MODEL 539

OSCILLOSCOPE

OPERATION MANUAL

印刷表紙使用のこと

KIKUSUI ELECTRONICS CORP.

C O N T E N T S

INTRODUCTION

Model 539 is easy-to-use oscilloscope designed for a compact and portable, employing a 3-inch cathode-ray tube and 5 Hz - 1 MHz bandpass vertical amplifier. Vertical amplifier has a stable, good phase characteristics wide-band push-pull amplifier, and horizontal employing wide-variable sweep frequency.

It is so reliable oscilloscope that the equipment is fully used printed circuit and construction in rational mechanism.

SPECIFICATION

Power Supply	..... Volts, 50 - 60 Hz
	Approx. 40VA
Dimensions	110W x 190H x 310 D mm
	max. 110W x 210H x 355 D mm
Weight	Approx. 5 Kg
Items supplied with equipment	1 - Operation Manual
	1 - Testing Data
Tube used	1 - 12AU7
	1 - 6AQ8
	1 - 6AU6
	1 - 6DJ8 or 6AQ8
	1 - 3KP1 (CRT)
Vertical Defelection	
Deflection sensitivity	More than 1V p-p/cm
Frequency Response	5 Hz to 1 MHz within -3dB
Voltage Divider (Frequency Response Compensated)	1, 1/10, 1/50
Input Impedance	1 MΩ Shunted with max. 25 pF
Horizontal Defelection	
Deflection Sensitivity	More than 3V p-p/cm
Frequency Response	1.5 Hz to 400KHz within -3dB
Input Impedance	Approx. 2.2 MΩ
	Shunted with max. 70 pF
Time Base	
Sweep Frequency	10 Hz to 100 Hz 100 Hz to 1 KHz 1 KHz to 10 KHz 10 KHz to 100 KHz) Continuously variable

FUNCTION OF CONTROLS AND TERMINALS

"POWER ON"	On-off switch in the lead to the power transformer
"VERT IN"	Signal input to the vertical amplifier
"VERT ATT"	3-position switch to select the desired deflection sensitivity
"VARIABLE"	Continuously variable control to vary the sensitivity between ranges.
"VERT POSITION"	Control to position the trace vertical.
"SWEEP RANGE VARIABLE"	6-position switch to select sweep frequency from 10 Hz to 100 KHz As turning fully this knob clockwise at "EXT" position, time-base oscillator stopsand input of horizontal amplifier in connected to "HOR IN" terminal on the panel.
"HOR POSITION"	Control to position the trace horizontal
"HOR IN"	Binding post to apply an external signal to the horizontal amplifier.
(FOCUS ASTIG)	Located in the rear of cabinet, used as focus and astigmatism control CRT.
"HOR GAIN"	HOR GAIN CONTROL is a screwdriver adjustment concentric with the HOR POSITION control used as horizontal gain control

of

INTRODUCTION FOR USE

Power Supply

For long life expectancy and high reliability of your Model 539 Oscilloscope, it is recommended to be used under condition that line voltage keeps within ±5% of the rating.

Also it is not used under direct sunlight, in room temperature of over 40 °C, or in high humidity circumstances.

Control Setting

The first, fix knobs of this equipment front panel as followings, connect power cord to outlet of power supply.

POWER	OFF
VERT POSITION	Center
HOR POSITION	Center
VERT ATT	1/50
VARIABLE (Red)	Turn fully to clock-wise
SWEEP RANGE	Range: 10-100
VARIABLE (Red)	Turn fully counterclockwise

First-time Operation

Above arrangement is over, and

POWER	ON

Power is applied and the equipment attains operating condition after about 30 seconds of warm-up. and appears bright line on the CRT.

WAVEFORM OBSERVATION

The frequency and voltage range of waveforms which can be observed by this instrument is as follows.

Frequency: Approximately 10 Hz - 1 MHz

Voltage: Approximately 0.5 - 600 Vp-p

or 0.18 - 210 V RMS

The range of repetition frequency is narrower than above when the waveform observed is pulse, square or sawtooth which contains mach harmonics.
However, the fandwidth of the instrument may be enouge for the observation of waveforms appeared in such as TV receiver.
Procedure of waveform observation is described in follows.

1. Apply the signal to be observed to the input terminals "VERT IN" and "GND" on the front panel.
2. Turning the knobs of "VERT ATT" and "VARIABLE" adjust the amplitude of the waveforms on CRT to the appropriate magnitude for observation.
   When the pattern on CRT is not hold still the adjustment of synchronization described below should be taken.
3. Turn the knob "VARIABLE" of SWEEP RANGE slowly.
   This red knob varies the sweep frequency continuously in the range indicated by the black knob. The pattern on CRT may be stopped by the adjustment of this red knob when the frequency of the signal is not lower than the lower limit of the range indicated by the black knob and not to high compared to the settings of the Sweep controls.

SERVICING

Warning standard safety precuations should be observed during servicing.

Removing the Instrument Case

Put off the set screws, one fixed in center portion of rear of case other located in bottom of rear of case and draws front-panel from the cabinet case.

Replacing the CRT

Remove the instrument from its case as described above. Loosen the CRT clamping bolt. Holding the CRT holder, withdraw the unserviceable CRT from the front of the instrument.

Insert the now CRT into the CRT holder. Tighten the CRT clamping bolt.

Connect the instrument to the mains supply. If the trace on the CRT screen is not in a horizontal plane, mark its position on the left-and right-hand sides of the CRT screen.

Disconnect the mains supply from the instrument and rotate the CRT so that the marks on the CRT screen are in a horizontal plane.

Adjust the semi-fixed Resistor VR402 FOCUS and VR401 Astigmatism controls to obtain a sharply defined trace.