SWR

POWER METER

Operation Manual

CONTENTS

A. INTRODUCTION:

This manual contains operation instructions as well as the installation procedures in conjuction with transceiver, SWR/POWER METER and antenna.

B. DESCRIPTION:

The Model 300 series of VSWR/RF POWER METERS are now widely used for both hobby and professional applications where accuracy and reliablity are essential.

They provide the cost effective answer to VSWR, RF POWER and coaxial line measurements from 1.8MHz to 520MHz (Model 310 from 1.8MHz-150MHz, Model 320 from 130MHz-520MHz, Model 330 from 1.8MHz-520MHz).

Each meter employs one or more special wide-band sensors for flat frequency response and direct in-line power readings.

Both RMS and peak power level can be measured in switched ranges.

Generously rated, their high sensitivity enables then to cope with accuracy well at low power levels.

C.FEATURES:

*Location:compact size in Line Watt meter thus in operation at any location.
*S.W.R.:Measurable SWR from minimum power 4w to maximum 200w.
*Peak Power:Measurable modulate power in operation of SSB mode.
*Accuracy:Linear characterristics assure accurate measuring over entire frequency range.
*Low Insertion loss:Less than 0.2dB.

D.SPECIFICATIONS:

1.Model:310

Frequency Range:	1.8 ~ 150MHz
Measurable Power Range:	0 ~ 200w
Power Range:	4w/20w/200w
Power Measurement Accuracy:	
	4w RANGE ± 10%(on full scale)
	20w RANGE ± 5%(on full scale)
	200w RANGE ± 5%(on full scale)
	Note:220 ~ 420MHz add -10% F.S.
	450 ~ 520MHz add +10% F.S.

Minimum Power for SWR Measurement: 4w
SWR Measurement: 1.0 ~ ∞
Insertion Loss: Less than 0.2dB
Input/Output Impedance: 50 ohms
Input/Output Connection Plugs: SO ~ 239

2. Model:320
Frequency Range: 130 ~ 520MHz
Measurable Power Range: 0 ~ 200w
Power Range: 4w/20w/200w
Power Measurement Accuracy:
4w RANGE ± 10%(on full scale)
20w RANGE ± 5%(on full scale)
200w RANGE ± 5%(on full scale)
Note:220 ~ 420MHz add -10% F.S.
450 ~ 520MHz add +10% F.S.
Minimum Power for SWR Measurement: 4w
SWR Measurement: 1.0 ~ ∞
Insertion Loss: 130 ~ 250MHz Less than 0.1dB
400 ~ 470MHz Less than 0.2dB
520MHz Less than 0.3dB
Input/Output Impedance: 50 ohms
Input/Output Connection Plugs: SO ~ 239

3.Model:330

Frequency Range:	1.8 ~ 520MHz
Measurable Power Range:	0 ~ 200w
Power Range:	4w/20w/200w
Power Measurement Accuracy:	
	4w RANGE ± 10%(on full scale)
	20w RANGE ± 5%(on full scale)
	200w RANGE ± 5%(on full scale)
	Note:220 ~ 420MHz add -10% F.S.
	450 ~ 520MHz add +10% F.S.
Minimum Power for SWR Measurement:	4w
SWR Measurement:	1.0 ~ ∞
Insertion Loss:	140 ~ 250MHz Less than 0.1dB
	400 ~ 470MHz Less than 0.2dB
	520MHz Less than 0.3dB
Input/Output Impedance:	50 ohms
Input/Output Connection Plugs:	SO ~ 239

E.Applications drawing in conjunction with Model 300 serie SWR/POWER METER to transceiver and antenna.

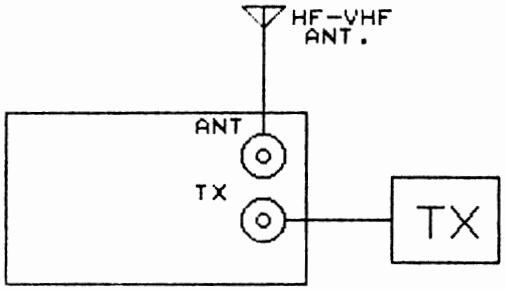


FIGURE 1

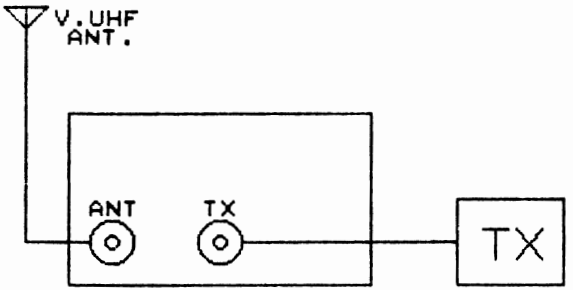


FIGURE 2

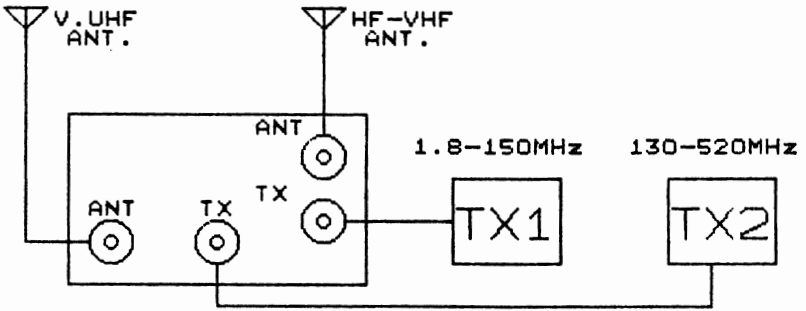


FIGURE 3

F.OPERATION INSTRUCTION:

1.Turn the transceiver off. Disconnect the antenna coaxial cable from the transceiver output.

2.Connect the unit "ANT" connector located in the rear side of the unit to antenna connector, and, connect the unit "TX" to transceiver output.

For Model 330, Please make sure that the "POWER SWITCH"on the front panel is set on the proper using frequency band 150MHz or 520MHz position.

3.For measuring transmitting power rate, please put "FUNCTION SWITCH" of the front panel on "POWER" position and "RANGE SWITCH" on the suitable power range 200w, 20w or 4w section.

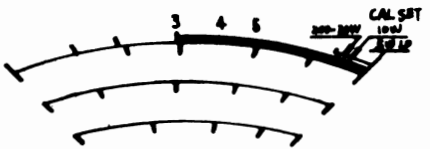
Also, set the "POWER SWITCH" on "FWD" position for reading the FORWARD power rate and set the "POWER SWITCH" on "REF" position for reading the "REFLECTIVE" power rate (only for Mode 310, and 320).

And then, when the transceiver switch is on, the meter needle will deflect.

Read the amount of deflection on the top scale. Never disconnect the "ANT" connectior when transmitting. The abnormal voltage generated may damage the transceiver.

4. For measaring VSWR, at first, set "CAL" adjustable knob on "MIN" position.

Setting "FUNCTION SWITCH" on "CAL" position turning the transceiver output on, rotate clockwise the ":CAL" knob slowly for the full scale. Setting the meter needle to the suitable power rate calibration point "CAL SET" as following drawing . There are three different calibration points indicated on the meter.



calibration point for pwoer rate 200-20w
calibration point for power rate 10w (20-10w)
calibration point for power rate below 5w

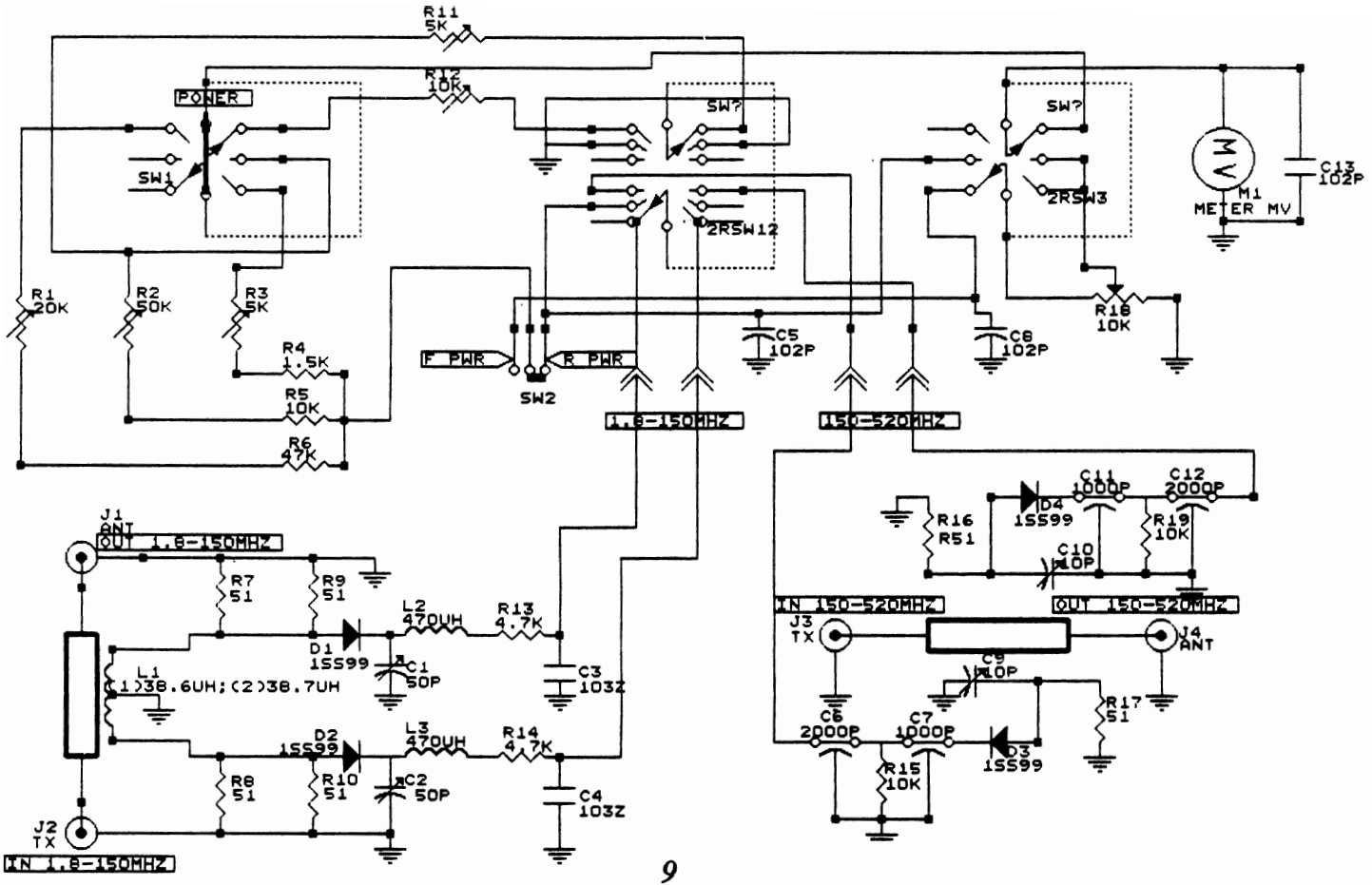
Next, set the "FUNCTION SWITCH" on "SWR"position and read the meter scale. The meter will give the SWR reading directly.

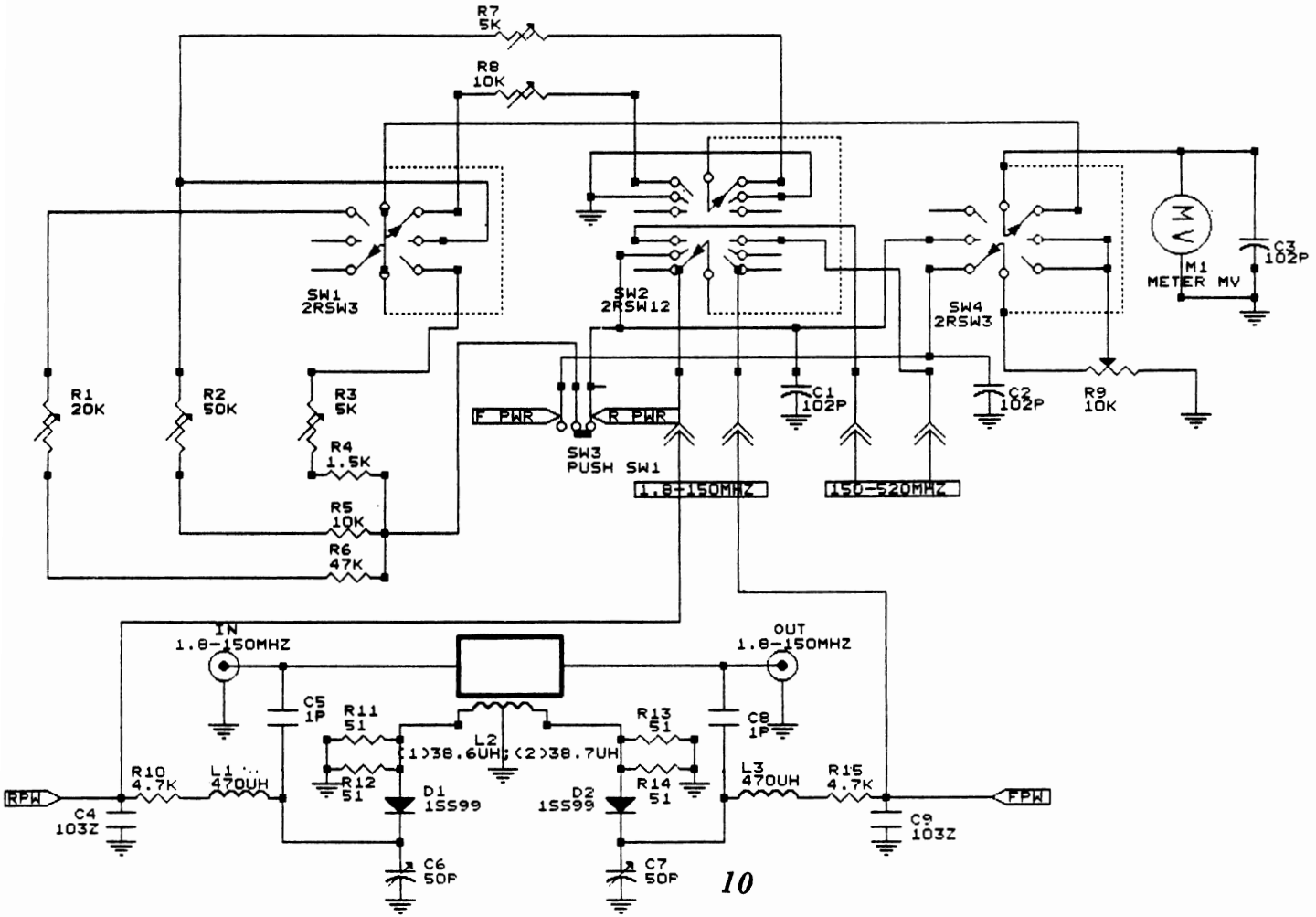
G.The explanation of calibration point.

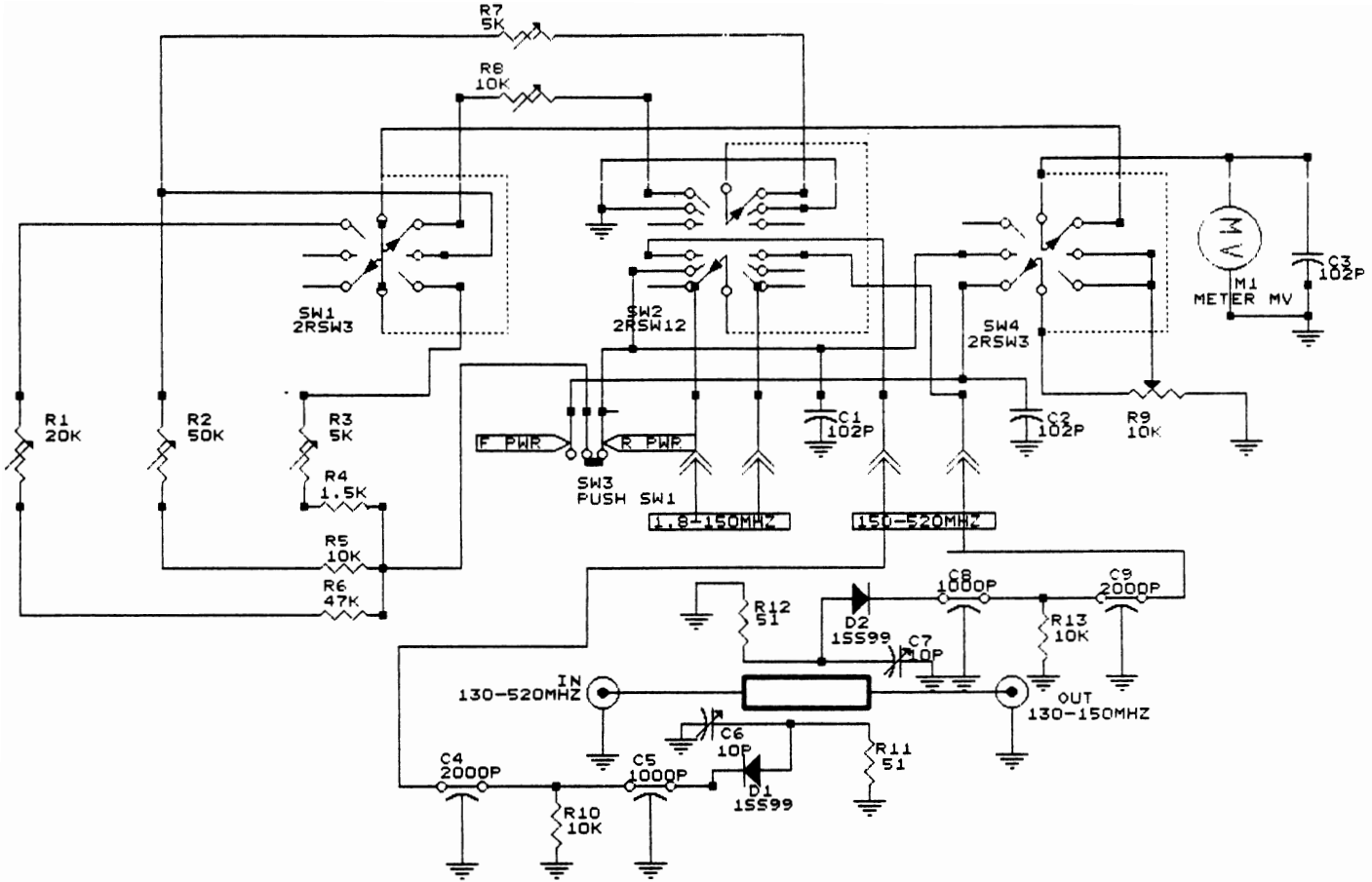
For the purpose of measuring the best accurating power and SWR, the unit adopts the three dividing calibration points as:
(1)Power rate below 5w.
(2)power rate below 20w.
(3)power rate over 20w to 200w which are showed on the scale meter of the unit.

The different three calibration points are separatlcy used to be depend on the different transceiver output power rate accordingly.

H. CIRCUIT DIAGRAM


R11
5K
R12
10K
POWER
SW1
SW?
SW?
2RSW3
2RSW12
M
M1
METER MV
C13
102P
R1
20K
R2
50K
R3
5K
R4
1.5K
R5
10K
R6
47K
F PWR
R PWR
SW2
C5
102P
C6
102P
R18
10K
1.8-150MHZ
150-520MHZ
J1
ANT
OUT 1.8-150MHZ
R7
51
R9
51
L2
470UH
R13
4.7K
D1
1SS99
C1
50P
L1
(1)38.6UH;(2)38.7UH
C3
103Z
D2
1SS99
L3
470UH
R14
4.7K
R8
51
R10
51
C2
50P
C4
103Z
J2
TX
IN 1.8-150MHZ
C11
1000P
C12
2000P
D4
1SS99
R16
R51
R19
10K
C10
10P
IN 150-520MHZ
OUT 150-520MHZ
J3
TX
J4
ANT
C9
10P
R17
51
C6
2000P
C7
1000P
D3
1SS99
R15
10K


R7
5K
R8
10K
SW1
2RSW3
SW2
2RSW12
SW4
2RSW3
M1
METER MV
C3
102P
R1
20K
R2
50K
R3
5K
R4
1.5K
R5
10K
R6
47K
F PWR
R PWR
SW3
PUSH SW1
C1
102P
C2
102P
R9
10K
1.8-150MHZ
150-520MHZ
IN
1.8-150MHZ
OUT
1.8-150MHZ
C5
1P
R11
51
L2
(1)38.6UH;(2)38.7UH
R13
51
C8
1P
R10
4.7K
L1
470UH
R12
51
D1
1SS99
D2
1SS99
R14
51
L3
470UH
R15
4.7K
RPW
FPW
C4
103Z
C9
103Z
C6
50P
C7
50P


R7
5K
R8
10K
SW1
2RSW3
SW2
2RSW12
SW4
2RSW3
M1
METER MV
C3
102P
R1
20K
R2
50K
R3
5K
R4
1.5K
R5
10K
R6
47K
F PWR
R PWR
SW3
PUSH SW1
C1
102P
C2
102P
R9
10K
1.8-150MHZ
150-520MHZ
R12
51
D2
1SS99
C8
1000P
C9
2000P
R13
10K
C7
10P
IN
130-520MHZ
OUT
130-150MHZ
C6
10P
C4
2000P
C5
1000P
D1
1SS99
R11
51
R10
10K