



model ZQ-M TRANSISTOR CHECKER

INSTRUCTION MANUAL

Instruction manual for Hansen Model ZQ-M

The Model ZQ-M is a transistor checker specially designed for the measurement of the α , β and I_{co} factors of a transistor and is corresponded to the existing GM checker for vacuum tube. It is also versatily used as a germanium or a silicon diode checker as well. As its power source, any AC source is not required but a 6 volt dry cell is embodied for, therefore it is handled very easily and safely in any place, at any time. Under the proper testing voltage the transistor measurement is to be performed without giving any destruction caused by over load.

the snap switch for α & β and then, read the indication taken from the β scale. By which the value already figured out in the way foretold, section No. 3 is to be subtracted. In thus way, now the resultant for the β factor of the special transistor is obtainable.

- 4) By using the α and the β scales, the α of the special transistor can easily be obtained by way of converting the β value into α .

6. Photo transistor

- 1) For measuring the photo transistor, this instrument is also in capable for the measuring of the dark current and the current amplification factor on all the average transistor of this kind. Set the main switch to the PNP or NPN position according to the characteristic of each transistor. Connect the emitter and collector to the relative socket or the terminals respectively.

adjusting switch. Adjust the zero adjustor to the full scale and push the switch button again.

- 2) When zero adjustment is not secured perfectly, check carefully the voltage of the dry cell.
- 3) Note the characteristic variation of the transistor with the change of temperature.
- 4) When no using the Instrument, keep the main switch rest on its off position.

3. Diode check

- 1) According to the diode symbol marked on it, which is as, $\rightarrow|$ — connect the diode to its corresponding terminals.
- 2) Set the main switch to the position Forward or Reverse and then the

internal resistance Forward and Reverse will be measured. Direct reading on the scale is at $K\Omega$ (1000 Ω) unit.

3) Because of its heavier carrying load, the indication of this instrument is, as a result, shown in a bit less degree comparing to that of such other instrument as multimeter etc.....

4. Transistor check

- 1) In accordance with the characteristic of the transistor, the main switch should be set on to the PNP or NPN position.
- 2) Socket in the transistor leads correctly or connect to its corresponding (Switch Jack) for collector, base and emitter respectively.
- 3) Set the snap switch to Ico position marked, and then the collector cut off current Ico of the transistor is indicated and be read at μA unit.

- 4) If the Ico value is less than its maximum value, which is, in general 10 to 30 μA at 25°C, the transistor is considered to be good. The lesser Ico indication of the transistor the more better.
- 5) If the indicator is at out of the scale, try a look into the main switch setting.
- 6) When Ico check is OKed, set the snap switch to the position for α & β . The current amplification factor will be obtainable at direct reading.
- 7) Two scales are adopted in this checker for the current amplification factor, that is, for α and β measurement. Use either scale α , β according to the purpose. As recognized as a standard factor in general, the α of the normal transistor is from 0.95 to 0.99 and over its 0.90 value is practically needed and essential.

- 8) The measuring for the current amplification factor always follows after the I_{co} check performance and should the I_{co} check be not proved satisfactory, do not proceed any current amplification measurement.

5. Special transistor check

- 1) For the special transistor which is normally useable at or over $50\mu A$, I_{co} the measurement method of the above mentioned (4) is not adoptable. Connect the base lead to the emitter terminal and the collector to the collector terminal. Hold the emitter lead disconnect.

- 2) Push the snap switch for the position marking α & β .

By reading the red 5mA scale, (located under the β scale), the I_{co} of the special transistor will be obtained. Note the indication read on the β scale.

- 3) Next, connect the transistor to the appropriate terminal correctly and push

the snap switch for α & β and then, read the indication taken from the β scale. By which the value already figured out in the way foretold, section No.3 is to be subtracted. In thus way, now the resultant for the β factor of the special transistor is obtainable.

- 4) By using the α and the β scales, the α of the special transistor can easily be obtained by way of converting the β value into α .

6. Photo transistor

- 1) For measuring the photo transistor, this instrument is also in capable for the measuring of the dark current and the current amplification factor on all the average transistor of this kind. Set the main switch to the PNP or NPN position according to the characteristic of each transistor. Connect the emitter and collector to the relative socket or the terminals respectively

- 2) Push down the snap switch for the α and β . And now the collector current will be taken on the scale of 5mA as its full value.
- 3) Apply a certain light volume within 100 lux to the photo transistor. The collector current will vary with the change of the light strength given.
- 4) Under the condition as above, the collector current is referred as dark current, when the light is not applied to.
- 5) For the measurement of the current amplification factor, refer to the method for dark current measuring and also to that of the Chapter No. 5.

