

MODEL 433
RC OSCILLATOR
OPERATION MANUAL

印刷表紙使用のこと

KIKUSUI ELECTRONICS CORP.

Contents

1.	General	3
2.	Specifications	4
3.	Front Panel	6
4.	Directions for Use	8
5.	Maintenance	9
5.1	Check of Component Parts	9
5.2	Parts Location and Readjustment	10

1. General

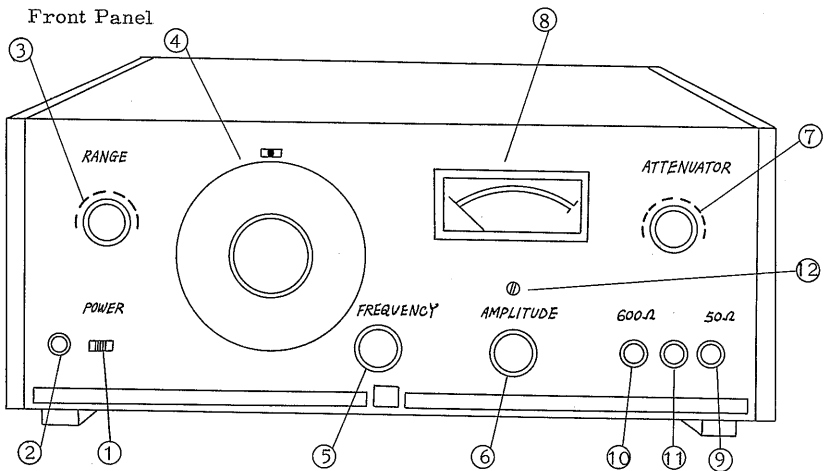
Kikusui Electronics Model 433 is a Wien-bridge type wide-band RC oscillator where semiconductors are fully employed. It provides maximum 3 V RMS output of low distortion factor ranging from 10 Hz to 10 MHz to a load of 50 or 600 Ω . Application of output voltage in a wide range is rendered possible by means of the large meter and the attenuator on the front panel.

2. Specifications

Power Supply	100 V \pm 10 %	50 or 60 Hz	Approx. 22 VA
Weight	Approx. 9 kg		
Dimensions	430 (W) x 160 (H) x 275 (D) mm		
(maximum)	445 (W) x 173 (H) x 300 (D) mm		
Ambient Temperature	5 - 35°C		
Oscillation Frequency	10 Hz - 10 MHz 6 ranges		
	Dial graduations: 1 - 10		
Dial Error	10 Hz - 1 MHz	\pm (2 % + 1 Hz)	
	1 MHz - 10 MHz	\pm 3 %	
Output Voltage	Maximum 3 V RMS to 50 Ω or 600 Ω pure resistance load		
Output Voltage Frequency Response	50 Ω pure resistance load connected with 50 Ω terminal:		
	10 Hz - 1 MHz	\pm 0.5 dB	
	1 MHz - 10 MHz	\pm 1 dB	
Output Impedance	50 Ω and 600 Ω		
Attenuator	10 dB step	Maximum 70 dB	
Attenuator Error	At 1 KHz	\pm 0.3 dB	
	At 10 MHz	\pm 1 dB	
Meter Error	At 1 KHz:	\pm 3 % of full scale	
Meter Frequency Response	100 Hz - 1 MHz	\pm 2 %	
	10 Hz - 100 Hz	} \pm 4 %	
	1 MHz - 10 MHz		

Distortion	100 Hz - 100 KHz (3V RMS)...	1%
	(1V RMS)...	0.3%
	20 Hz - 100 Hz	} (3V RMS)... 3%
	100 KHz - 7 MHz	
Accessories	50 Ω terminator	1
	Operation manual....	1
	Cable	1

3.



- ① POWER Push-button switch. When pushed, line power is turned on. When pushed again it unlocks the button which then turns off the power supply.
- ② Pilot Lamp Lights when line power is turned on.
- ③ RANGE Knob for selecting ranges of oscillation frequency.
- ④ Frequency Dial Dial for continuously varying oscillation frequency. This dial functions in combination with the RANGE knob 3 for setting oscillation frequency.
- ⑤ FREQUENCY Knob for turning the frequency dial 4.
- ⑥ AMPLITUDE Knob for continuously varying output voltage, clockwise rotation increases output.
- ⑦ ATTENUATOR Selector knob of the output attenuator. Output voltage is varied in 10dB steps by this knob. The numerals respectively correspond to the ranges of the meter 8.

The inner red numerals show output voltage when the meter indicates 0 dB, and the outer black ones show the actual output voltage when the meter indicates 3 or 1 near the end scale.

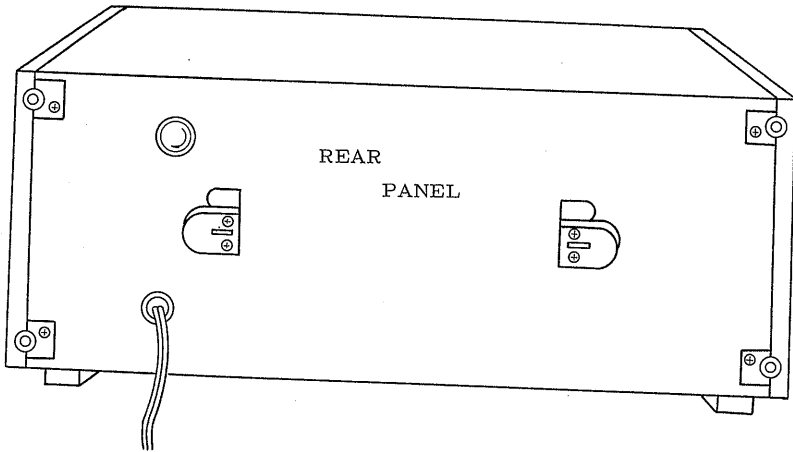
- 8 Meter Output voltmeter. The output voltage level is obtained by multiplying the meter scale reading by the numeral which appears on the ATTENUATOR switch 7. A dBm scale is referenced to 1mW into 50Ω.
- 9 50Ω Output terminal where output resistance is 50Ω. (BNC type jack) Output voltage indicated by the meter 8 is obtained from this terminal when 50Ω pure resistance is connected.
- 10 600Ω Output terminal where output resistance is 600Ω. (BNC type jack) Output voltage indicated by the meter 8 is obtained from this terminal when 600Ω pure resistance is connected. At high frequencies, however, effect of the stray capacity of the load becomes great. For this reason, the 50Ω terminal is to be used for high frequencies.
- 11 This is provided on the panel for connecting the ground lead wires.
- 12 Hole used for mechanical zero adjustment of the meter. Adjustment is made by insertion of a screwdriver into this hole after power is turned off.

4. Directions for Use

1. As this instrument employs semiconductors, it is to be used at ambient temperatures ranging from 5 to 35°C. It is important to remember that internal temperature of this instrument may rise extremely high when it is exposed to the direct rays of the sun or receives radiation from any other heat sources.
2. A thermistor is used as an oscillation voltage control element. Therefore output voltage is affected by ambient temperature. When constant output voltage is required for many hours, the output voltage is to be monitored by the meter.
3. When the output terminal is properly terminated at 50Ω or 600Ω output voltage coincides with the meter indication. If any other resistance than the above is connected, the meter will not indicate accurate output voltage. In this case, however, attenuation value of the attenuator remains unchanged.
4. Continuous adjustment of output voltage is made by varying the input voltage of the output amplifier. It is possible, therefore, to obtain the output of further lower distortion by decreasing the output until the meter indication becomes approximately 1/3 of the full scale.

5. Maintenance

1. Check of Component Parts



Dismantle the feet by removing the four mount screws on the rear panel. Then it becomes possible to pull out backward the top, bottom, and side plates respectively.

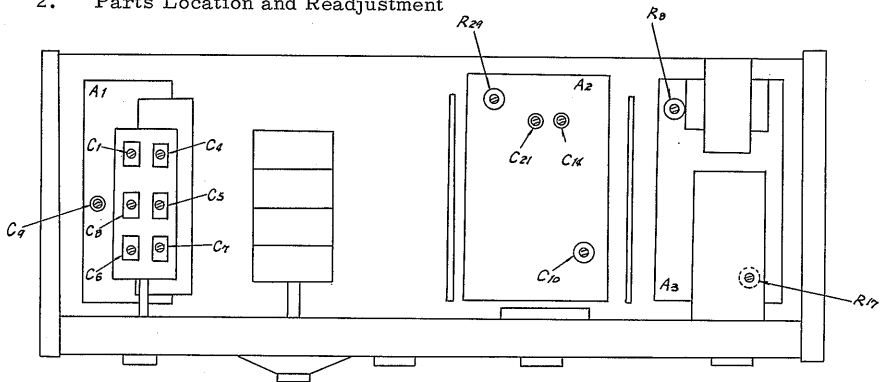
For checking inside the instrument, further dismantle the top, bottom, and side shielding plates by removing the screws (nuts for the bottom one).

As pin jacks are used for connecting the respective printed-circuit boards, it is possible to dismantle them easily by removing the setscrews.

When checking is completed, reassemble the top, bottom, and side plates by fitting them correctly into the respective grooves, and then adjust the feet.

Make absolutely certain when carrying this instrument that the feet are in place or the plates may slip off from the frame.

2. Parts Location and Readjustment



The circuit of this instrument is divided into three printed-circuit boards. The adjusting trimmer capacitors and semi-fixed resistors are located as shown above.

- | | |
|--------|---|
| A1 | Oscillator block |
| A2 | Output amplifier (front panel side) and meter circuit |
| A3 | Power supply block |
| C1, C8 | For adjusting x10, x100, x1K, and x10K frequency ranges |

- | | |
|------------|---|
| C4, C6 | For adjusting the x100K frequency range |
| C5, C7, C9 | For adjusting the x1M frequency range |
| C10 | For compensating the high frequency response of the
output amplifier |
| C14, C21 | For compensating the high frequency response of the
meter circuit |
| R29 | For calibrating the meter sensitivity (at 1 kHz) |
| R8 | For adjusting the voltage of +25V power supply |
| R17 | For adjusting the voltage of -25V power supply |