

1 CHANNEL

2 CHANNEL

AC MILLIVOLT METER

MODEL RVT-321

MODEL RVT-322

INSTRUCTION MANUAL

b. dBm

“dBm” is abbreviation of dB(mw). This decibel value expresses the power ratio with respect to 1mw. Normally “dBm” implies the condition that the power exists in an impedance of 600 Ω.

Therefore “0dBm” signifies the following: 0dBm=1mw or 0.75v or 1.291mA

(3) The power or voltage levels are determined by adding the scale readings, for the reference in use, to the RANGE selector switch settings.

Example:

a. Scale-1dB

RANGE+20dB

Level+20+(-1)=+19dB

b. Scale+1dB

RANGE-30dB

Level(-30)+(1)=-29dB

c. Scale+2dBm

RANGE+10dBm

Level(+10)+(2)=+12dBm

5. CAUTIONS

This AC millivoltmeter would stop working if the fuse had blown. You should firstly find the exact cause and correct it, then select a fuse with same rated capacity at the blown one to replace.

It has excellent stability under normal working conditions. Just in case you have any problem, please try not to fix it yourself, Take the instrument to our dealer for any necessary repair. The cost for repair will be free in the period of guarantee, except any artificial breakdowns. If the problem is caused artificially or out of the period of guarantee, a proper extra fee will be charged according to the situation.

Thanks for your cooperation!

OPERATING INSTRUCTION

1. GENERAL

RVT-321 millivoltmeter has one pointer for one channel.

RVT-322 millivoltmeter has two pointers for two channels. The pointer for CH1 is black, and the one for CH2 is red. Both CH1 and CH2 can measure AC voltages in the range of 10Hz to 1MHz with 300 μ V to 100 μ V full scale ranges. The dB scale measures 1V as 0 dB and ranges from -90 to +40 dB. The 600 Ω (1mV) dBm scale ranges from -90 to +42 dBm.

RVT-322: The common lines of CH1 and CH2 can be connected directly to the chassis ground with the slide switch on the rear panel of the instrument. With the same slide switch, we can make the two common lines isolated each other and isolated on chassis ground. Therefore, this instrument can conveniently measure two separate AC voltages with different DC components superimposed. For example, both channels of the stereo amplifier can be measured simultaneously with this instrument instead of using two identical voltmeters separately.

2. SPECIFICATIONS

Scale Values : r.m.s. value of sinusoidal wave, dB value with 1V as 0 dB and dBm value with 1mw 600 Ω as reference.

Range Select Mode : Separately for each channel or simultaneously for both channels.

Voltage Measurement Range : 12 ranges: 300μV, 1, 3, 10, 30, 100, 300mV, 1, 3, 10, 30 and 100V full scale.

Decibel Range : 12 range: -70 to +40 dB in increments of 10 dB.

Decibel Scale- : -20 to +1 dB (0 dBm=1V)
-20 to +3 dBm (0 dBm; 1mW, 600 Ω).

Voltage Accuracy : Within ±3% of full scale (at 1KHz).

Frequency Response : For 20Hz to 200KHz, within ±3% (referred to 1KHz)

For 10Hz to 1MHz, within $\pm 10\%$ (referred to 1KHz)

Input Resistance	: Approximate $1\text{M}\Omega$, for each range.
Input Capacitance	: 50PF or less, for each range.
Maximum Allowable Input Voltage	: 300V
(Note: DC+AC peak)	
Channel isolation	: 40dB
Output Voltage	: $0.1\text{rms} \pm 10\%$ (at 1KHz) for each range (at full scale with no load)
Input Power	: $220\text{V}_{\text{ac}} \pm 10\%$ 50Hz
Dimensions	: 142 (W) \times 210 (H) \times 235 (D) mm
Weight	: Approximately 3.2Kg
Accessories	: Connection Cord (RVT-321.....1, RVT-322.....2, Instruction manual...1)

3. PRELIMINARY NOTES

(1) Chassis ground terminal

Be sure to connect the chassis ground terminal to the earth before inserting the power plug into the main outlet.

(2) Maximum input voltage

Any input voltage of more than the specified voltage should not be applied. Otherwise, the instrument may be damaged. The specified voltage is determined by adding the peak value of the input signal plus the superimposed DC voltage: 300V.

(3) Connection leads

When the measured signal level is low (i.e., $300\mu\text{V}$) or the measured signal source impedance is high, the input line is susceptible to external noise. To guard against noise, shielded wires or a coaxial cable should be used depending on the noise frequency.

4. OPERATION

(1) Voltage measurements

- Set the PWR switch at down position (OFF).
- Check the 0 setting of the pointers. If offset, then use a small screwdriver and adjust the zero adjustment screw at the center of the meter front cover.
- Plug the AC plug into the AC line.
- Set the RANGE at 100V and PWR switch at up position (ON).
- Connect leads to the INPUT terminal and load under test.
- Turn the RANGE selector switch and set it at the position where readings can be obtained at least above the lower one third of the scale.

(2) Use of Decibel ranges

Two dB scales are provided on the dial. These are calibrated for $0\text{dB} = 1\text{V}$ and $0\text{dBm} = 0.775\text{V}$ (1mW into 600Ω).

a. dB.

“Bel” is a logarithmic unit expressing the ratio of two powers. One “Decibel” (abbreviated dB) is one-tenth of one Bel. The dB is defined as follows: $\text{dB} = 10 \log \frac{P_2}{P_1}$.

If the impedances at the places where p_1 and p_2 exist are equal to each other, the ratio of powers may be expressed with the ratio of voltages or currents as follows:

$$\text{dB} = 20 \log \frac{E_2}{E_1} = 20 \log \frac{I_2}{I_1}$$

For example, when input voltage of an amplifier is 10mV and its output voltage is 10V, the degree of amplification is $10\text{V}/10\text{mV} = 1000$ times. This is also expressed in dB as follows:

$$\text{Degree of amplification} = 20 \log \frac{10\text{V}}{10\text{mV}} = 60\text{dB}$$