

SECTION I

1. INTRODUCTION

This instrument is a 20KHz to 200KHz audio oscillator with a built-in four digit digital frequency counter. This instrument generates low distortion sine waves and square waves over a frequency range of 20Hz to 200KHz. A stable RC oscillator provides 5Vrms output under no load, or 2.5Vrms into 600Ohms load.

A continuously variable control affords greater than 50dB sine wave attenuation in addition to the push button-selected 10, 20, 40 dB steps. A fixed TTL square wave, at the same frequency as the sine wave, is used at the TTL output BNC in the front panel. The oscillator also features an external synchronizing input BNC which locks the output frequency to a synchronizing signal. A single dial and four range pushbuttons provide the frequency selection.

2. SPECIFICATIONS

A. Frequency range

- 200 Range : 20Hz ~ 200KHz
- 2K Range : 200Hz ~ 2KHz
- 20K Range : 2KHz ~ 20KHz
- 200K Range : 20KHz ~ 200KHz

B. Sine wave characteristics

- Output voltage: 5 Vrms or more at no load  
2.5Vrms or more into 600 ohms.
- Distortion factor (at max. out)  
200 Range : 0.5% or less  
2K Range : 0.15% or less  
20K Range : 0.15% or less  
200K Range : 0.5% or less
- Output impedance : 600 Ohms  $\pm$  10%
- Output attenuator : 0 to greater than 50dB continuously variable.  
10dB, 20dB and 40dB steps within  $\pm$ 3% for each step.

C. Square wave characteristics (TTL out)

- Over shoot : 2% or less (at 1 KHz)
- Duty ratio : 50%  $\pm$  5% (at 1 KHz)
- Output level : Fixed amplitude  
Logic 0 less than 0.4V  
Logic 1 more than 2.4V
- Rise & Fall time : less than 200nSec

D. External synchronization characteristics

- Input impedance : approx. 10 Kohms
- Max. input voltage : 10 Vrms

E. Frequency counter characteristics

- Display : 4 digits, 7mm red LED display.
- Measuring range : 10Hz ~ 1MHz
- Reading accuracy : 0.01%  $\pm$  1 count
- Sensitivity : 800mVrms, 10Hz to 100Hz  
300mVrms, 100Hz to 1KHz  
80mVrms, 1KHz to 10KHz  
50mVrms, 10KHz to 100KHz  
25mVrms, 100KHz to 1MHz
- Max. input voltage: 150 Vp-p
- Input impedance : 1 Mohm

F. General

- Power requirements : 110/120/220V  $\pm$  10%  
240V + 5%, - 10%, 48 ~ 66Hz
- Operating temperature: 0°C ~ 50°C (Accuracy is specified at 25  $\pm$  5°C)
- Dimension : 205(W)x76(H)x267(D) mm
- Weight : 2,270 g

Voltage is selected by voltage selector at rear panel.

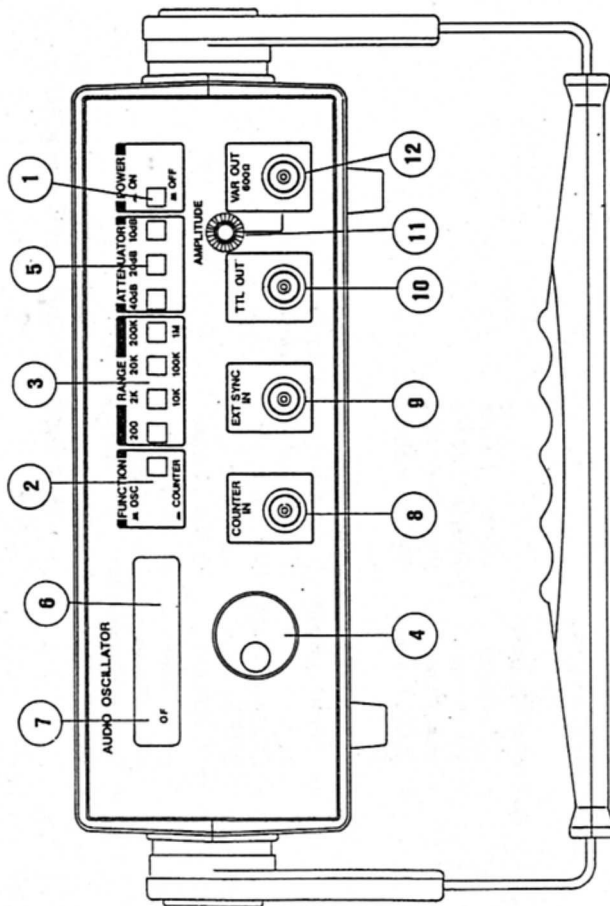
## SECTION II

### 1. INTRODUCTION

This section contains information and instructions necessary for the operation of the oscillator. This section also describes the operating characteristics.

### 2. PANEL FEATURES

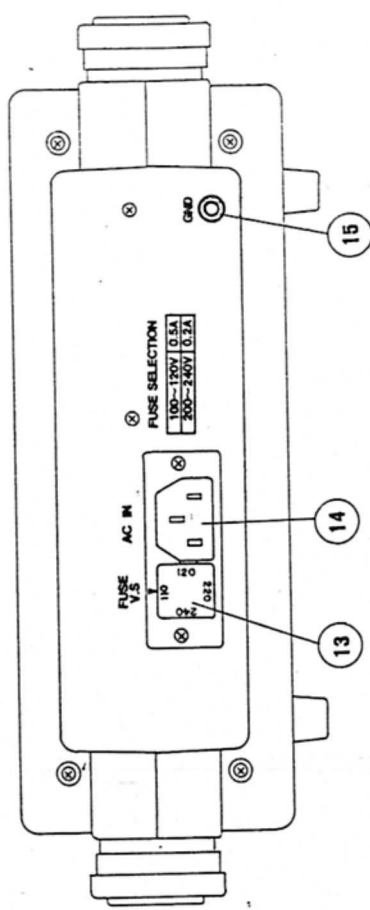
The front and rear panel controls are shown in Fig. 2-1 and Fig. 2-2. The description of each control and connector is keyed to the number shown in the Figure



**Fig. 1-1** Front panel feature

- 1) POWER : Connect AC power to the oscillator.
- 2) FUNCTION : Select the function to audio oscillator or counter. (The release statement (⌋) to operate as an oscillator. The push statement (—) to operate as a counter.)
- 3) RANGE : Select the range of output frequency or external input frequency.  
(Output frequency range : 200; 20Hz~200Hz, 2K; 200Hz~2KHz, 20K; 2kHz~20KHz, 200K; 20KHz~200KHz.)  
Input frequency range : 10K; 10Hz~10KHz, 100K; 10KHz~100KHz, 1M; 100KHz~1MHz.)
- 4) FREQUENCY CONTROL : Control the output frequency in selected range.

- 5) ATTENUATOR : Select attenuation of 0 dB to 70 dB by combining each attenuator (10 DB, 20 dB, 40 dB).
- 6) DISPLAY : Display the output or input frequency.
- 7) O.F. LED : Lights and flickers when the input frequency is overflow.
- 8) COUNTER IN : Input connector for measuring the unknown external signal.
- 9) EXT. SYNC. IN : Input connector for the external synchronization signal.
- 10) TTL OUT : Output connector for square wave (TTL level).
- 11) VAR OUT : Output connector for sine wave. The output impedance is 600 ohms.
- 12) AMPLITUDE : Continuously varies the amplitude of sine wave output.



**Fig. 1-2** Rear panel feature

- 13) VOLTAGE SELECTOR : Selects the AC line voltage.
- 14) AC INLET : Provides connection to AC power.
- 15) GND TERMINAL