

LCD Digital Storage Oscilloscope

Operating Instructions

Model : 06201

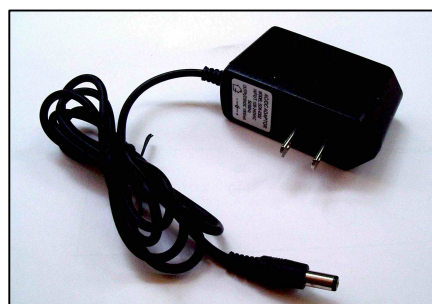
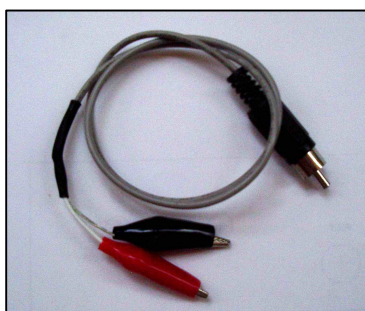
1. Features

- Max sample rate - 2M/s , 8 bits
- Sample memory depth - 256 bytes
- Analog bandwidth - 1MHz
- Vertical sensitivity - 100mV/Div - 5V/Div
- Vertical position adjustable with indicator
- Input impedance - 1MO
- Max input voltage - 50Vpp
- DC/AC coupling
- Horizontal - 5 μ s/Div - 10m(minute)/Div
- Auto, normal and single trig modes
- Rising/falling edge trigger
- Trig level adjustable with indicator
- Hold/run feature
- Built-in 500Hz/5Vpp test signal
- Frequency counter features with independent F and T read-outs (only for TTL level input signal)
- 9 - 12V DC or AC power supply
- Dimension: 110mm X 65mm X 25mm (no case)
- Weight: 70 gram (board & probe)



2. Accessories

- 1) Simple probe
- 2) AC/DC Power adapter (universal input voltage range)



3. Precautions

- 1) **Do not apply voltage higher than the specified maximum input voltage to the instrument.**
- 2) **Do not attempt to directly measure wall power supply without a transformer.**
- 3) **Do not use power supply with voltage higher than 12V (DC or rms)**

4. Panel Description

Fig 1 shows the screen and various controls at the front panel. They are explained below.

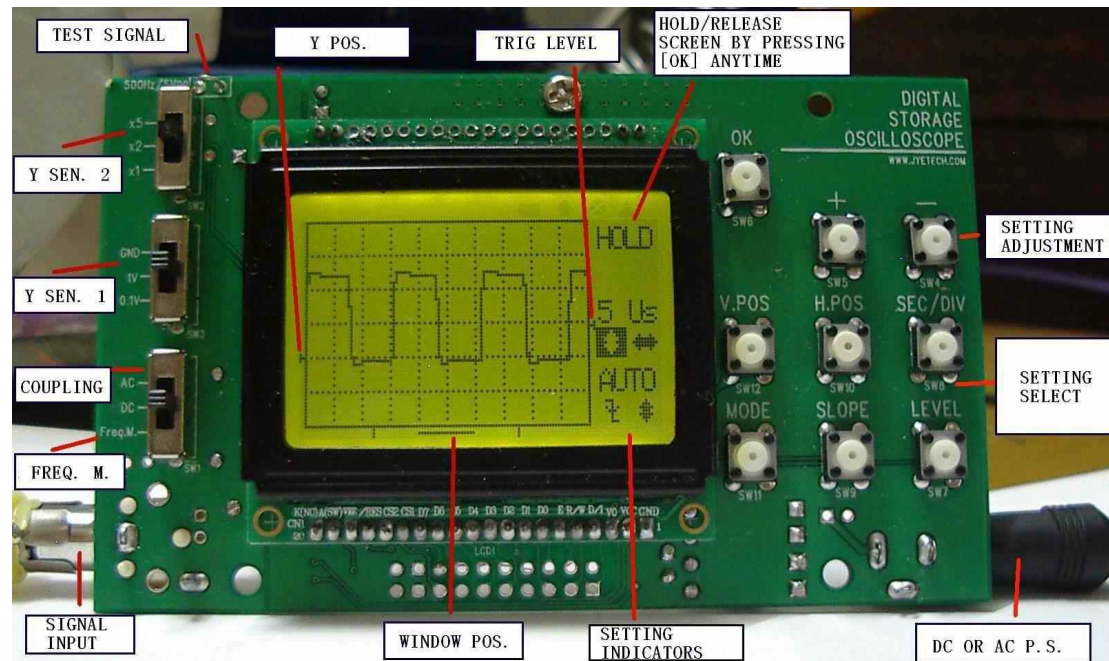


Fig. 1

Screen

- 1) Y position indicator – shows the 0V position.
- 2) Trig level indicator – shows trig level.
- 3) Window position indicator – reflects the displayed portion of sample memory.
- 4) “HOLD” is displayed when the oscilloscope is in HOLD state, which means capturing is halted until HOLD state is released.
- 5) Scope setting indicators – their meaning as shown in Fig. 2.

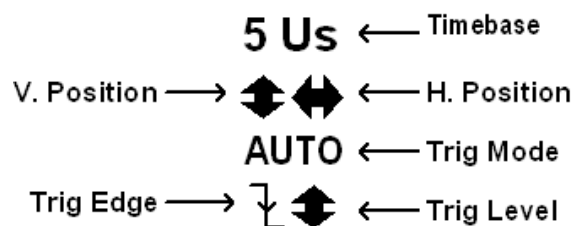


Fig. 2

Power Supply Connector

Locates at bottom right of the panel. 9 – 12V DC or AC power supply (minimum 300mA capacity) can be connected to this connector.

Signal Input Connector

Locates at bottom left of the panel.

Coupling Select Switch

This switch selects the coupling method to be used, i.e. AC coupling or DC coupling. When it is placed at “Freq. M.” position input is connected to frequency measurement circuit. The input to scope, therefore, is disconnected.

Y Sensitivity Select Switches

There are two switches for Y sensitivity selection. The first one selects base value. The second selects rate. The two settings are combined to determine actual Y sensitivity. For example, when switch Y SEN. 1 is put at “0.1mV” position and switch Y SEN 2 is placed at “X2” position, this means actual Y sensitivity is 0.2mV per division.

SEC/DIV

Selects horizontal timebase. When this button is pressed timebase display will be highlighted and can be adjusted with [+] and [-] buttons.

V.POS

Selects vertical position. When this button is pressed vertical position adjustment indicator will be highlighted and vertical position can be adjusted with [+] and [-] buttons.

H.POS

Selects horizontal position. When this button is pressed horizontal position adjustment indicator will be highlighted and can be adjusted with [+] and [-] buttons.

MODE

Selects trig modes. When this button is pressed trig mode adjustment indicator will be highlighted and trig mode can be selected with [+] and [-] buttons.

SLOPE

Selects trigger polarity. When this button is pressed slope select indicator will be highlighted and will toggle trig slope between rising and falling. Alternatively, trig slope can be changed with [+] and [-] buttons when the indicator is highlighted.

LEVEL

Selects trigger level. When this button is pressed trig level adjustment indicator will be highlighted and trig level can be adjusted with [+] and [-] buttons.

OK

Switches oscilloscope between HOLD and RUN states. When this button is held down for more than 3 seconds the instrument will switch between OSCILLOSCOPE MODE and FREQUENCY METER MODE.

5. General Measurement

Example 1 Observe the test signal (Practice for basic operations)

- 1) Connect power supply and probe.
- 2) Connect the red clamp to the test signal terminal locates at top-left corner of the panel, as shown in Fig. 3.
- 3) Set Y sensitivity switch 1 (the middle one) to 1V position.
- 4) Set coupling switch to DC position.
- 5) Press [V.POS] button, adjust 0V indicator to the second last vertical scale as shown in Fig. 3.
- 6) Press [SEC/DIV] button , set timebase to 1ms.
- 7) Set Y sensitivity switch 2 (to top one) to X2 position. Waveform similar to that shown in Fig. 3 should be seen.
- 8) Change positions of Y sensitivity switch 2 you should see waveform amplitude changes accordingly.
- 9) Change timebase setting to 0.5ms, for instance, you should be able to see the signal high/low level is widened accordingly. Waveform. Try other settings to explore.
- 10) Now put coupling switch to AC position you should see waveform is shifted down to a position where the Y Pos. indicator is at its middle point. This means what you see is a pure alternative signal.

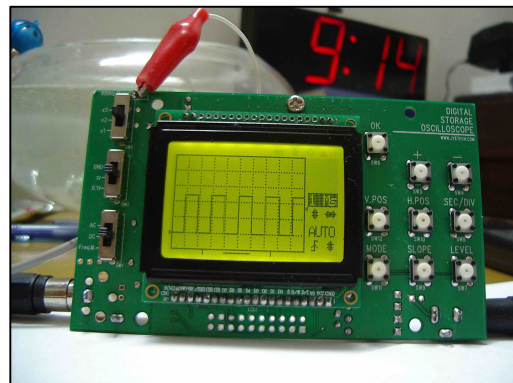


Fig. 3

Example 2 Observe saw signal (Learn how to use trigger modes)

Fig. 4 is a simple saw signal generator. We can use the scope to observe its output. Build the circuit according to Fig. 4 and connect power and the scope.

- 1) Select DC coupling. Set Y sensitivity switch 1 to 1V position and Y sensitivity switch 2 to X2 position. Adjust the 0V point to the second last vertical scale. Select 0.1ms timebase.
- 2) Connect probes as stated in Fig. 4. Power the circuit. You should see waveform similar to that shown in Fig. 5.
- 3) Select AUTO trigger mode and change trigger level. You should be able to observe that the waveform stabilize itself when it intersect with trigger level. Otherwise, it would jump back and forth.
- 4) Change trigger mode to NORM and vary trigger level. You should see that the waveform updates when there is intersection with trigger level. Otherwise, it remains unchanged.
- 5) Press [OK] to put the oscilloscope into HOLD state. "HOLD" indicator displays. Now you can shift the waveform back and forth to watch the rest portion of the signal. Press [OK] again will release the HOLD state and put the oscilloscope back to capture state.

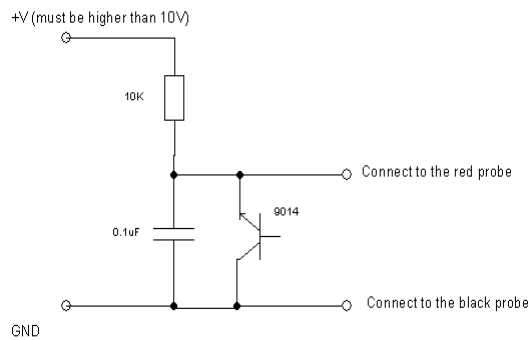


Fig. 4

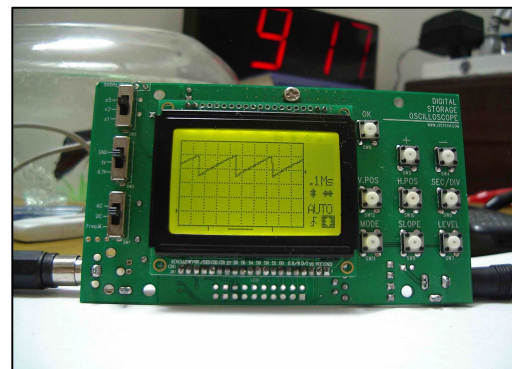


Fig. 5

6. How to Use the Frequency Meter

Put the coupling switch to "Freq. M." position and hold down [OK] for more than 3 seconds. This will make the instrument enter Frequency Meter mode. Signal frequency and period will be displayed. Please note that peak signal amplitude should be greater than 3V to validate the measurement because it only takes TTL level signal.

Hold button [OK] again will make it return to Oscilloscope mode.

7. Specifications

Oscilloscope	Max Sample Rate	2M samples/second
	Resolution	8 bits
	Sample Memory Depth	256 bytes
	Analog Bandwidth	1MHz
	Vertical Sensitivity	100mV/Div – 5V/Div
	Input Impedance	1M Ω
	Max Input Voltage	50V _{pp}
	Coupling	DC/AC
	Trigger Modes	Auto, Normal, and Single
	Trigger Polarity	Rising/Falling
	Trig position	1/2 of sample buffer
	Power Supply Voltage	9 – 12V DC or AC
	Power Supply Current	< 280mA
Frequency Meter	Frequency Range	5MHz
	Time Range	100 seconds
	Sensitivity	3V
Overall	Dimension	110mm X 65mm X 25mm (no case)
	Weight	70 grams (board & probe)