

ADVANCE SIGNAL GENERATOR

Type P.1

Introduction

The Advance P.1. provides a reliable and economical instrument for measurement and servicing on radio and television receivers. The frequency range is 100 kc/s — 100 Mc/s, covering on fundamentals the broadcast bands, the British television band and the 90 Mc/s communication band. R.F. output is 1 microvolt — 100 millivolts. The accurate attenuator and low leakage field permit reliable measurement at low signal levels.

Instructions

MAINS VOLTAGE

The standard model is operated from power supplies of 105-125 volts, 210-250 volts, 40-100c/s, A.C. only.

The instrument is normally despatched with the mains transformer set to operate at 210-250 volt. For supplies of 105-125 volt, remove the disc on the underside of the case exposing the mains transformer, adjust the taps as indicated, and replace the disc.

Special models available are :—

P.I.M. for 105-125 volts, 140-160 volts, 210-250 volts, 40-100 c/s.

P.I.N.A. 117 volts, 25-60 c/s.

FREQUENCY

A signal of any frequency from 100 kc/s to 100 Mc/s is selected by means of a 6 band switch and a directly calibrated scale. A slow motion drive facilitates fine adjustment. Frequency accuracy is $\pm 1\%$.

The bands are :—

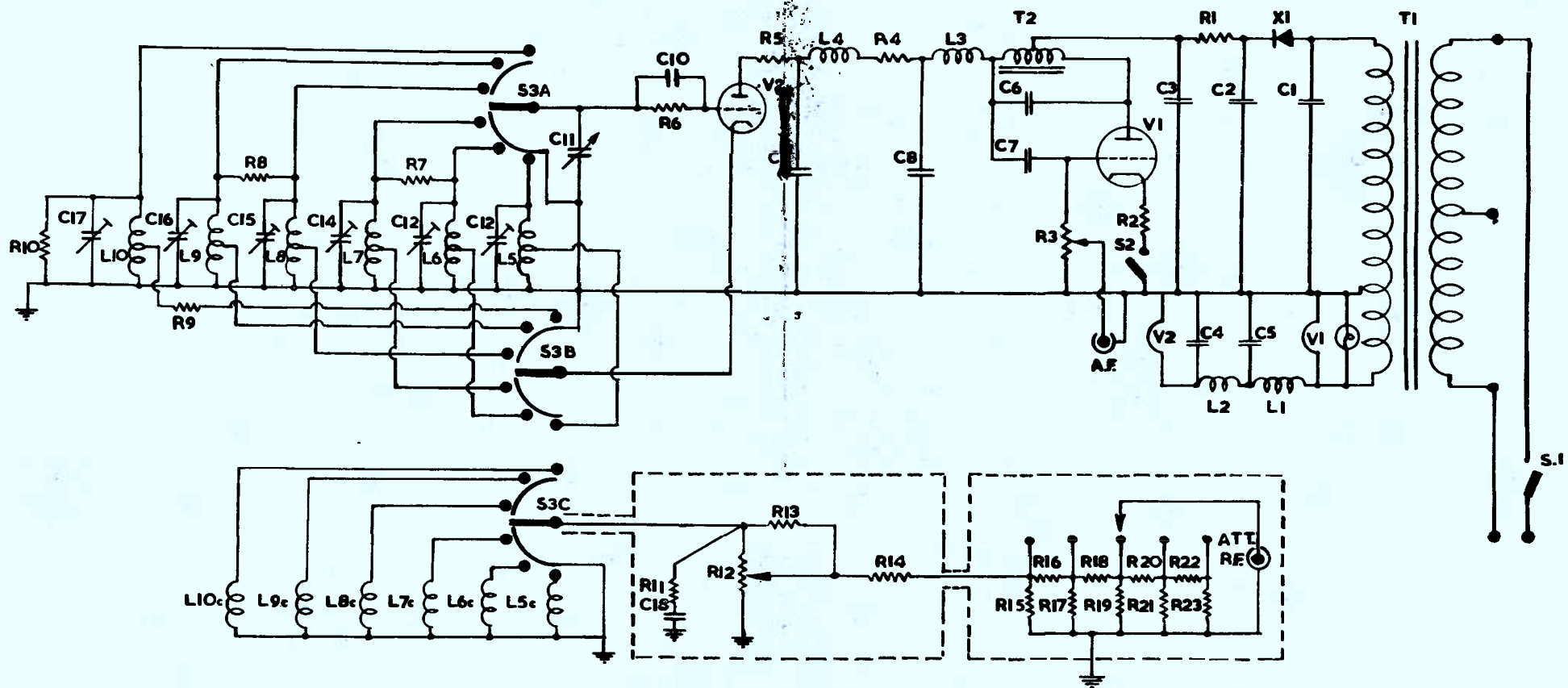
A	30 —	100 Mc/s
B	10 —	30 Mc/s
C	3 —	10 Mc/s
D	1 —	3 Mc/s
E	300 —	1000 kc/s
F	100 —	300 kc/s

R.F. ATTENUATOR

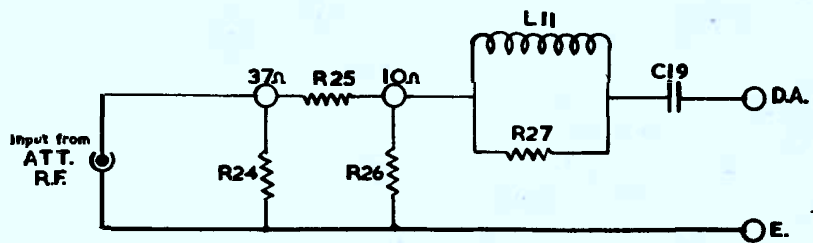
The output from the oscillator is fed to the non-inductive "VOLTAGE OUTPUT" continuous control, and thence to the "MULTIPLIER", a 75 ohm attenuator with four steps of 20 db per step. The "VOLTAGE OUTPUT" is calibrated 0-10 and the "MULTIPLIER" positions are X1, X10, X100 μ V and X1, X10mV. Thus, multiplying the indications of the two controls, the output is given from 1 microvolt to 100 millivolts. The output impedance is 75 ohms except on step X10mV, when it varies from 45-53 ohms. The voltages indicated are obtained when the output is terminated by a 75 ohm load. The terminated R.F. lead type, T.P.8. gives such a load.

CIRCUIT CODE

R.1.	1,000 ohms $\pm 10\%$	$\frac{1}{4}$ W.	R.14.	100 ohms $\pm 5\%$	$\frac{1}{4}$ W.
R.2.	560	" " " "	R.15.	91	" " " "
R.3.	50,000	" Potentiometer	R.16.	750	" " " "
R.4.	1,000	" $\pm 10\%$	R.17.	91	" " " "
R.5.	22	" " " "	R.18.	750	" " " "
R.6.	15,000	" " " "	R.19.	91	" " " "
R.7.	4,700	" " " "	R.20.	750	" " " "
R.8.	100,000	" " " "	R.21.	91	" " " "
R.9.	1,000	" " " "	R.22.	750	" " " "
R.10.	39,000	" " " "	R.23.	82	" " " "
R.11.	82	" " 5% "	R.24.	270	" " " "
R.12.	90	" Low Inductance Potentiometer	R.25.	99	" " " "
R.13.	180 ohms $\pm 5\%$	$\frac{1}{4}$ W.	R.26.	11	" " " "
R.27.	390	" " 10% "			
C.1.	0.04 μ F	.... 150V. D.C. Wkg. Miniature Paper Tubular			
C.2.	16 μ F	.... Electrolytic			
C.3.	16 μ F	.... Electrolytic			
C.4.	0.001 μ F	.... Mica			
C.5.	0.005 μ F	.... Mica			
C.6.	0.04 μ F	.... 150V. D.C. Wkg. Miniature Paper Tubular			



Circuit Diagram
T.P.B.



NOTE : Every effort is made to keep this drawing up to date, but the right is reserved to adjust the values or amend the circuit without notice.

CIRCUIT CODE (cont.)

C.7.	0.04 μ F	....	150V. D.C. Wkg. Miniature Paper Tubular
C.8.	0.001 μ F	....	Mica
C.9.	0.001 μ F	....	Mica
C.10.	100 pF	....	Mica
C.11.	13-541 pF	....	Variable
C.12.-C.17.		....	Wire Trimmers
C.18.	40 pF	....	Ceramic
C.19.	200 pF	....	Miniature Paper Tubular

L.1.	L.T. R.F. Choke	L.5.-L.10.	Oscillator Coils
L.2.	L.T. R.F. Choke	L.5c-L.10c.	Coupling Coils.
L.3.	H.T. R.F. Choke	L.11.	Dummy Aerial
L.4.	H.T. R.F. Choke		Inductance

S.1.	Mains Switch	S.3A-C.	Wave Change Switch
S.2.	Modulation Switch		

V.1. 6J5GT A.F. Oscillator

V.2. ECC91 (6J6) R.F. Oscillator

X.1. Selenium Rectifier 120v. A.C. 15mA.

T.1. Mains Transformer T.2. Modulation Transformer

TERMINATED R.F. LEAD, TYPE T.P.8.

The termination pad correctly terminates the lead with 75 ohms, and provides the following outputs :—

1. Output impedance 37 ohms and voltage as indicated.
2. Output impedance 10 ohms and voltage one tenth of that indicated.
3. Output impedance that of a standard "all wave" dummy aerial and voltage one tenth of that indicated.

At high frequencies the connection from the pad to the receiver should be as short as possible, and above 10 Mc/s should not be more than three inches.

FORCE OUTPUT

A force output of approximately 0.2 volts may be obtained when the output is not terminated. A long wander plug is provided which will fit into the R.F. socket and may be used for the force output lead, together with a lead from the earth socket.

The unterminated output may be used with the attenuators for lower frequency work such as I.F. alignment. The output is then twice that indicated by the controls.

MODULATION

The internal 400 c/s oscillator may be switched on by the switch incorporated in the "A.F. CONTROL". The R.F. signal is then modulated at 400 c/s to a depth of 30%.

AUDIO FREQUENCY OUTPUT

An output of 0.8 volts 400 c/s at high impedance is available between the A.F. and E. sockets. The level is adjustable by the "A.F. CONTROL".

CONNECTION TO POINTS OF HIGH POTENTIAL

It must be remembered that all outputs have low resistance paths to earth. Therefore if a signal is injected into apparatus at

a high potential point, a blocking condenser (say 0.05 μ F at 100 kc/s) must be connected between the generator and the apparatus. Where the chassis may be "live", e.g. on an A.C.-D.C. receiver, condensers should be fitted in both the output and earth leads.

ACCESSORIES SUPPLIED WITH THE INSTRUMENT

- 1 Terminated R.F. lead, type T.P.8. including co-axial R.F. lead, termination pad and dummy aerial, fitted with black and red wander plugs.
- 1 Black wander plug for earth lead.
- 1 Long red wander plug for A.F. and force output.

VALVES, ETC.

- 1 Valve type ECC91 Mullard (6J6).
- 1 Valve type 6J5GT.
- 1 Pilot lamp type MES 11mm 6.5 volt.

MAINTENANCE

The instrument may be removed from the case by removing the fixing screws round the edge of the panel. To ensure good earthing and low leakage, the lock washers under the screwheads must be used when refixing.

The oscillator valve is in an internal screening box holding the oscillator assembly. To open this box, remove the pilot lamp bracket and undo the self tapping screws on the edges of the box. Care must be taken not to disturb the trimmers and coil assembly. The trimmers **MUST ON NO ACCOUNT** be adjusted as this will alter the frequency calibrations. The valve may be changed without appreciable effect on the calibration. To ensure reliable screening **ALL** screws must be replaced when the screen is refitted.

In all cases of difficulty the instrument should be returned to the factory for repair or adjustment.