

MODEL 417  
R C OSCILLATOR  
OPERATION MANUAL

KIKUSUI ELECTRONICS CORP.

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## 1. GENERAL DESCRIPTION

The model 417 is a transistorised instrument which produces sine-wave signals in the frequency range from 5 Hz to 500 kHz.

It provides a stable output at constant level employing a peak detector circuit. The output can be varied continuously over 30 dB range and attenuated in 10 dB steps to a maximum attenuation of 40 dB.

## 2. SPECIFICATIONS

Power	-----V, $\pm 10\%$ 50/60Hz	
Weight	Approx. 4 kg	
Dimensions (Maximum)	200W x 140H x 250D mm (200W x 155H x 300D)mm	
Ambient Temp.	5 ~ 35°C	
Frequency Range	5 Hz ~ 500 kHz 5 ranges	
Dial Accuracy	$\pm(3\% + 1 \text{ Hz})$	
Output	More than 10 mW into 600 ohm load	
Output Terminal	Floating, with built-in 600 ohm termination resistor	
Amplitud Control	Continuously variable over 30 dB ( $\pm 10\%$ ) range	
Attenuator	40 dB in 10 dB steps	
Output Impedance	600 ohms $\pm$ 100 ohms	
Frequency Response	Flat within $\pm 0.3$ dB at 600 ohm load	
Distortion	20 Hz 50 kHz : Less than 0.2%	
	50 kHz 500 kHz : Less than 1%	
Meter	Scale : V RMS and dBm	
	Full scale : 3 V	
	Accuracy : Within $\pm 3\%$ of full scale at 1 kHz	
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### 3. FRONT PANEL DESCRIPTION

- POWER This is a power switch. When it is pushed, power will be turned on. When pushed once again, it will be turned off.
- FREQUENCY This is a knob which varies oscillating frequency continuously. With this knob, the oscillating frequency can be changed 10 times.
- RANGE This switch changes the oscillating frequency 10 times per one step.
- ATTENUATOR This is a switch which attenuates output voltage to max. 40 dB in 10 dB steps.
- VARIABLE This is a knob which varies output voltage continuously.
- The range of 30 dB can be changed.
- OUTPUT These are output terminals. The gray terminal

is connected with the internal chassis which is floated from the case.

GND

This is a terminal connected with the case.

600 SHUNT

When this switch is pushed in, a 600 ohm resistor will be connected across the output terminals. When pushed once again, it will be disconnected.

METER

This output meter continuously monitors the oscillator signal at the output of "VARIABLE" control and indicates the input level to the "ATTENUATOR"

#### 4. OPERATION

- 1) When "POWER" is pushed, power will be turned on and neon lamp will be lighted.

In the range of x 100, x 1k, and x 10k, output voltage will appear immediately. However, in the range of x 1 and x 10, it will take about 10 seconds before output appears.

- 2) Oscillating frequency is set with "FREQUENCY" and "RANGE".
- 3) Output voltage is set with "VARIABLE" and "ATTENUATOR".

A 600 ohm load must be connected across output terminals.

when the load resistance is very large compared with 600 ohms, "600 ohm SHUNT" should be pushed. Under such a condition, the value of the output voltage is obtained by subtracting the selected value (dB) of "ATTENUATOR" from the meter reading (dBm). Meter indication is continuously varied by "VARIABLE", but is not affected by the setting position of "ATTENUATOR" when the output terminal is properly terminated.

Attenuation can be made to 70 dB maximum with these two controls, "ATTENUATOR" and "VARIABLE", minimum output of 1 mV being obtained.

Of course, a 600 ohm attenuator may be utilized at the outside of the instrument for further attenuation or more precise measurement. Indication of meter is calibrated for 600 ohm load on the output terminal. For other loads than 600 ohms, there will arise an error.

When the output terminal is opened, the output voltage will be two times as large as that when terminated by a 600 ohm load and the meter pointer may go off for some settings of the controls.

- 4) The gray output terminal is connected with internal chassis, and black terminal with the case. Internal chassis is insulated from the case. For this reason, it can be used applying a DC bias of 250 V max. between case (black terminal) and output terminal (gray terminal).



## 5. CAUTIONS FOR USE

- 1) As semi-conductors are used, this instrument must be operated in ambient temperature of 5°C-35°C. It should be considered that even if is 35°C or below, the temperature inside the instrument may rise higher due to sun-light or the radiation heat from other heat sources.
- 2) DC voltage can be applied across the output terminals.  
(red and gray) But be sure to avoid letting it exceed  $\pm 5V$ .
- 3) High resistance is adopted in WIEN BRIDGE circuit.  
Care must be taken for good performance when the instrument is operated at dusty or humid place.