

Instruction manual

A05-7856-W0

Sound Oscilloscope



Sept. 2021

! Safety Precaution

- ⊘ Do not disassemble, repair and remodel this product. This product might stop working and warranty will be void.
- ⊘ Keep dry. Otherwise, the product can be damaged, short-circuited or create a shock hazard.
- ⊘ Teacher or trainer must instruct students about the safe ways of conducting experiments with this product before actually conducting experiments.
- ⊘ When you find that something is broken, please do not repair the product by yourself and contact your distributor.

Introduction

Handy and portable oscilloscope specialized in experiments with properties of sound for students. Designed to meet the basic demands of typical school laboratory works to observe the waveform of sound and is suitable for students' experiments in groups. Dedicated microphone that comes with the product enables students to capture the sound and then instantly observe the sound waveform on the screen.

Contents



A: Sound Oscilloscope

B: Microphone

C: Probe

D: AC adaptor (Not included)

Specification

A: Sound Oscilloscope

Display : 2.4 inches TFT color display

Input Channels : 1 channel

Frequency band : 0 ~ 200 kHz

Sampling rate : 1 M samples/s

Transverse sensitivity control:

- Sensitivity 10 μ s/Div ~ 500 s/Div

Vertical sensitivity control:

- 5 mV/Div~20 V/Div
- Maximum Input Voltage: 50 V
- Input Impedance: 1 M Ω

Size: 115 x 75 x 22 mm

B: Microphone

Type : Dynamic type

Frequency Characteristics: 80 - 15 kHz

Directivity : Unidirectional Microphone

Output impedance: 500 Ω

Output terminal: BNC

Others : ON-Off switch

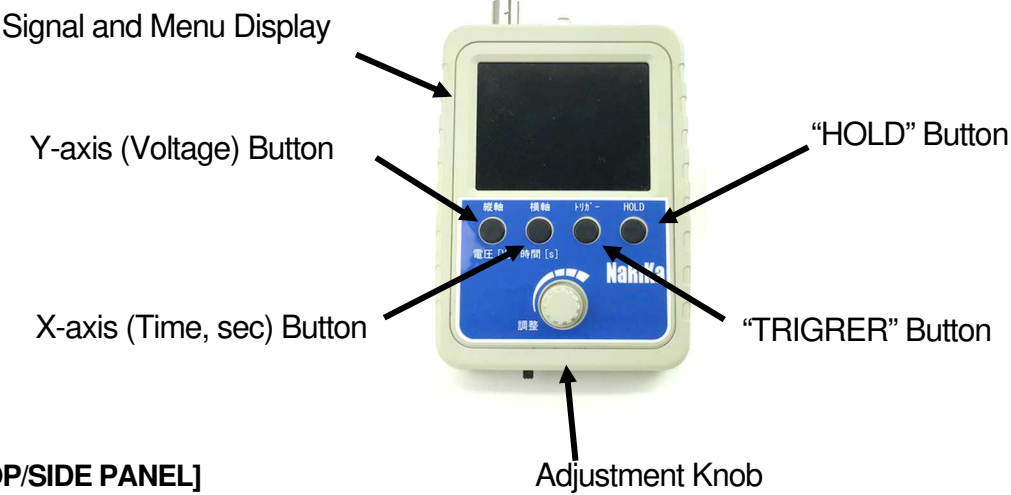
C: Probe : For measuring non-audio electric signal.

D: AC adaptor (not included): DC 9 V 1.2 A

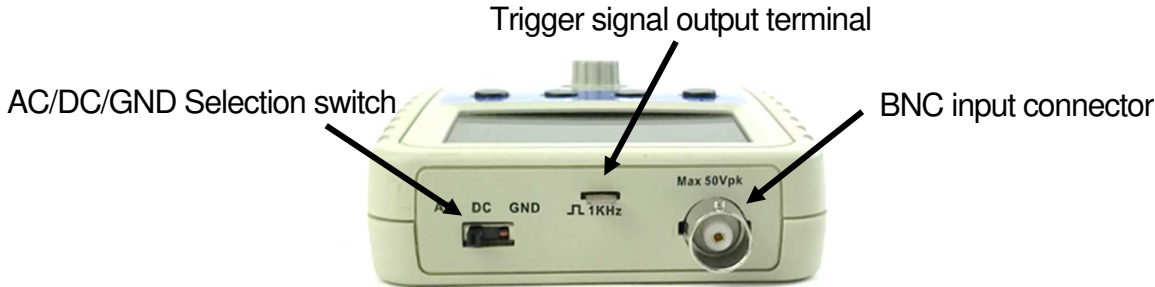
Description

Sound Oscilloscope

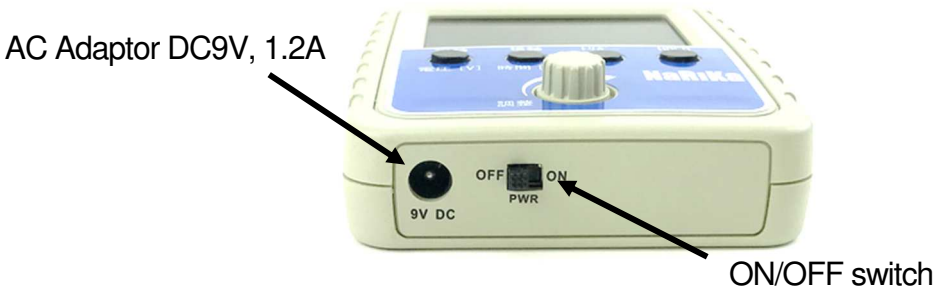
[FRONT PANEL]



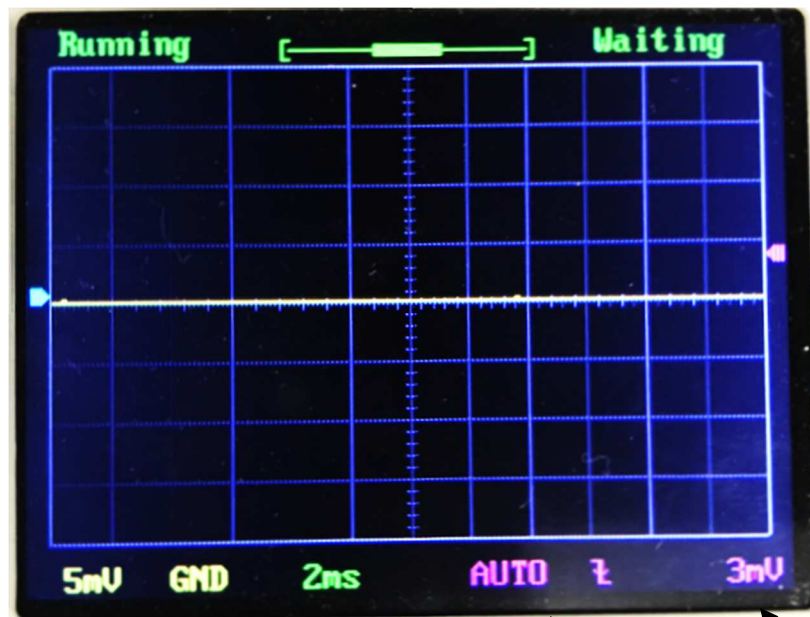
[TOP/SIDE PANEL]



[BOTTOM/SIDE PANEL]



[SIGNAL AND MENU DISPLAY]



Voltage value
per one (1) division
on Y-axis

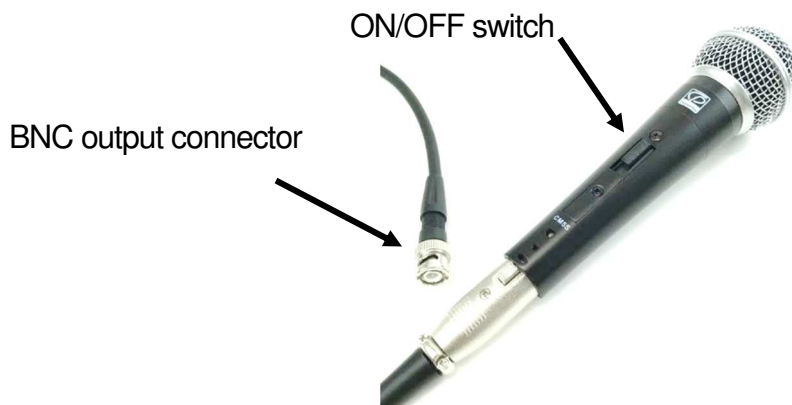
Selected measurement mode (AC/DC/GND)

Time value
per one (1) division
on X-axis

Selected trigger mode

Trigger value

Microphone



Procedure for observing waveform of sound

PREPARATION / SETTING

1. Connect AC adaptor and Microphone to Sound Oscilloscope.

Connect AC adaptor and Microphone to Sound Oscilloscope (Fig.1). Plug AC adaptor into the jack at the bottom of Oscilloscope and Microphone into BNC input connector at the top of Oscilloscope respectively (Fig.1).

2. Centering the baseline

Set the switch to the "AC" on the top panel and check if "AC" sign is shown on the menu display. While switching the microphone on, adjust the baseline coming at the center of the display by tuning the adjustment knob (Fig.2).



Fig.1

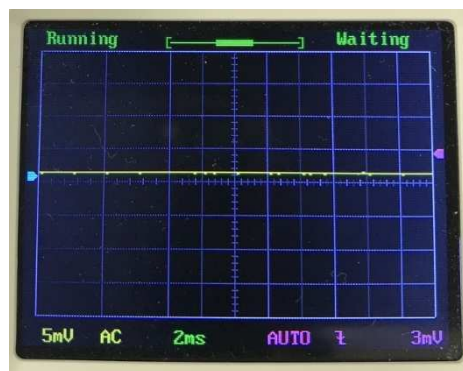


Fig.2

OBSERVATION and MEASUREMENT of Voice Sound

1. How to set the voltage value per one (1) division on the Y-axis:

Press Y-axis (Voltage) button and check if "Voltage value mode" on the Y-axis is selected at the menu bar at the bottom of the display. Turn the adjustment knob in to 5 mV as the adequate range for measuring voice sound. Check if "5mV" sign is displayed on the menu bar (Fig.3).

NOTE: Selectable among 5 mV, 10 mV, 20 mV, 50 mV, 0.1 V, 0.2 V, 0.5 V, 2 V, 5 V, 10 V, and 20 V.

2. How to set the time value per one (1) division on the X-axis:

Press X-axis (time, sec) button and check if "Time value mode" on the X-axis is selected at the menu bar at the bottom of the display. Turn the adjustment knob in to 2 ms as the adequate range for measuring voice sound. Check if "2 ms" sign is displayed on the menu bar (Fig.4).

NOTE: Selectable among 24 steps (10 micro sec to 500 sec).

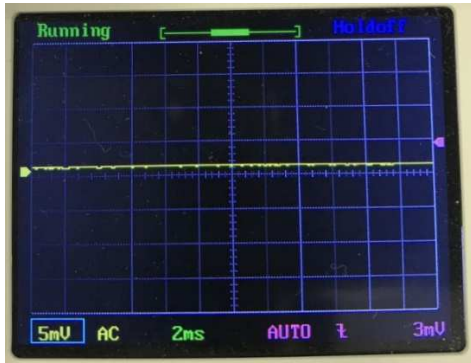


Fig.3

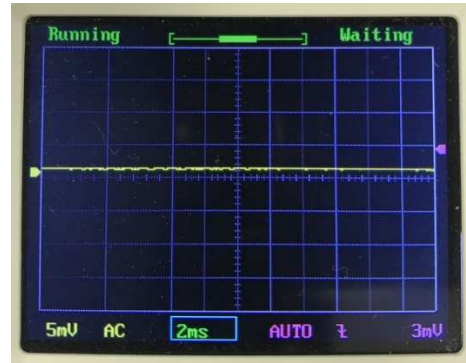


Fig.4

3. How to set the trigger:

Trigger conditions includes "Mode", "Type" and "Level". Press "TRIGGER" button to shift a trigger condition from one to another.

1) Press the "TRIGGER" button and check if "Mode" area is selected as the trigger condition. Turn the adjustment knob in to "AUTO" mode. Check if "AUTO" sign is displayed on the menu bar(Fig.5).

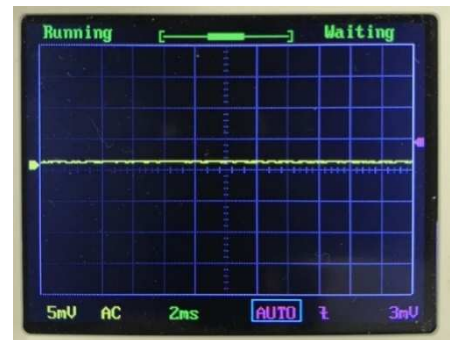


Fig.5

2) Press the "TRIGGER" button and check if "Type" area is selected as the trigger condition. Turn the adjustment knob in to a down arrow sign. Check if the down arrow sign is displayed on the menu bar (Fig.6).

3) Press the "TRIGGER" button and check if "Level" (for threshold value) area is selected as the trigger condition. Turn the adjustment knob in to 3mV as the threshold voltage value. Check if "3mV" numeric expression is displayed at the right end of the menu bar and a pink arrow appears on the right margin of the Y-axis (Fig.7).

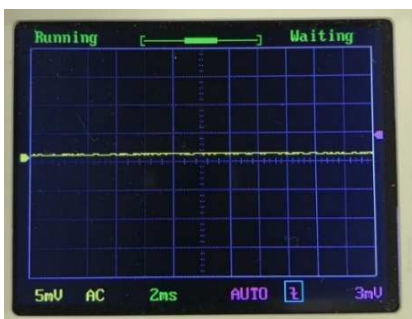


Fig.6

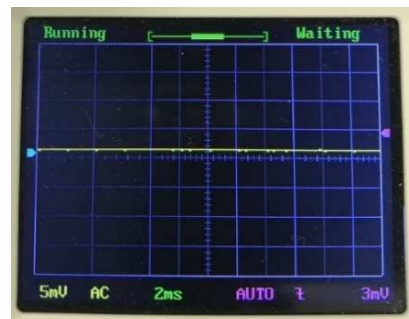


Fig.7

4. How to observe waveform of voice sound:

Input your cardinal vowel such as [a] (Fig.8) and [u] (Fig.9) into the microphone, then, you will see the waveform displayed.

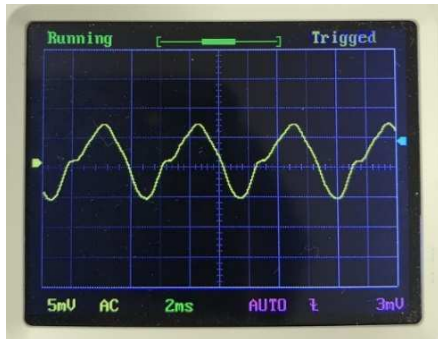


Fig.8 Sound waveform [a]

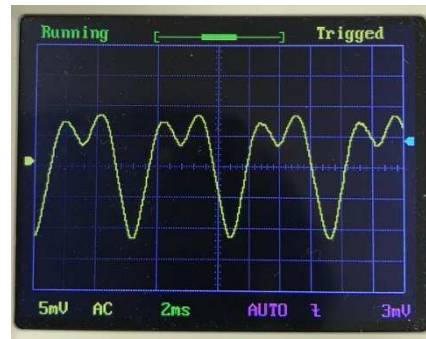


Fig.9 Sound waveform [u]

Observation of the waveform of non-audio electric signal from an oscillator

Plug the probe in the BNC input connector at the top of the Oscilloscope (Fig.10), pinch the probe to an output terminal of the oscillator with the probe tip (Fig.11). Waveform of the electric signal from the oscillator will be observed on the display.



Fig.10



Fig.11

Troubleshooting

In case no waveform is displayed,

- a) it might be due to the misconfiguration of the product, (→ Re-set in accordance with the “PREPARATION / SETTING” section.)
- b) the switch of the microphone might be turned off. (→ Switch it on.),

c) the AC/DC/GND Selection switch on the top panel might not be set to “AC”.
(→Set the switch to “AC”.) and/or

d) input voice might be too weak. (→Input loud voice into the microphone.)