可以恢复之后果。

●请使用说明书规格范围内的电压进行充电。

八、生产信息

产品名称：DSO510迷你数字示波器

品牌/型号:FNIRSI/DSO510

服务电话：0755-28020752

服务邮箱：support@fnirsi.com

商务邮箱：business@fnirsi.com

生产商：深圳市菲尼瑞斯科技有限公司

地址：广东省深圳市龙华区大浪街道伟华达工业园C栋西边8楼

网址：www.fnirsi.cn

执行标准：GB/T 15289-2013

NOTICE TO USERS

●This manual provides detailed introductions to the product. Please read this manual carefully ensure obtain the best state of the product.

●Please keep this manual properly .

●Do not use the instrument in flammable and explosive environments.

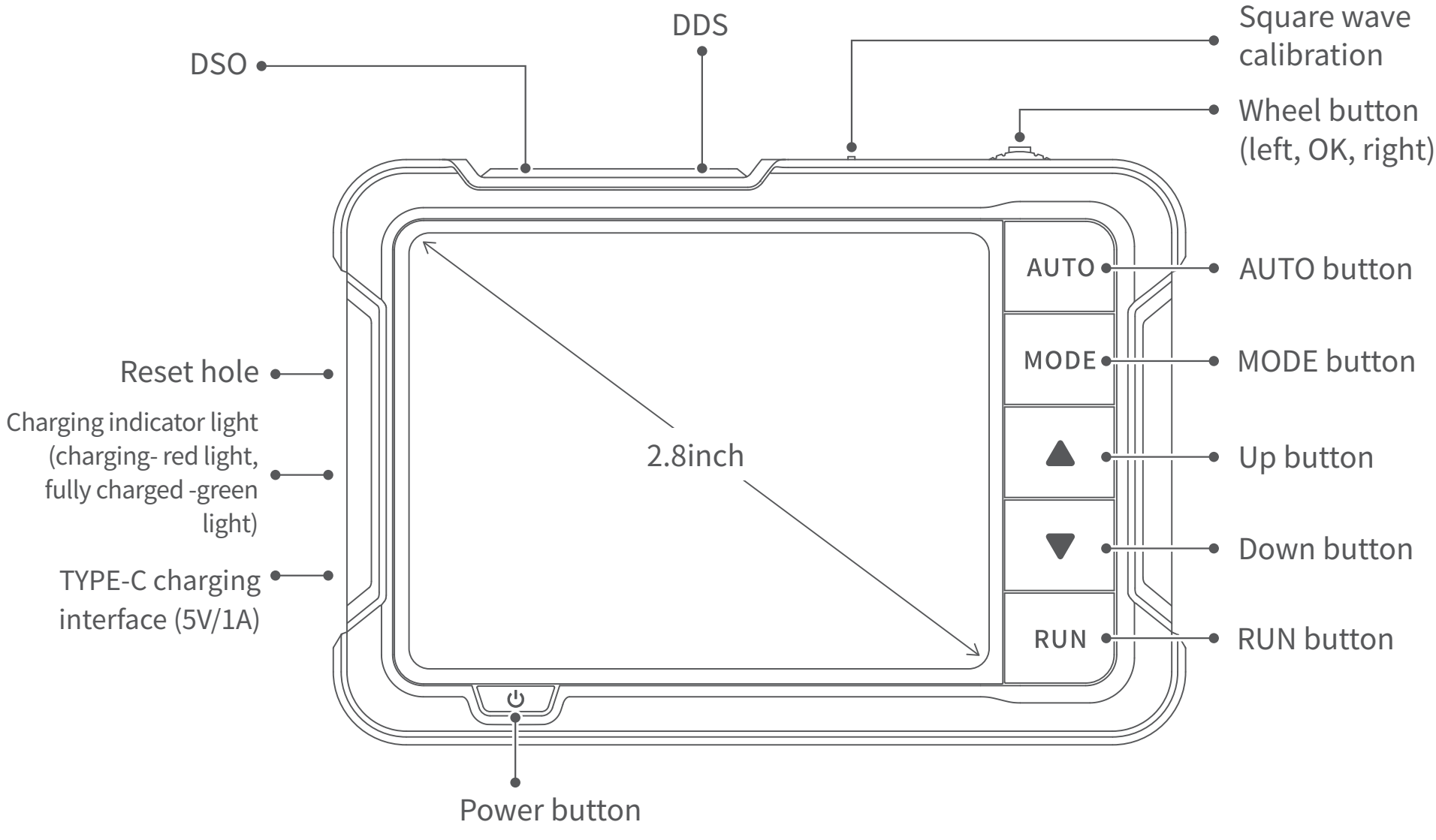
●Waste batteries and instruments cannot be disposed of together with household waste. Please dispose of them in accordance with relevant national or local laws and regulations.

●If there are any quality issues with the device or if you have any questions about using the device, please contact “FNIRSI” online customer service and we will solve it for you in the first time.

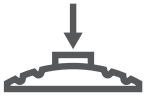
1、PRODUCT INTRODUCTION

DSO-510 is a highly practical and cost-effective handheld oscilloscope launched by our company, targeting the maintenance industry and development education industry. This oscilloscope has a real-time sampling rate of 48MS/s, 10MHz bandwidth, and complete triggering function (single, normal, auto). It can be used freely for both periodic analog signals and non periodic digital signals, and can measure up to ± 400V voltage with an efficient one click AUTO, which can display the measured waveform without complicated adjustments. In addition, it also comes with multiple functions signal generator (50KHz). Equipped with a 2.8-inch 320 * 240 resolution HD LCD screen and a built-in 1000mAh high-quality lithium battery, it can be used for about 4 hours when fully charged.

2.PANEL INTRODUCTION

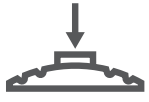


3.BUTTONS FUNCTIONS

Button	Operation	Main Menu	Oscilloscope	Signal Generator	Setting
	Move to the left	Upward selection	Control various parameters, function adjustment selection	Numerical position selection	Decrease volume/ brightness
	Short press	Enter interface	/	Enter/exit numerical values	Enter current settings/Confirm current setting parameters
	Long press	Return main menu			
	Move to the right	Downward selection	Control various parameters, function adjustment selection	Numerical position selection	Increase volume/ brightness

Button	Operation	Main Menu	Oscilloscope	Signal Generator	Setting
AUTO	Short press	/	Automatic measurement	/	/
	Long press		Auto calibration		
MODE	Short press	/	Switch measurement mode	Return	Return
	Long press	/	Parameter settings interface	/	/
▲	Short press	/	Upward selection/adjustment of parameters		
▼	Short press	/	Downward selection/adjustment of parameters		
RUN	Short press	/	Run/pause waveform	Enable/ disable output	/
	Long press		Save waveform	/	
⏻	Short press	Power on/Power off			

Oscilloscope Parameter Settings Interface Buttons Functions

Button	Operation	Wave-form	Parameters	Persistence	Image
	Short press	Switch parameters	Turn on/ off parameters	/	Open image
	Move to the left	Select leftward			View previous image
	Move to the Right	Select rightward			View next image
▲	Short press	Move upward (in parameter interface, move to the previous column)			
▼	Short press	Move downward (in parameter interface, move to the next column)			
MODE	Long press	Enter/exit parameter settings interface			

*Oscilloscope Parameter Settings Interface can be found on page 22

4.PRODUCT PARAMETERS

Sampling rate	48MS/s
Bandwidth	10M
Vertical sensitivity	10mV/Div-10V/Div
Time Base Range	50ns-20S
Voltage range	X1:±40V (Vpp:80V)
	X10:±400V (Vpp:800V)
Trigger Mode	Automatic/Normal/Single
Trigger Edge	Rising edge /Falling edge
Coupling	AC/DC
Square wave calibration	Frequency: 1K; Duty cycle: 50%; Amplitude: 3.3V

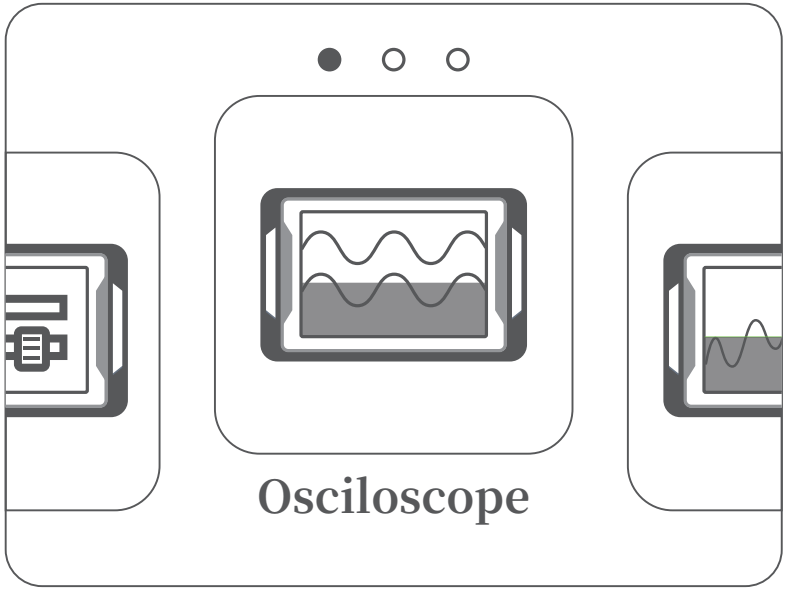
※The size and weight are both manually measured, with slight errors, please refer to the actual product for accuracy.

Signal generator	
Frequency	0-50KHz
Duty cycle	0-100% (rectangular and sawtooth waves)
Amplitude	0.1-3.0V
Waveforms	Sine wave, rectangular wave, sawtooth wave, half wave, full wave, step wave, anti step wave, exponential rise, exponential drop, DC signal, multi tone, Sink pulse, Lorentz wave.

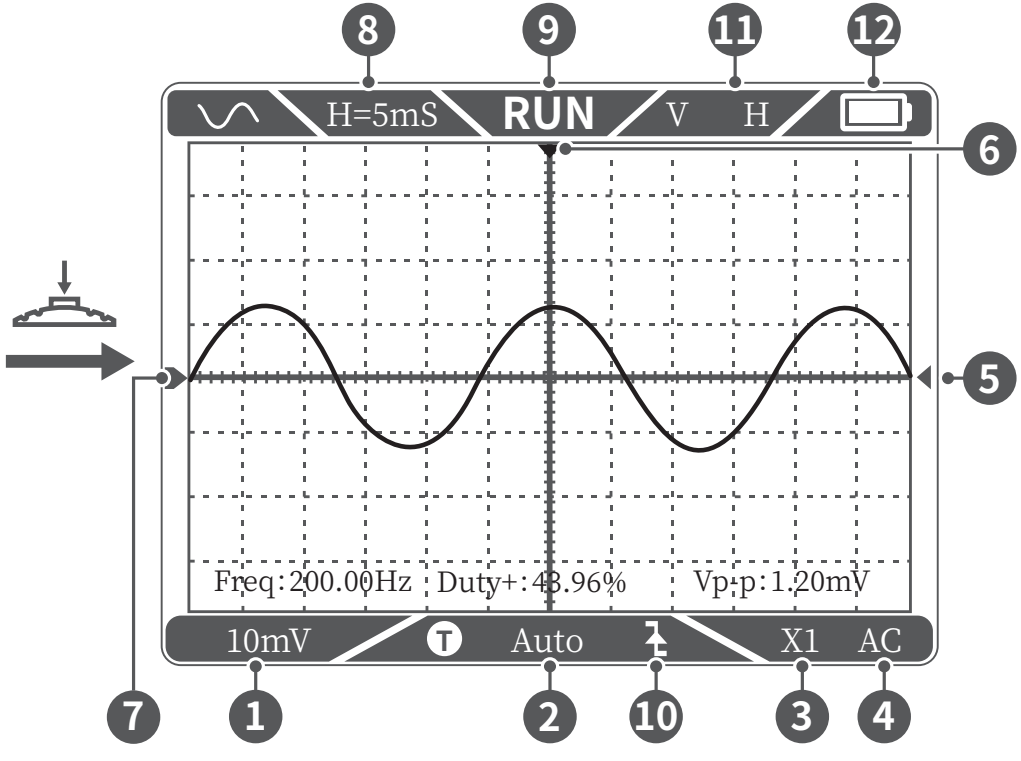
Others	
Display	2.8 inches/PPI:320*240
USB charging	5V/1A
Lithium battery capacity	1000mAh
Size	99x68.3x19.5mm
Weight	104g

5.SCREEN INDICATION

5.1 Oscilloscope Interface



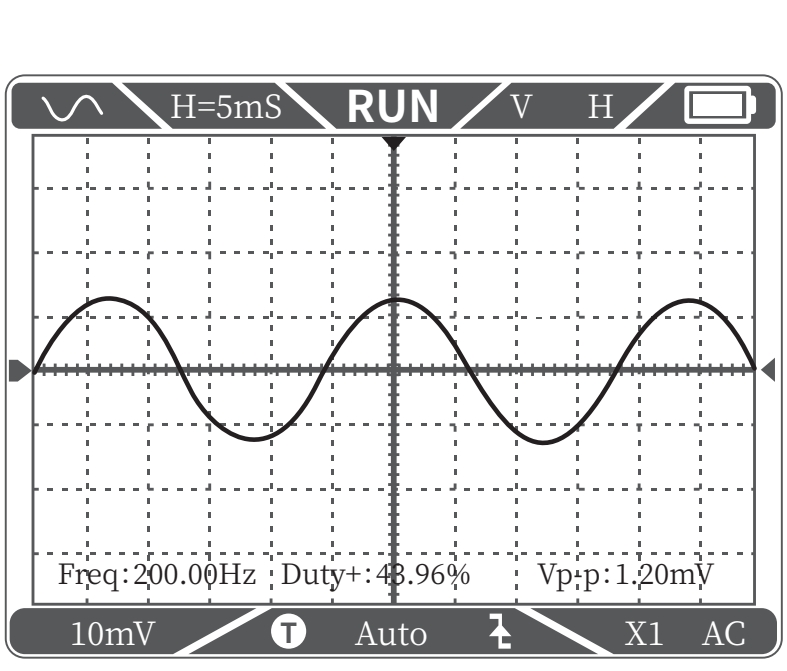
Main Menu



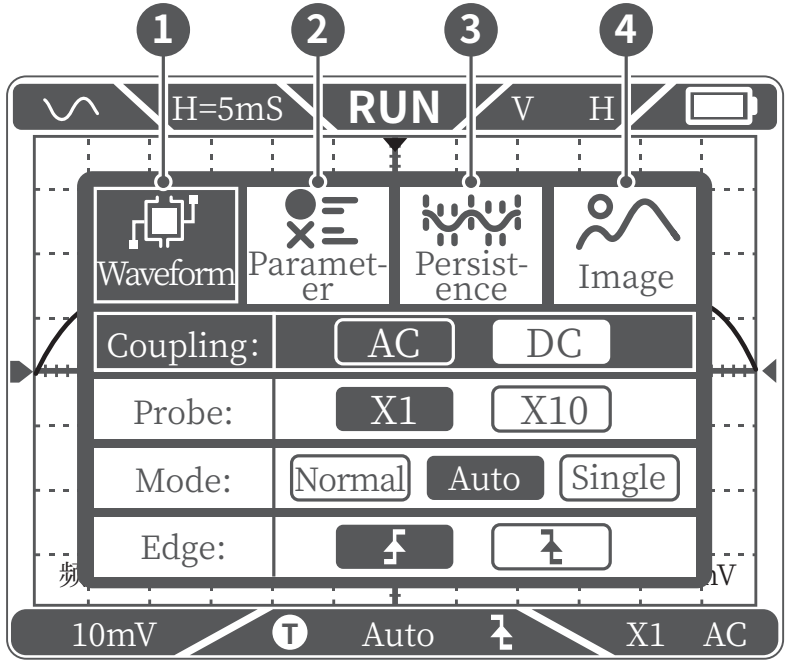
Oscilloscope Interface

①Vertical unit: represents the voltage represented by a large grid in the vertical direction
②Trigger mode indicator icon, Auto represents automatic triggering, Single represents single triggering, Normal represents normal triggering
③Probe ratio: This must be consistent with the setting of the 1X/10X switch on the probe handle. If the probe is in 1X mode, then the oscilloscope should also be set to 1X mode, where 1X measures 40V voltage and 10X measures 400V voltage
④Input coupling method indicator icon, AC represents AC coupling, DC represents DC coupling
⑤Trigger voltage indicator icon ⑥ Trigger position indicator icon
⑦Baseline indicator icon, this icon indicates the current position as 0V voltage
⑧Horizontal time base, representing the length of time represented by a large grid in the horizontal direction.
⑨Run pause indicator icon, RUN represents run, STOP represents pause.
⑩Trigger edge indicator icon
⑪V H : Left and right control the time base, up and down control the vertical sensitivity of the channel.
▶ ▼ : Left and right control horizontal trigger movement, up and down move the channel waveform up and down.
◀ ▼ : Left and right control horizontal trigger movement, up and down adjust the trigger level.
* MODE button control switching icons
⑫Battery level

5.2 Oscilloscope Parameter Settings Interface



Long press
MODE



Oscilloscope Interface

Oscilloscope Parameter Settings Interface

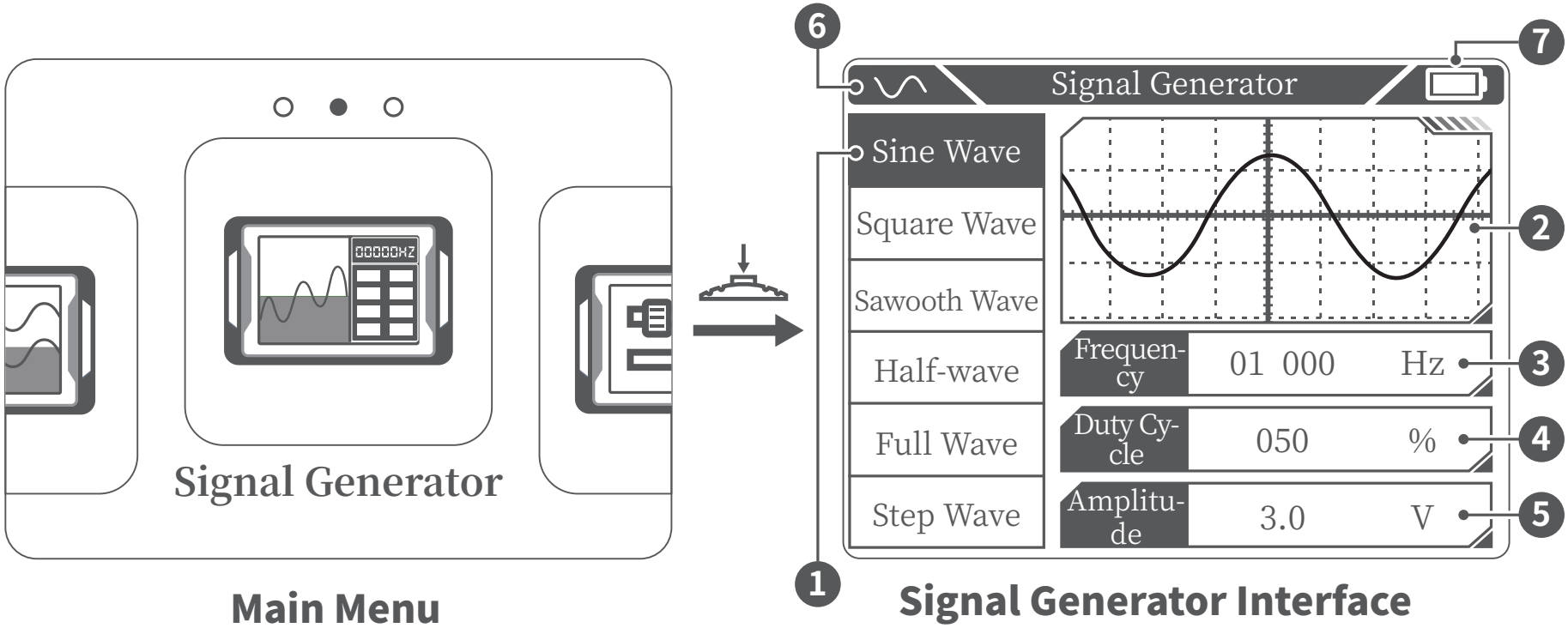
①**Waveform:** Set coupling type, probe ratio, trigger mode, trigger edge

②**Parameter:** Toggle parameter display (frequency, period, positive duty cycle, negative duty cycle, positive pulse width, negative pulse width, maximum value, minimum value, peak-to-peak value, amplitude, RMS value, average value)

③ **Persistence:** Set afterglow: off, 500ms, 1s, ∞

④ **Image:** View image

5.3 Signal Generator Interface



Main Menu

Signal Generator Interface

① Waveforms selection

② Display of waveforms

③ Frequency setting

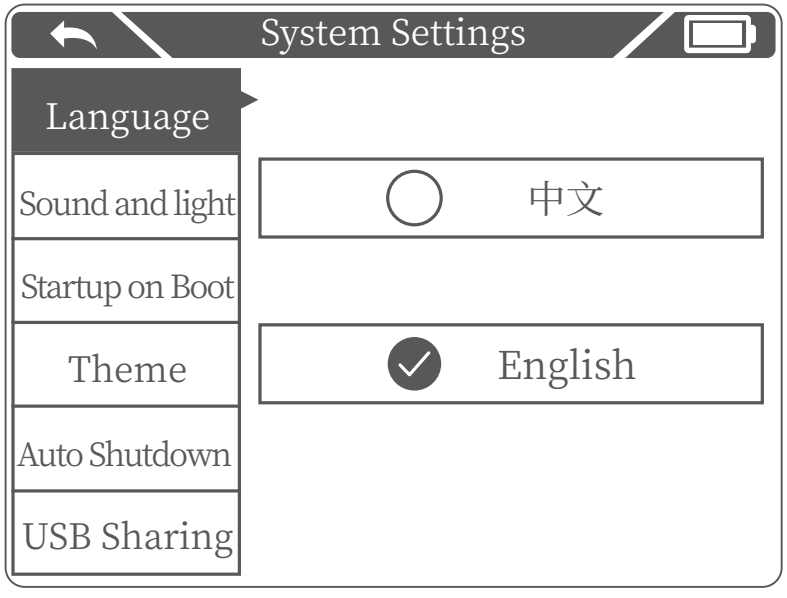
④ Duty cycle setting

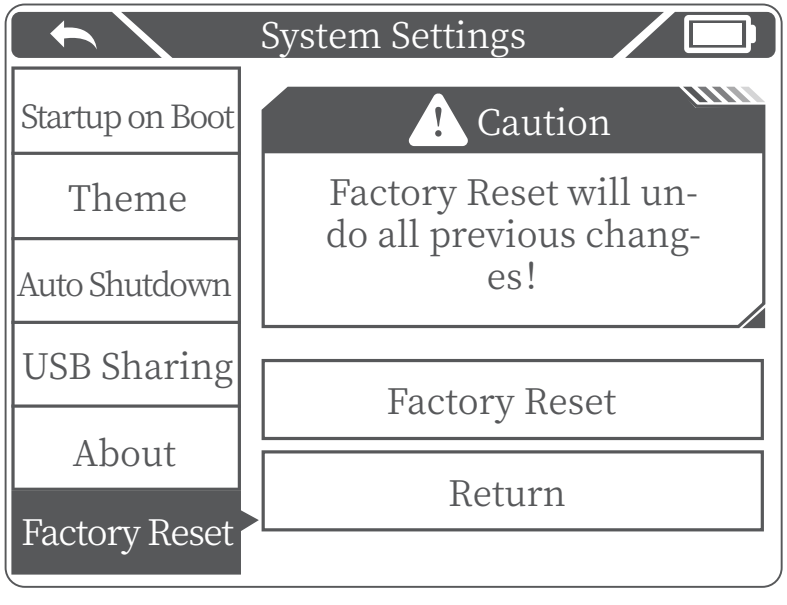
⑤Amplitude setting

⑥Opening and closing of signal generator (graying out when closed)

⑦ Battery level

5.4 Settings Interface





1. Set single item selection:

Language, Sound and light , Startup on boot, Theme, Auto Shutdown, USB Sharing, About, Factory Reset

2. Specific settings details:

①**Language:** Chinese, English.

②**Sound and light:** Brightness: 25-100;
Sound: 0-10.

③**Startup on Boot:** turn off, oscilloscope, signal generator. This setting is used to set which function mode will be automatically started upon startup.

④**Theme:** blue, yellow.

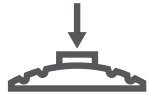
⑤**Auto shutdown:** off, 15 minutes, 30 minutes, 1 hour.

⑥**USB Sharing:** After opening, you can connect to the computer via USB interface to transfer pictures, etc.

⑦**About:** Brand information, version number.

⑧**Factory Reset.**

6.FIRMWARE UPDATE

① In the case of shutting down, press and hold the  first and then press ⏻ button.
② Use a Type-C cable to connect the Type-C port on the board to the computer, and a USB drive named "IAP" will pop up on the computer.
③ Pull the firmware into the USB drive, and if the firmware upgrade is completed, it will automatically jump to the APP.

⚠ NOTICE

- Firmware upgrade only supports use on computer Windows 10 and above systems.
- During the upgrade process, you need to keep pressing the power button until the file transfer is complete.

7.POINTS FOR ATTENTION

- After receiving the device, please use it when fully charged.
- When using oscilloscope, pay attention to the selection of gear, and the gear of the oscilloscope should be consistent with the gear of the probe.
- When measuring high voltage, do not touch any metal parts of the oscilloscope to avoid the risk of electric shock.
- Try not to conduct a high-voltage test during charging.

●When calibrating, it is necessary to unplug the BNC probe or short circuit the positive and negative terminals of the probe.
●USB firmware upgrade only supports WIN10 and above. It is prohibited to drag files other than the released firmware, otherwise it may cause irreparable consequences.
●Please charge using the voltage within the specifications in the instruction manual.

8.CONTACT US

Any FNlRSl's users with any questions who comes to contact us will have our promise to get a satisfactory solution +an extra 6 months warranty to thanks for your support!
By the way, we have created an interesting community, welcome to contact FNiRSl staff to join our community.

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