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IMPEDANCE METER / FREQUENCY COUNTER 152A

Ⅰ. Functions And Features

1. Model-152A can measures the voice coil DC resistance value of loudspeaker, Headphone and receiver, As well as the AC impedance value of the afore-mentioned products.

2. With its built-in frequency oscillator, Model-152A does not need to connect with an external signal generator, Instead it can be able to measure the AC impedance value of the pre-measure products.

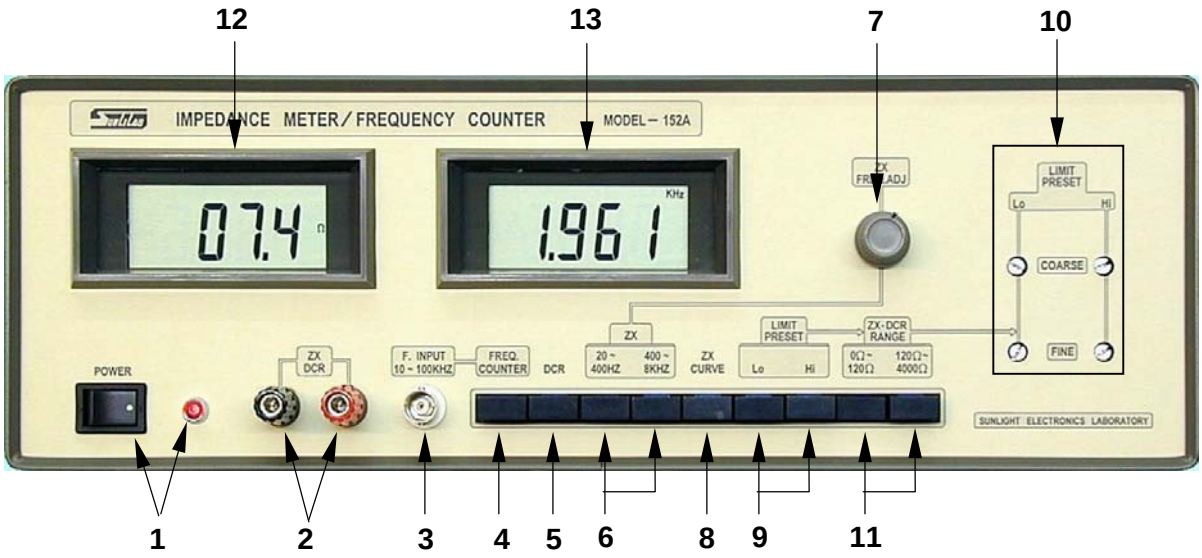
3. Its built-in frequency oscillator has a frequency ranges from 20Hz to 8KHz, Which is continuous adjustable. (It can also connect with an external frequency oscillator, To set on the frequency value of the intend measured AC impedance value, Frequency range from 20Hz to 20KHz are allowable.)

4. With Model-152A, users can preset their own qualified upper and lower limits, which are very suitable for speedy Q.C. in production line.

5. Model-152A has 2 LCD digital display windows, which can display directly the impedance value and frequency value respectively.

6. It can be served as a frequency counter, which is used to test the output frequency of other frequency oscillators, measurement range of frequency： 10Hz to 100KHz.

Ⅱ. Panel Description



1. Power : Power switch and indicator.
2. Zx / DCR : Terminals for measuring the AC impedance / DC resistance. Place the under-test voice coil, loudspeaker, headphone or receiver to these terminals.
3. F. Input : Terminal for measuring the frequency, it can measures the freq. of other signal source, which ranges from 10Hz to 100KHz, the voltage of the pre-measure signal source should not beyond 30Vrms.
4. Freq. Counter : Push-button for measuring the frequency. To measure the freq. of the external signal source, just press in this push-button.
5. DCR : Push-button for measuring the DC resistance. To measure the voice coil DC resistance, simply press in this push-button.
6. Zx: 200～400Hz / 400Hz～8KHz : Push-button for measuring the AC impedance value, frequency is divided into 2 ranges, users may select either 20～400Hz or 400Hz～8KHz range, depends on the frequency needed for measuring impedance, this push-button should be used simultaneously with (7) 〝 Zx. Freq. Adj. 〞 knob, to adjust the required frequency
7. Zx. Freq. Adj. : Knob for adjusting the frequency for AC impedance. Press in the “20～400Hz”or “400Hz～8KHz” range of (6), the adjustable frequency range of (7) will be “20～400Hz” or “400Hz～8KHz” respectively.
8. Zx. Curve : Push-button for measuring the AC impedance curve. With connection of an external oscillator, when the frequency ranges from 20Hz to 20KHz, 0.68V (RMS)

sine wave, the impedance of the loudspeaker or the headphone will be displayed on the display window.

9. Limit Preset LO / Hi : Push-button for setting the upper／lower limits, users may set their own qualified upper／lower limits, for 100% speedy measurement in production line, judgment is precise & time-saving. (This push-button should be used simultaneously with (10) adjusting knob, for more detail, please refer to (Ⅲ) “Method of using”.)

10. Limit Preset HI Coarse / Fine ; LO Coarse / Fine : Adjusting VRS for upper／lower limits。Upper and lower adjusting VR each has a set of Hi coarse／fine & LO coarse／fine adjusting VRS, users may adjust their own desire upper value and lower value through the Hi coarse／fine and LO coarse／fine VR of (10). (This push-button should be used simultaneously with (9), for more detail, please refer to (Ⅲ) “Method of using”.)

11. Zx. DCR Range : Measuring range of impedance & resistance, it is divided into 2 ranges : ”0 to 120Ω” and “120Ω to 4KΩ”. Since Model - 152A is adapting a constant current to measure the AC impedance value (0 to 120Ω uses 27mA constant current, while 120Ω～4KΩ adapts a 1.0mA constant current), the measured AC impedance value will have a slight difference under different constant current source, thus, even one particular loudspeaker or headphone or receiver uses 27mA and 1.0mA current in making measurement, their displayed AC impedance value will differ from each other. therefore, we recommend the users to : (a) Use “0 to 120Ω” range, to measure loudspeaker with a bigger power rating; (b) For receiver with a smaller power rating, it is advisable to use a smaller current source : ”120 Ω to 4KΩ” range in making measurement.

12. Zx. DCR Display : AC impedance & DC resistance value display window. Press in the ”DCR” push-button, the displayed value will be the DC resistance value. Press in the “Zx” push-button, the displayed value will be AC impedance value.

13. Freq. Display : Frequency display window. Press in the “Freq. Counter” push-button, the displayed value will be the frequency of the external signal source. Press in the “Zx” push-button, frequency of the built-in oscillator will be displayed. Press in the “Zx Curve” push-button, frequency of the external sweeping signal source will be displayed.

Ⅲ. Method Of Using

A、 Dc Resistance Measurement :

1. Connect the pre-measure objects to 〝Zx／DCR〞 terminals (2).
2. Press in the 〝DCR〞 push-button (5) and press in the 〝0 to 120 Ω〞 or 〝120 Ωto 4K Ω〞 push-button of 〝Zx／DCR〞 measurement range of (11).
3. The measured DC resistance value will display directly on 〝Zx.／DCR Display〞 display window (12).

B、 AC Impedance Measurement On 〝SPOT〞 Frequency :

1. Connect the pre-measure objects to 〝Zx／DCR〞 terminals (2).
2. Press in either the 〝20～400Hz〞 or 〝400Hz～8KHz〞 push-button of 〝Zx.〞 range of (6), depends on the frequency required. Users may use the 〝Zx. Freq. ADJ.〞 adjusting knob (7), to adjust the frequency needed.
3. Press in the 〝0 to 120Ω〞 or 〝120Ω～4KΩ〞 push-button of 〝Zx. DCR〞 measurement range of (11).
4. The measured AC resistance value will display directly on 〝 Zx. DCR Display 〞 display window (12).

C、 Method Of Using The Frequency Counter :

1. Press in the 〝Freq. Counter〞 push-button (4).
2. Use a BNC testing cable provided by Sunlight , connect one end of the cable to 〝F. Input〞 terminal (3), and the other end to the intend measured signal source, then, the measured frequency will display directly on 〝Freq. Display〞 display window (13).

D、 Method On How To Make Speedy, Automatic 〝GO / NO GO〞 Judgement On Production Line Or Q.C. DEPT.

1. Speedy, automatic 〝GO／NO GO〞 judgment method is only suitable in making measurement for impedance & resistance, thus, this method is not applicable in making frequency measurement.
2. Users are required to choose first the 〝DCR〞 of (5) or 〝Zx〞 of (6) measurement (If Zx measurement are chosen, users are required to adjust frequency needed.)

3. When the setting upper & lower limits are both lower than 120Ω :

To set the lower limit value, users are required to press in both the 〝LO〞 push-button of (9) and 〝0～120Ω〞 push-button (11) simultaneously. (Which means that both the 〝LO〞 & 〝0～120Ω〞 push-button are in press in stage), then, use a minus screwdriver, to adjust the coarse VR and fine VR of the lower limit adjusting VRS (10), thereby adjust the lower limit value. Similarly, to set the upper limit, users are required to press in both the 〝HI〞 push-button of (9) & 〝0～120Ω〞 push-button (11) simultaneously, then, use a minus screwdriver, to adjust the coarse VR and fine VR of the upper limit adjusting VRS (10), thereby adjust the upper limit value. After setting of upper and lower limit, simply press in the 〝0～120Ω〞 push-button, measurement can then be proceed. If the pre-measure object has a value within the range of upper and lower limits, then, the built-in buzzer of Model - 152A will ring up, which means the measured object is qualified, otherwise, the buzzer will not ring.

4. When the setting upper & lower limits are both higher than 120Ω :

To set the lower limit value, users are required to press in both the 〝LO〞 push-button of (9) and 〝120Ω～4KΩ〞 push-button (11) simultaneously. then, use a minus screwdriver, to adjust the coarse VR & fine VR of the lower limit adjusting VRS (10), thereby adjust the lower limit value. Similarly, to set the upper limit, users are required to press in both the 〝HI〞 push-button of (9) and 〝120Ω～4KΩ〞 push-button (11) simultaneously, then adjust the coarse VR and fine VR of the upper limit adjusting VRS (10), thereby adjust the upper limit value. After setting of upper and lower limit, simply press in the 〝120Ω～4KΩ〞 push-button, to let the 〝HI〞 push-button trigger out, measurement can then be proceed. If the pre-measure object has a value within the range of upper and lower limits, then, the built-in buzzer of Model - 152A will ring up, which means the measured object is qualified, otherwise, the buzzer will not ring.

5. If the users want to proceed with the 〝measurement of impedance or resistance〞 only, and not with the 〝auto judgment〞 , then, users may adjust both the coarse and fine VR of the upper and lower limits simultaneously to the largest value or to the lowest 0Ω, Model - 152A will no longer proceed with any judgment task.

IV. Specification

1. Power : AC 110V±10%, 50Hz to 60Hz. For other specifications, please specified when placing order.

2. Resistance／Impedance measuring range :
   a. 0 to 120 Ω , Resolution 0.1 Ω
   b. 120 to 4K Ω, Resolution 1 Ω

2. Precision : DCR : ≦±(0.2% + 1 digit) ; Zx : @1KHz : ≦±(0.4% + 1 digit) ;
Zx＝20～20KHz : ≦±(0.8% + 1 digit).

4. Frequency range of the built-in oscillator : 20Hz to 8KHz, continuous adjustable.

5. Dimension : 36 (W) × 26 (D) × 13 (H) cm.

6. Weight : ≒ 4.5KG.