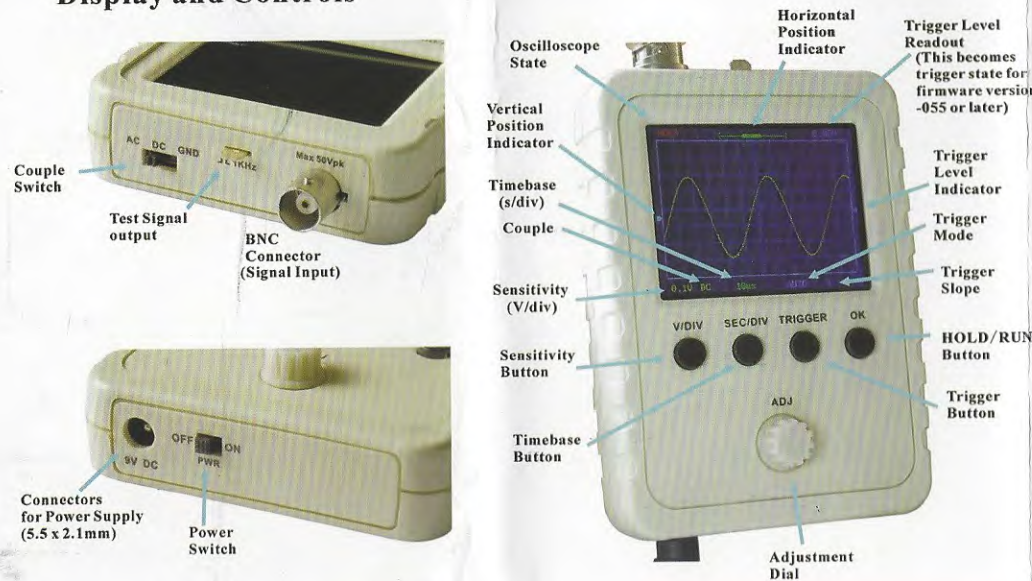


How to Use

Display and Controls



Connections

Power Supply: Connect 9V DC power supply to the 5.5x2.1mm jack at bottom (center positive). Power supply voltage must be in the range of 8 - 10V.

Probe: Connect probe to the BNC connector at top.

Operations

Basic Button Functions

- [V/DIV]:** Select sensitivity or vertical position. The selected parameter indicator will be highlighted.
- [SEC/DIV]:** Select timebase or horizontal position. The selected parameter indicator will be highlighted.
- [TRIGGER]:** Select trigger mode, trigger level, and trigger edge. The selected parameter indicator will be highlighted.
- [OK]:** Enter HOLD state (freeze waveform). Press it again will de-freeze.
- [ADJ]:** Adjust the parameter selected (highlighted). Short press toggles *Fast Adjustment* mode.
- Couple switch:** Set couple to DC, AC, or GND. When GND is selected the scope input is isolated from input signal and connected to ground (0V input).

Specifications			
Max realtime sample rate	1MSa/s	Timebase range	500s/Div -- 10us/Div
Analog bandwidth	0 -- 200KHz	Trigger modes	Auto, Normal, and Single
Sensitivity range	5mV/div - 20V/div	Trigger position	Center of buffer
Max input voltage	50Vpk (1X probe)	Power supply	9V DC (8 - 10V)
Input impedance	1M ohm/20pF	Current consumption	~120mA @ 9V
Resolution	12 bits	Dimension	105 x 75 x 22mm
Record length	1024 points	Weight	100 gram (without probe and PS)

Attention

1. Power supply voltage must not exceed 10V. Otherwise it may damage the ICs inside.
2. Allowed maximum signal input voltage is 50Vpk (100Vpp) with the clip probe.

More Functions

Functions	Operations
VPos Alignment	Set Couple Switch to GND position. Hold down [V/DIV] button for about 3 seconds.
Measurements ON/OFF	Hold down [OK] button for about 3 seconds. This will turn ON or OFF on-screen display of measurements including Vmax, Vmin, Vavr, Vpp, Vrms, Freq., Cycle, Pulse width, and Duty cycle.
Save Waveform	Press [ADJ]&[SEC/DIV] buttons simultaneously. The currently displayed waveform is saved to EEPROM. The existing data in EEPROM will be over-written.
Recall Waveform	Press [ADJ]&[TRIGGER] buttons simultaneously. Recalled waveform is always displayed in Hold state.
Default Restore	Hold down [SEC/DIV] and [TRIGGER] buttons simultaneously for about 3 seconds.
Center HPos	Hold down [SEC/DIV] button for about 3 seconds. This will make the data at the center of capture buffer displayed.
Center Trigger Level	Hold down [TRIGGER] button for about 3 seconds. This will set the trigger level to the medium value of signal amplitude.
Fast Adjustment	Short press of [ADJ] toggles <i>Fast Adjustment</i> mode on and off for VPos, HPos, and Trigger Level. A ">>" sign appearing at top of screen indicates <i>Fast Adjustment</i> is ON.

About Trigger State

The trigger can have three states including Holdoff, Waiting, and Triggered. They are explained below.

Holdoff: Trigger is disabled until a portion of sample buffer prior to a trigger point is filled with raw data.

Waiting: Trigger is waiting for a valid signal slope.

Triggered: A valid signal slope has been detected and registered.

Rolling Mode

When timebase is set to 50ms or slower and trigger mode is set to AUTO the scope will automatically switch to *Rolling Mode* where waveform shifts from right to left constantly. The trigger is disabled under this mode.

Troubleshooting

Problems	Possible Causes
Bad V+	① Connector J7 defective. ② Diode D2 open or damaged.
Bad V-	① Bad C12 and/or C13. ② U5 (7660) bad soldering or defective. Hint: Check with R27 disconnected would let you know the issue is caused by load or source.
Bad AV-	① R27 bad soldering or wrong value. ② Shorts between AV- and ground.
Bad AV+	① R26 bad soldering or wrong value. ② Shorts between AV+ and ground.
V1 does not close to 0V	① SW1 not set to GND position. ② Bad soldering on R1 and/or R2. ③ Bad soldering on U1.
V2 does not close to 0V	① SW1 not set to GND position. ② Bad soldering on R3 and/or R4. ③ Bad soldering on U1.
V3 does not close to 0V	① Bad soldering on U1 and/or U2. ② Bad soldering on R5 and/or R6.
Bad V4	① Bad soldering on R13, R14, and R15.
No Trace	① Incorrect V4. If V4 is correct perform factory default restore as described in ② ② Make sure trigger mode is AUTO and timebase is 1ms. Hold down [SEC/DIV] and [TRIGGER] buttons simultaneously for 3 seconds.