MULTITESTER

MODEL YF-370A

OPERATOR'S MANUAL

I. General description

Viewed in the light of a circuit tester measuring voltage, current, resistance etc,the YF-370 A is no more than a standard multitester in function. But the added versatility of performing as a transistor analyzer distinguishes it from average meters. For the particulars of is bound of hidden possibility, you can examine for yourself the specification date along with the benefits and advantages the instrument offers.

For all this, the YF-370A is by no means a largebuilt equipment but it is a light weight and handy-sized device to be seated anywhere on your bench, As a matter of fact, it is suitablc for carring service.

From beginners to professionals, you can enjoy a good command of it so as to get the best of the instrument on your original idea according to your own service design.

This mode YF-370A is not only with movement protection by spring jewel and diode, but also with circuit protection by 0.5A Fuse. Besides it includes spare Fuse(0.5A), so it is a heavy duty one.

II. Specifications

1. measurement ranges and performance

1−1 As a circuit tester:

Measurement	Measurement ranges	Allowance	Remarks
DC voltage (DCV)	0−0.25V−0.5V−2.5V-10V−50V−250V−1000 V.(25kV) 25kV with HV probe extra	±3% fs ex. cept 25kV	Input impedance 20k Ω / V
AC voltage (ACV)	0−10V−50V−250V−500V−1000V Frequency 30Hz~30kHz±3dB 50Hz~6kHz ±3%	±4% fs	Input impedance 8k Ω / V
DC current (DCA)	0−50uA−2.5mA−25mA−0.25A 50uAat 0.25 VDC position	±3% fs	Voltage drop 250mV (100mV for 50uA)
Resistance (Ω)	Range x1−x10−x1K−x10K Minimum 0.2−2 −200−200K(Ω) Midscale 20−200−20K−200K(Ω) Maximum 2K−20K−2M−20M(Ω)	±3% of arc	Internal batteries UM-3×2 006 P×1
AF output (dB)	−10dB~+22dB for 10VAC 0dB / 0.775V(1mW through 600Ω)	±4% fs	8K / V for OUT-PUT terminal

1-2 As a transistor tester

Leakage current (Iceo)(LI)	0~150μA at×1K range 0~15mA at×10 range 0~150mA at×1 range	±5% of arc	Current across terminals
DC current amplification factor(h_{FE})	0~1000 at ×10 range $\frac{Ic}{Ia}$	±3% of arc	With connector extra

2. Batteries:UM-3,1.5V,2 PCS:
006 P,9V,1 PC
3. Fuse:0.5A 1PC(with spare fuse 1PC).
4. Size&Weight:148×99×41m / m&322g.approx.(5-13 / 16′′×3-29 / 32′′×1-39 / 64′′&11.4oz.approx.)
5. Accessories:Test / leads 1 sets.
Transistor connector 1 set & Instruction manuel 1 set.

III. Operation I−as a circuit tester

1. Zero correction of indicator.
Zero corrector ① is adjusted to place the printer ⑧ on 0 of the scale left.It doesn't need to be repeated at each measurement. but the position of the pointer on zero must be confirmed before starting measurement.
2. Test lead connections.
The test leads attached are inserted well down. the red lead going to the + jack and the black lead to the-COM jack.
3. Selection of range.
When selecting a range, the white mark on the knob is correctly positioned at the prescrbed range.

3-1 DC voltage(DCV)

DC voltages of batteries, amplifier circuits, power source of communication equipment, tube and transistor circuit biases, etc. are measured. Each of the 7 range notations (0.25~1000) indicates the maximum voltage reading for that range.

3-2 AC voltage (ACV)

Voltages of commercial AC supply, AC powered circuits. AF signal level, etc.are measured Each of the 5 range notations (10~1000) indicates the maximum voltage reading for that range.

3-3 DC current (DCA)

Current consumption of DC power operated equipment, bias current of tube and transistor circuits, etc are measured.Each of the 4 range notations (50μA~0.25A) indicates the maximum current reading for that range.(uA=10^{-3}mA and A=10^{3}mA)

3-4 Resistance(Ω)

Resistance is measured, and line and circuit continuity (∞ or oΩ)tested. Each of the 4 range notations indicates the multiplication of the reading for that range, where k stands for 1000.

3-5 Range selector "OFF" position

After measuring, the range selector should be set to the "OFF" position. It provides a damping action to protecting the meter movement.

4 Measurement ranges and scale reading.

Scale mark	Measurement	Scale reading
(1) Ω (black)	Resistance	×1 range directly reads 0.2Ω~2kΩ For×10, ×1K and×10K ranges, multiply reading by the multiples.
(2) Mirror		For accuracy reading, the pointer itself and its image in the mirror must be lined up.
(3)DCV-A (black)	DC Voltage and current	0−10,0−50 and 0−250 lines each reading 0~10V, 0~50V and 0~250V fs. 0.25V,0.5V,2.5V and 1000V are read multiplied, For current,0−250 (A) line reads 0~0.25A, 0~25mA and 0~2.5mA. 0~50uA is read on 0−50 line.
(4)ACV(red)	AC Voltage	Common scale with DCV reads 0~250V, 0~50V,0~500V and 0~10V directly. For 0~1000V, multiply the reading on 0−10 line.
(5)h_{FE} (blue)	DC amplification factor	Extra connector reads 0~1000 on ×10 (Ω) range.
(6)LEAK, I_{CEO} LI (blue)	Reverse leakage current of transistors	Read current flow across + and −COM while measuring resistance,×10 range reading 0~15mA. Emitter and collector connected instead read I. 0~150uA for ×1k and 0~150mA for ×10k ranges.
(7)LV (blue)	Voltage across terminals	Reads reverse DC voltage of 3V~0 while measuring resistance; ×1K through×1.
(8)dB (red)	AF output	−10 +22dB for 10VAC range. 0dB is established at 0.775V (1mW through 600Ω) $dB=20\log_{10}\frac{ACVrdg}{0.775V}$

Ⅳ. dB scale

dB (decibel)is measured in the same way as ACV measurement reading the dB scale instead.

Because the human ear is analogous to logarithmic variation, the input / output ratio of an amplifier and transistor circuit is expressed by logarithmic value dB to save complicated calculation. For a coupled circuit of a definite impedance, power can be compared by simply expressing the voltage(current)ratio by dB. the dB scale provided is graduated to read from-

0dB to+22dB on the reference of 0dB at 0.775V which is the voltage when lmW is dissipated across 600Ω

Most frequently,the input and output circuit impedances of audio amplifiers are not necessarily standarized for 600Ω, and the dB values measured by a tester are nothing but voltage values read in dB corresponding to them.However, when comparing AF voltage levels by dB, the scale provided will surely save the trouble of making complicated calculation when it is necessary to convert them into dB values.

Ⅴ. Measurement of h_{FE} (DC amplification factor) 0～1000.

1. Besides reverse leakage current, the amplification degree of a TR kinetically measured also determines the quality of a TR on a very simple theory.

As a TR is connected to the tester as shown in Fig 1 , there flows I_{CEO}. A certain resistance (R) connected across the N terminal and the base of the TR causes the current I_B-to flow determined by R. For a good TR, $I_B \times h_{FE}$ is led to the collector resulting in so much current increase and higher reading of the meter. The quantity of the current change can be scaled out as h_{FE} on the meter to read the amplification degree.

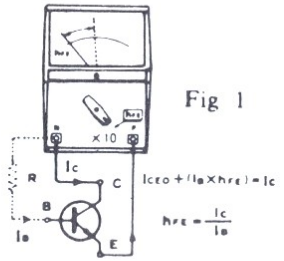


Fig 1

2. Transistor connector for h_{FE} measurement.

the connector is connected either to the N or P terminal subject to the polarity of the TR. TO the other P or N terminal uncmployed is connected the emitter of the TR. the range switch is set for×10.

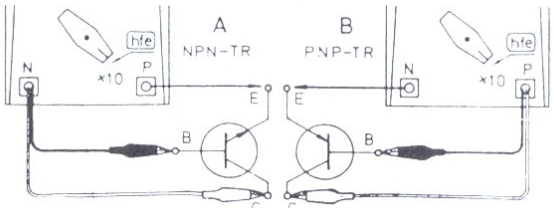


Fig. 2

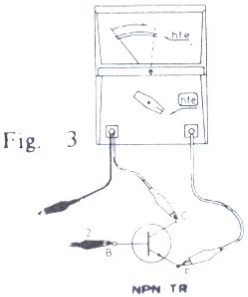
3. The clips of the connector are connectcd to the collector and base, and the lead from the other terminal of the tester, to the emitter.
4. For a good TR, there will be a big difference of reading between ① and ② of Fig. 3.In ① when $I_B=0$ and with base open, only a little I_{CFO} is read, and in ②, I flows and Ic changes reading an increased value by $I_B \times h_{FE}$.

For a faulty TR:(a) No reaing at all for the connection ② :

(b) No difference of reading between ① and ② ;

(c) For the ①, reading gose beyond the h_{FE} scale and near to full scale.

Fig. 3



5. Under the condition of Fig. 2-②, reading is noted on the blue hFE scalc. The value read is IC/IBwhich is the DC amplification degree of the TR tested.
6. Speaking exactly of a Ge TR, leakage current always flows to the collector resulting in so much reading error. Therefore, true value is obtained by deducting from hFE value corresponding to I_{CEO}. read.

VI. MODEL YF-370A SCHEMATIC DIAGRAM