EIM Technology

1. Features

Zoolark is a pocket-size electronics circuit testing and debugging tool which integrated features of a function generator, two channel oscilloscope, a fast digital I/O for PWM tuning and a high accuracy DC reference output. A 240*240 full color 1.54-inch LCD allows measurement results and testing information clearly displayed. The device is powered by a 280mAh rechargeable lithium polymer battery supporting over 2 hours standby time.

2. Functions

The main functions of Zoolark are illustrated below:
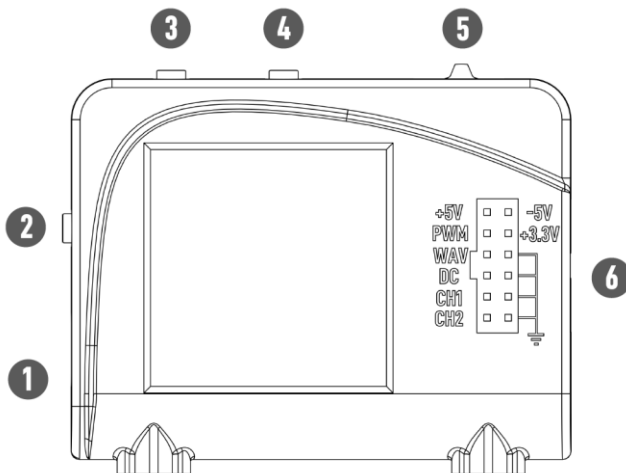
❶ Type-C USB Port

❷ Power Button

❸ Mode Selection Button

❹ Menu Selection Button

❺ 3-way Toggle

❻ Debug Port

❶ Type-C USB Port

Operation: Connect to 5V adaptor or computer USB port

Functions: Charge the battery; Update the Firmware (see section 4); Communicate with Computer (see section 5)

❷ Power Button

Operation: Press

Functions: Short press to turn ON the device; Long press and release to turn OFF the device

❸ Mode Selection Button

Operation: Press

Functions: Function Generator; Oscilloscope in time domain; Oscilloscope in frequency domain; DC Reference Voltage; PWM Signal

❹ Menu Selection Button

Operation: Press

Functions: Switching the cursor to different submenus

❺ 3-way Toggle

Operation: Left/Right/Press

Functions: Left: decrement or move leftwards; Right: increment or move rightwards; Press: confirm then go to next

❻ Debug Port

Operation: Connect to jumper wires

Functions:

+5V, -5V and +3.3V: Fixed DC output

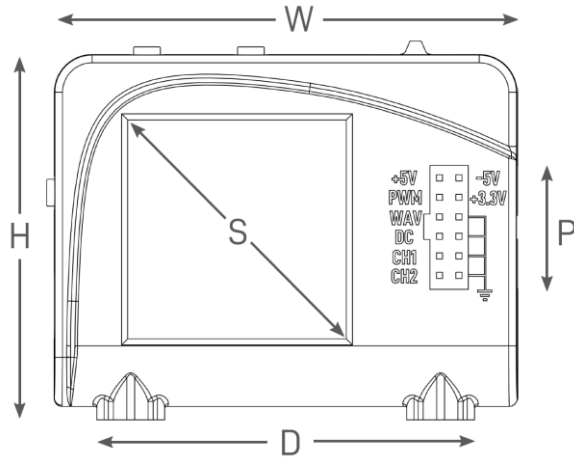PWM (OUT): Duty cycle from 5% to 95%

WAV (OUT): Tri/Squ/Sin waves

DC (OUT): High accuracy DC signal

CH1 (IN): Oscilloscope channel 1, 1MΩ impedance

CH2 (IN): Oscilloscope channel 2, 1MΩ impedance

3. Specifications

Parameter	TG491
H	49mm
W	62mm
S	40mm
D	50mm
P	16mm
Thickness	13mm
Weight	29g
Color	White

Package weight: 85g

| Modes	Parameters	Specifications	Port
Func. Generator	Waveforms	Tri/Sqr/Sin	WAV
	Frequencies	[0.1Hz , 1MHz]	
	Amplitudes	[-4.0V, 4.0V]	
	DC Bias	[-4.0V, 4.0V]	
PWM Signal	V_Low, V_High	[0V, 3.3V]	PWM
	Frequencies	[0.1Hz , 5MHz]	
	Duty Cycle	[5% , 95%]	
DC Signal	OutputVoltages	[-4.00V, 4.00V]	DC
	Max Current	1mA	
Spectrum	Div/grid(Hori.)	[100Hz, 2.5MHz]	CH1 CH2
	Div/grid (Vert.)	[50mV, 10V]	
Oscilloscope	MaxInput	30Vpk-pk	CH1 CH2
	SamplingRate	5Msps	
	Analog Bandwidth	1MHz	
	InputImpedance	1M	
	Coupling	DC Coupling	
	Div/grid(Hori.)	[5us, 50s]	
	Div/grid (Vert.)	[50mV, 10V]	
Power	+5V	USB Limit	+5.4V -5.4V +3.8V
	-5V	50mA	
	+3.3V	200mA	
Others	DisplayRegion	1.54in	N/A
	Display Resolution	240*240	
	BatteryCapacity	280mAh	
	Typical Standby	1.5hrs	

4 Connecting Zoolark to a Computer

Zoolark is capable to communicate to a computer which allows waveform to be displayed on a larger screen and have data exported. Please note that the older firmware version did not open the communication protocol so you need to ensure the device has an up-to-dated firmware. Please read section 5 to update the firmware. To identify if your firmware is

To download the software Zookee first and follow the procedures.

1. Go to https://github.com/eimtechnology/Zoolark, and download the software **Zookee** (located in the product section of Zoolark).
2. Unzip the folder, then click the "Zookee" file located in the folder. This is an executable file.
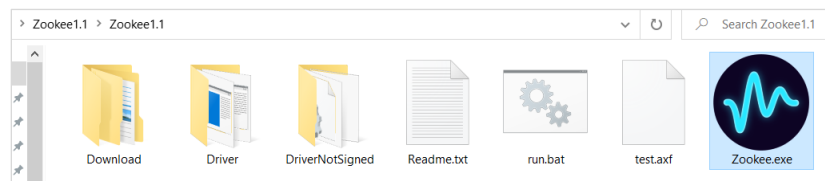
3. The interface of Zookee is introduced in the following picture.
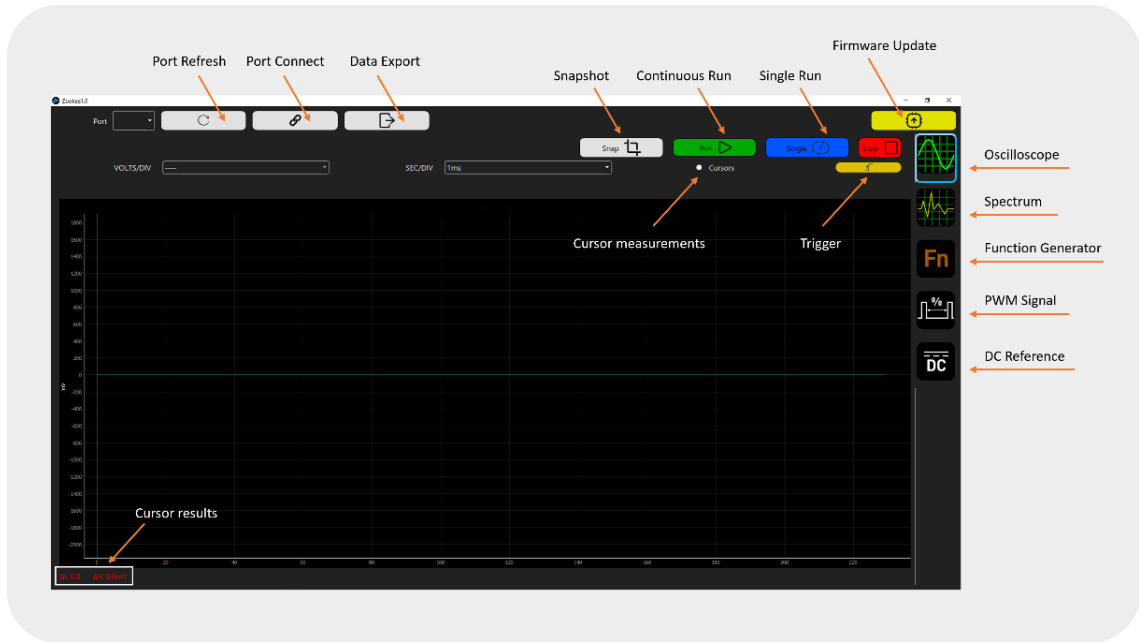
4. Connect Zoolark to your computer's USB port and turn on the device. Click Refresh icon to get the port and then Link the device. Click Run to display the data onto your computer screen.

5. Once connection has established, the software will display Zoolark's waveform. You can open the cursor function for more detailed measurement. The Export icon allows data to be exported in .csv format.

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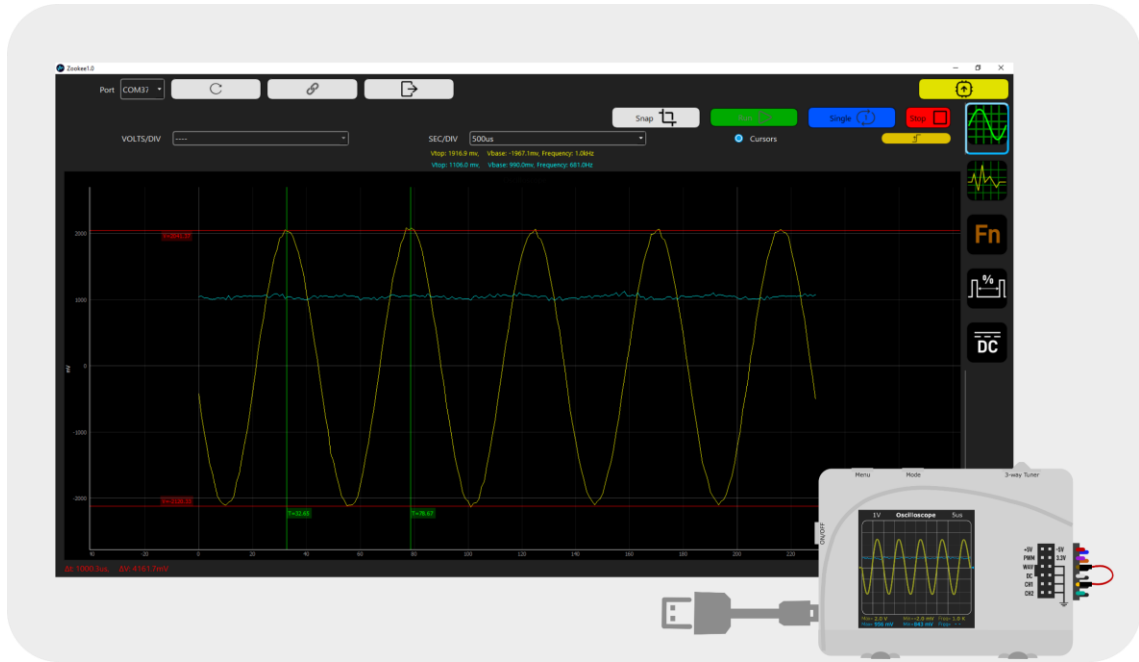
5 Instructions for Firmware Updates

Firmware is a piece of machine code to be flashed into the hardware and enables certain functionalities of the device. The initial firmware was released on July 2021 during the Kickstarter product launch. This firmware did not support computer communication. All firmware version released after Oct 31, 2022 improved screen refresh rate and have supported computer communication. We encourage you update to the latest firmware.

To upgrade the firmware, please follow the steps below:

1. Download the firmware from Zoolark's product website. The file extension is .AXF.
2. Install the driver with the "run.bat" file in the unzipped folder of Zookee. Right click this file and choose Run as administrator. This bat file takes less than 1s of run time.
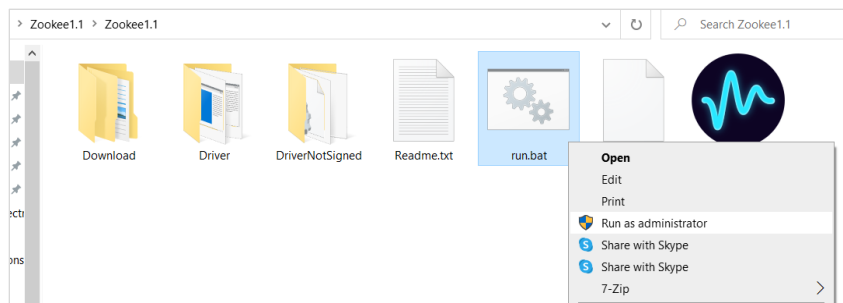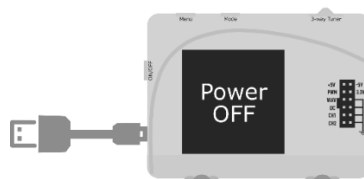

3. Once the driver is installed, open Zookee and click the yellow upload icon on the right top conner, as indicated in the figure. Then select the location where your firmware file is located. Again, the firmware file for Zoolark should have extension of .axf.
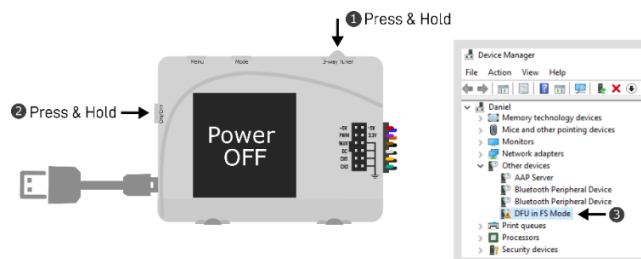
EVO-IN-MOTION TECHNOLOGY LTD.
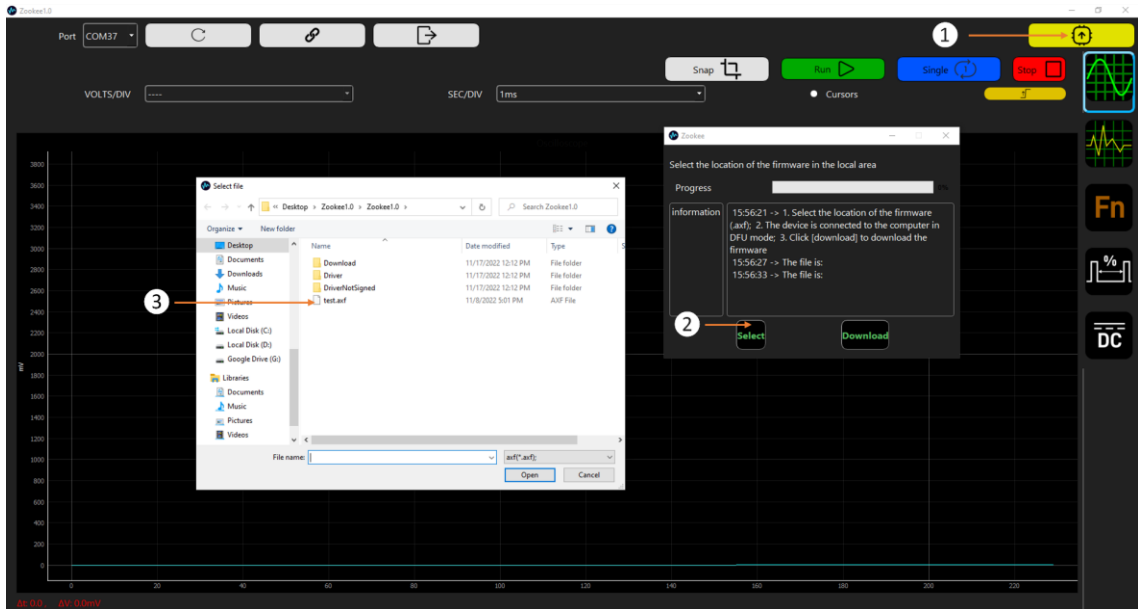
4. You need to set Zoolark to DFU (device firmware update) mode before clicking Download button. Please follow the steps below:

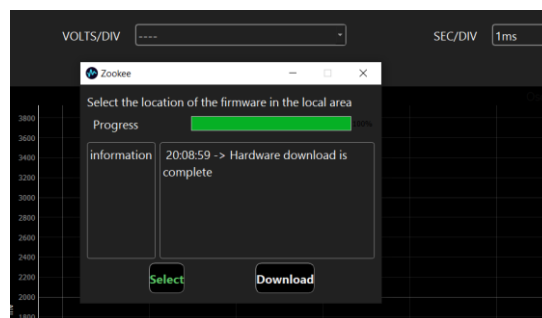|	
a. Plug-in USB but make sure Zoolark is turned OFF	
b. Use the buttons to set Zoolark into DFU mode	
c. Keep Zoolark in DFU mode and finish download progress	

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6. Additional Notice

Zoolark may serve as a handy and immediate assisting tool for qualitative measuring, testing and debugging of your circuits, though the performance is not comparable to the professional benchtop instruments which are more suitable for industrial and scientific applications that require precise quantitative results. Here are some you need to pay attentions:

Generating output signals with Zoolark:

- The triangular wave begins to lose linearity for 500kHz or higher frequencies
- Due to the limited slew rate of the internal Op-amp, the square wave edges are no longer steep at 200kHz or higher
- Using PWM mode generates better square wave signals by setting duty cycle to 50%
- The actual output voltages at +5V, -5V and +3.3V ports have 10% offsets, but they are suitable for most microcontrollers or ICs being rated for 5V or 3.3V

Measuring signals with Zoolark:

- While Zoolark is connected to USB for measurements, it is configured into slave mode, which means you can only control Zoolark on the computer side.
- Only CH1 has trigger function, which means if you connect a signal to CH2 only, the signal is not steady
- CH1 and CH2 have crosstalk due to internal hardware design, and use shorter probe wires can help reduce the crosstalk.
- Input voltages higher than 30V pk-pk will be clipped and may damage the device; use Zoolark to measure signals with human safety voltages only

Hardware Reboot

If you ever encountered situations where the device software is crashed and cannot be turned off with the power button, you may use a wire to manually short the +5V to GND, so the device will be forced to turn off. And then you can reboot normally.

Contact

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