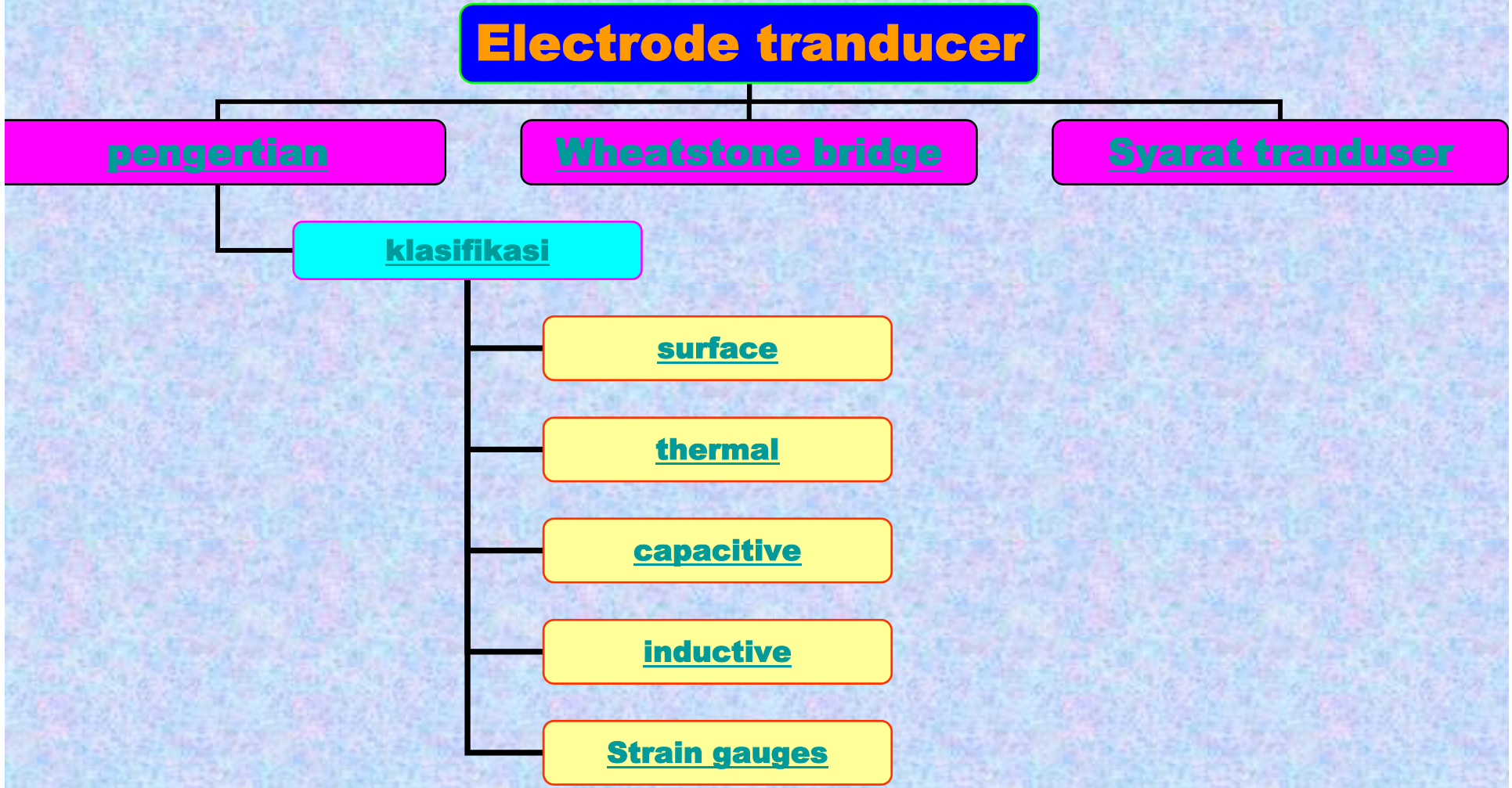
Electrode tranducers

Moh. Khairudin

Lab. Kendali T. Elektro UNY


Electrode tranducer
pengertian
Wheatstone bridge
Syarat tranduser
klasifikasi
surface
thermal
capacitive
inductive
Strain gauges

EXIT

Definisi tranduser/sensor

- **William D.C, (1993)**

transduser adalah sebuah alat yang bila digerakan oleh suatu energi di dalam sebuah sistem transmisi, akan menyalurkan energi tersebut dalam bentuk yang sama atau dalam bentuk yang berlainan ke sistem transmisi berikutnya". Transmisi energi ini bisa berupa listrik, mekanik, kimia, optic (radiasi) atau thermal (panas).

- **D Sharon, dkk (1982)**

sensor adalah suatu peralatan yang berfungsi untuk mendeteksi gejala-gejala atau sinyal-sinyal yang berasal dari perubahan suatu energi seperti energi listrik, energi fisika, energi kimia, energi biologi, energi mekanik dan sebagainya..

Peryaratan Umum Sensor dan Transduser

- *Linearitas*
- *Sensitivitas*
- *Tanggapan Waktu*

menu

Klasifikasi Sensor

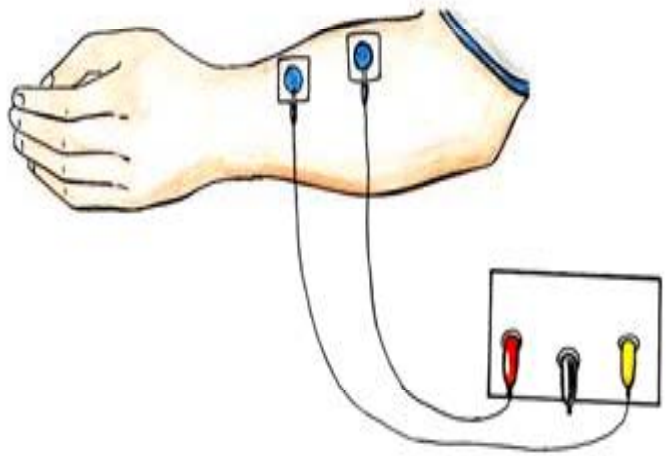
- a. sensor thermal (panas)
- b. sensor mekanis
- c. sensor optik (cahaya)

Klasifikasi Transduser

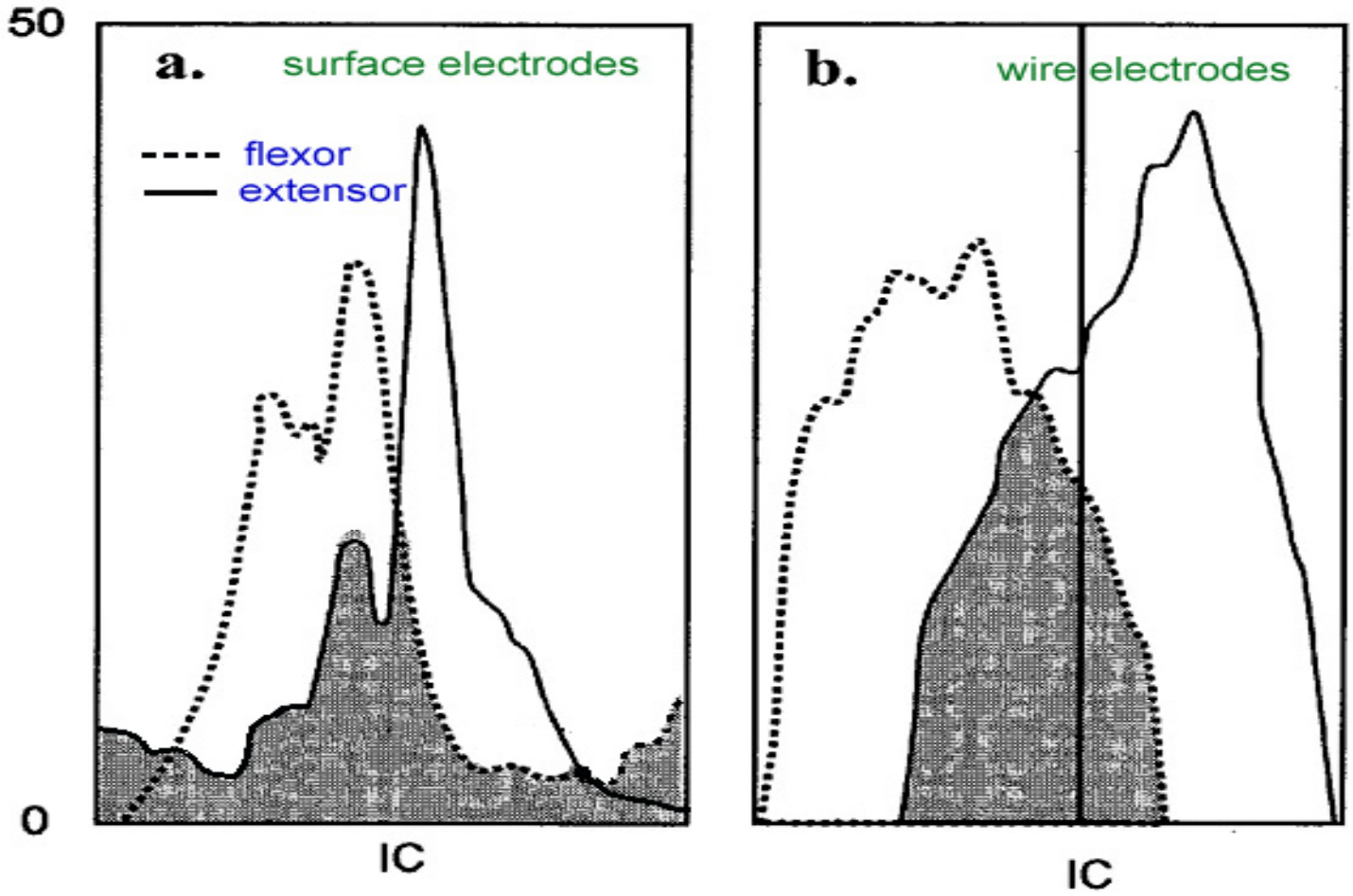
- *Self generating transduser* (transduser pembangkit sendiri)
- *External power transduser* (transduser daya dari luar)

menu

Surface electroda

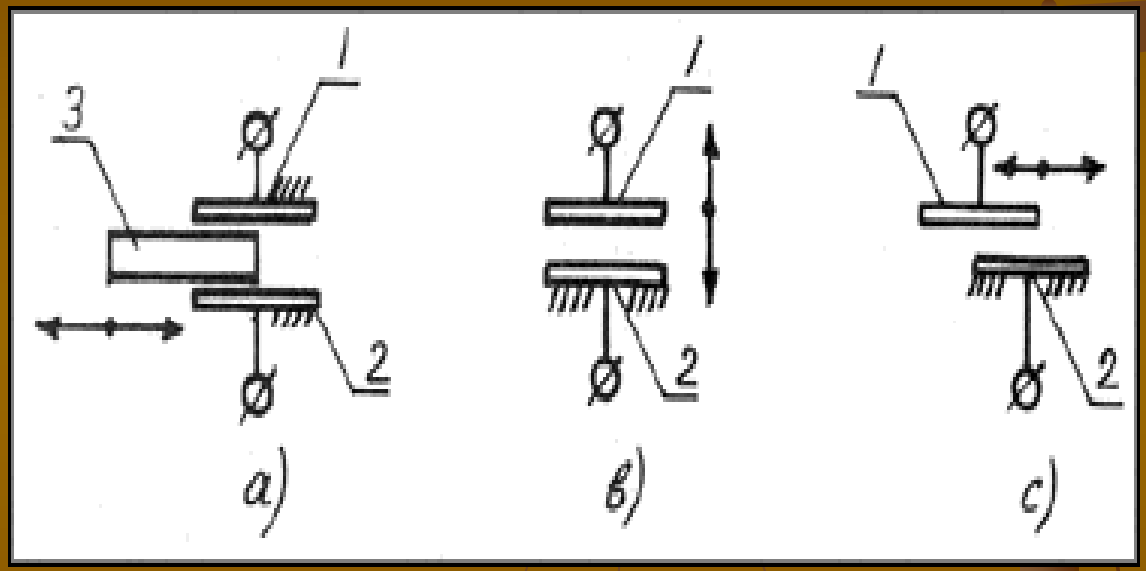


Contoh hasil pengukurannya



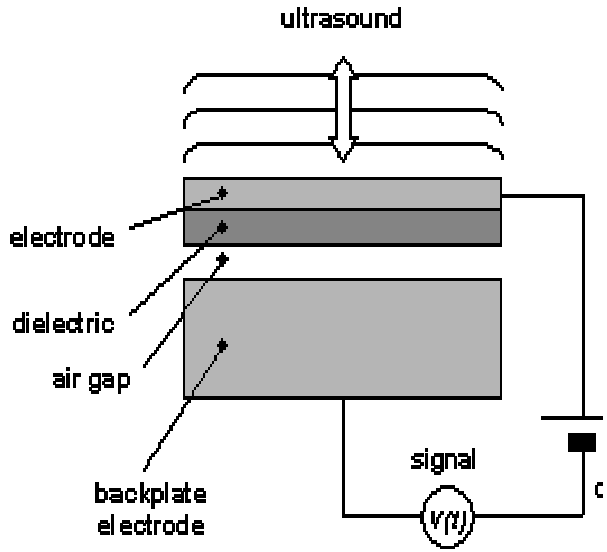
menu

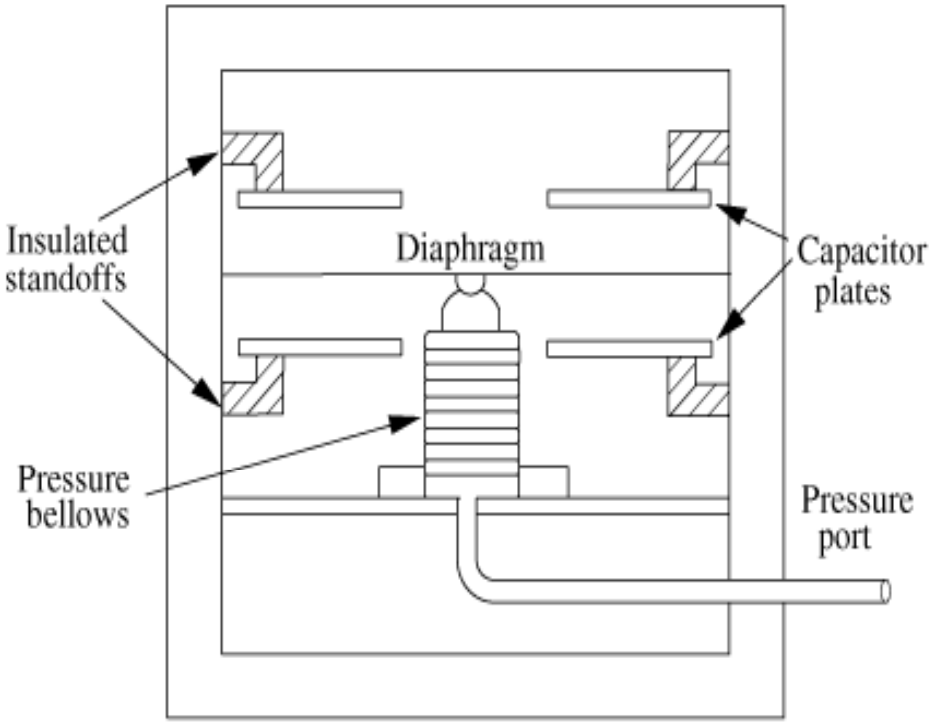
Capasitif tranduser



1 dan 2= plat kapasitor, 3= dielektrikum

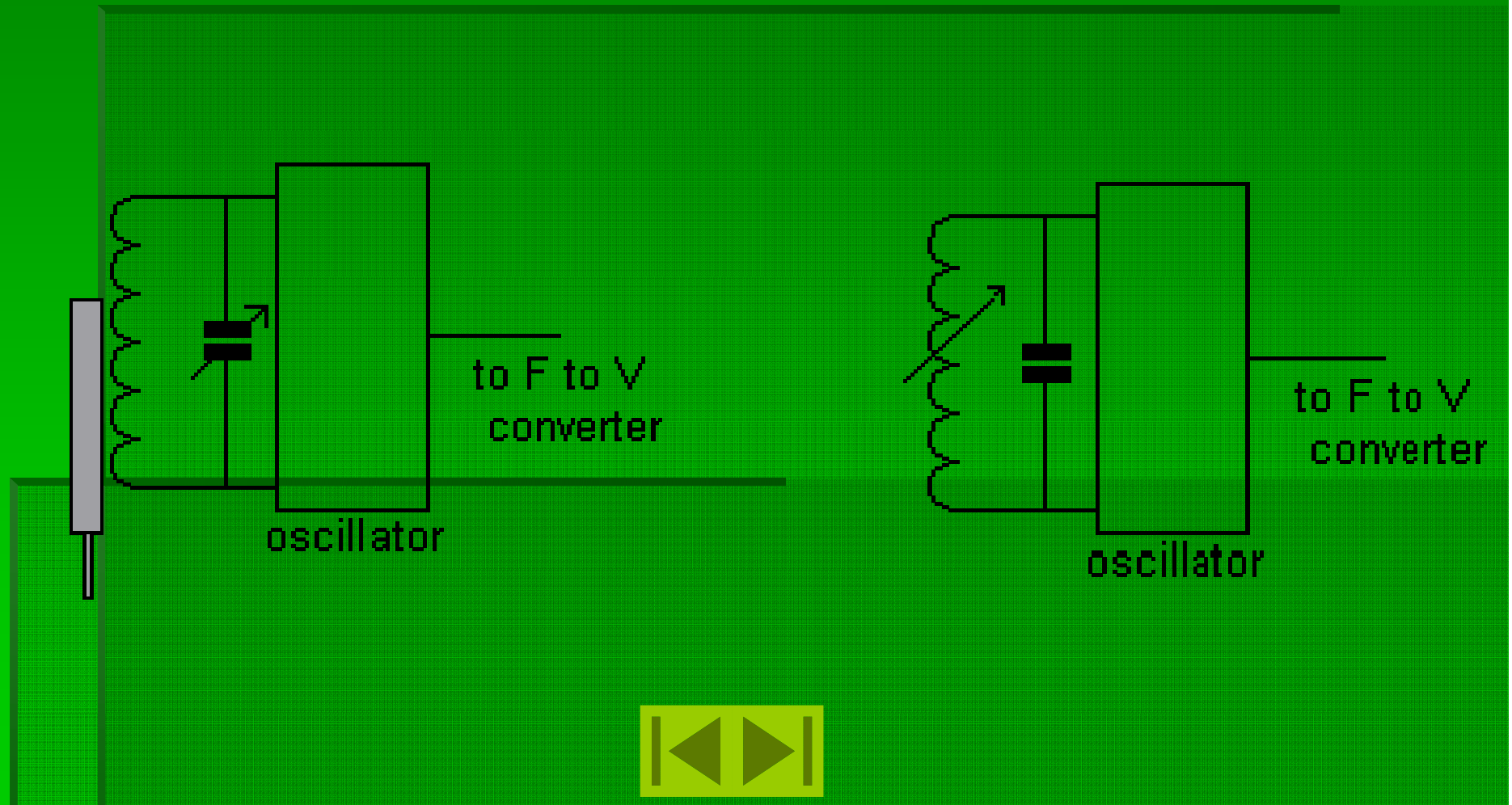
aplikasi

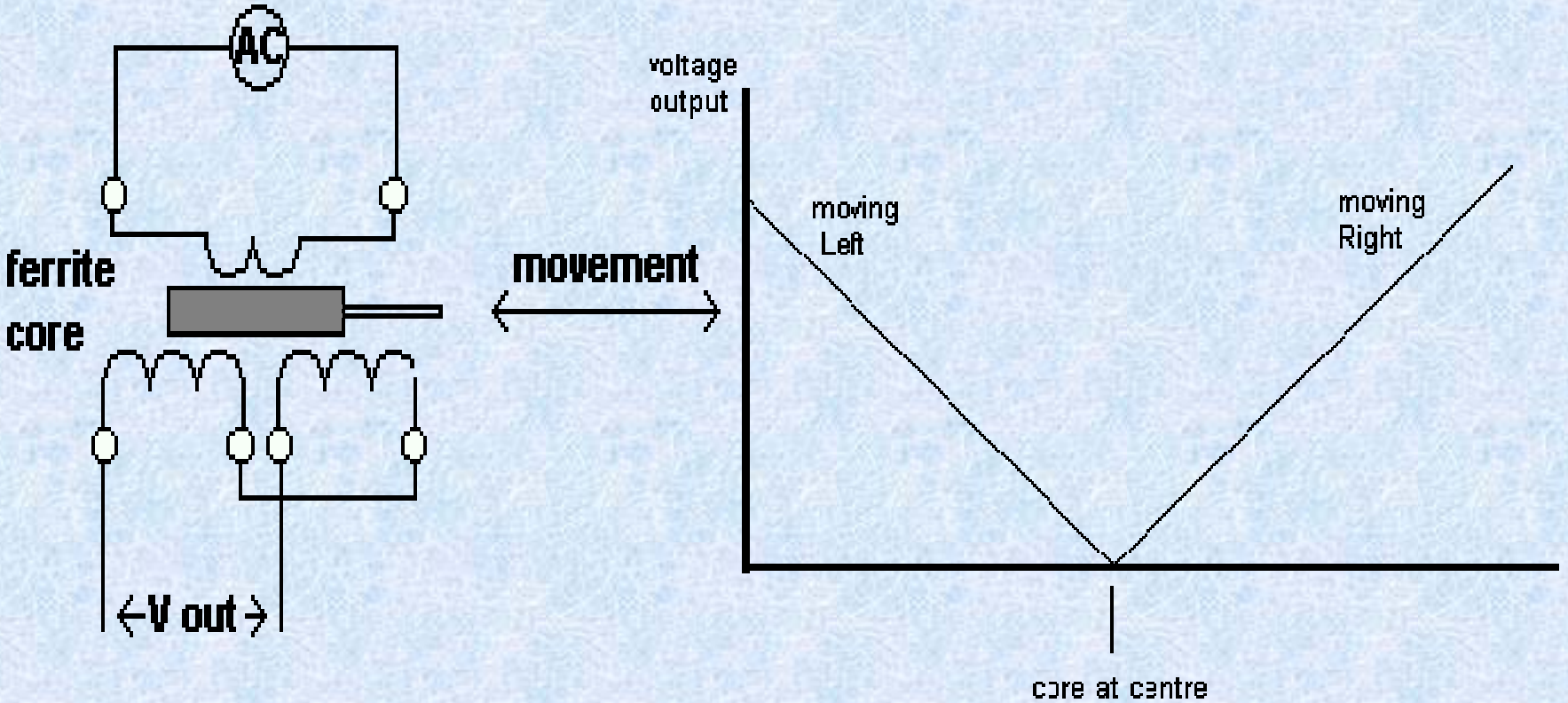




menu

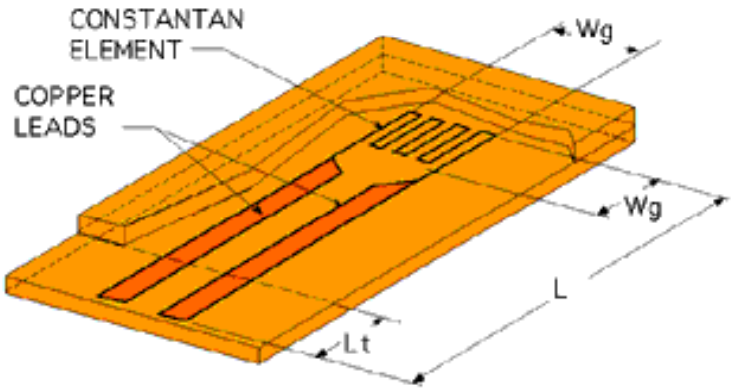
Induktif tranduser



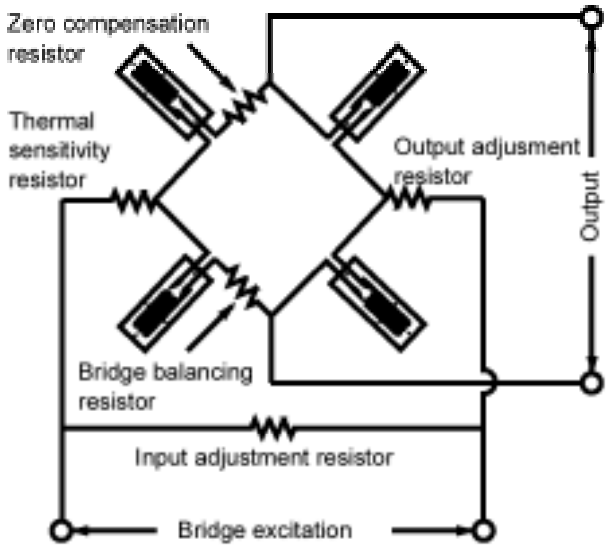

AC
ferrite
core
movement
←V out→
voltage
output
moving
Left
moving
Right
core at centre

menu

STAIN GAUGES

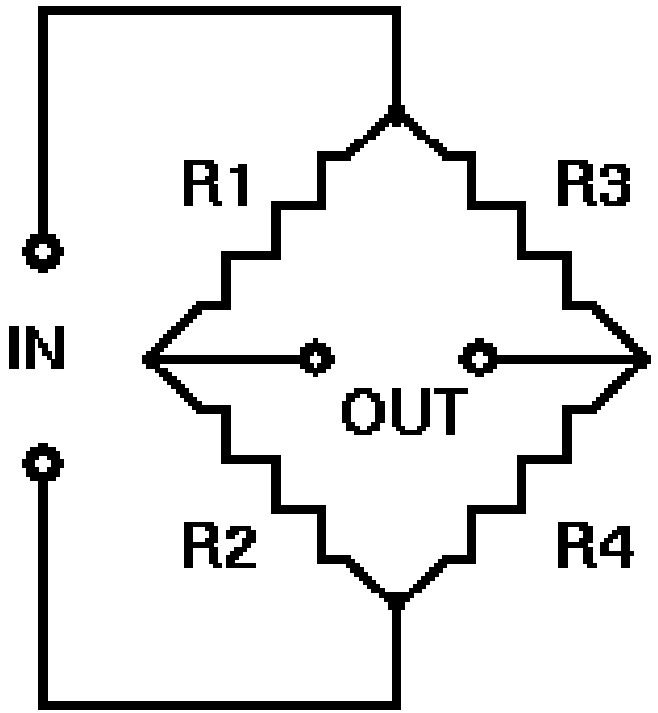


UNIAXIAL CONSTANTAN
STRAIN GAUGE

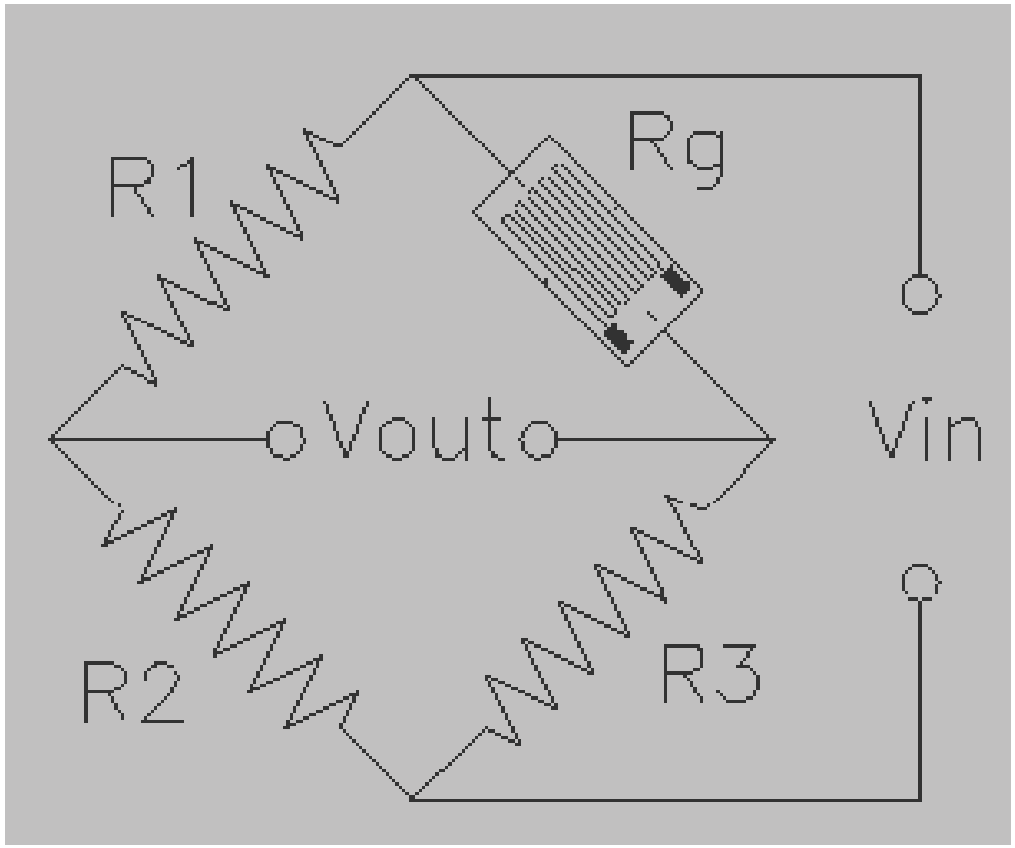


menu

Jembatan wheatstone



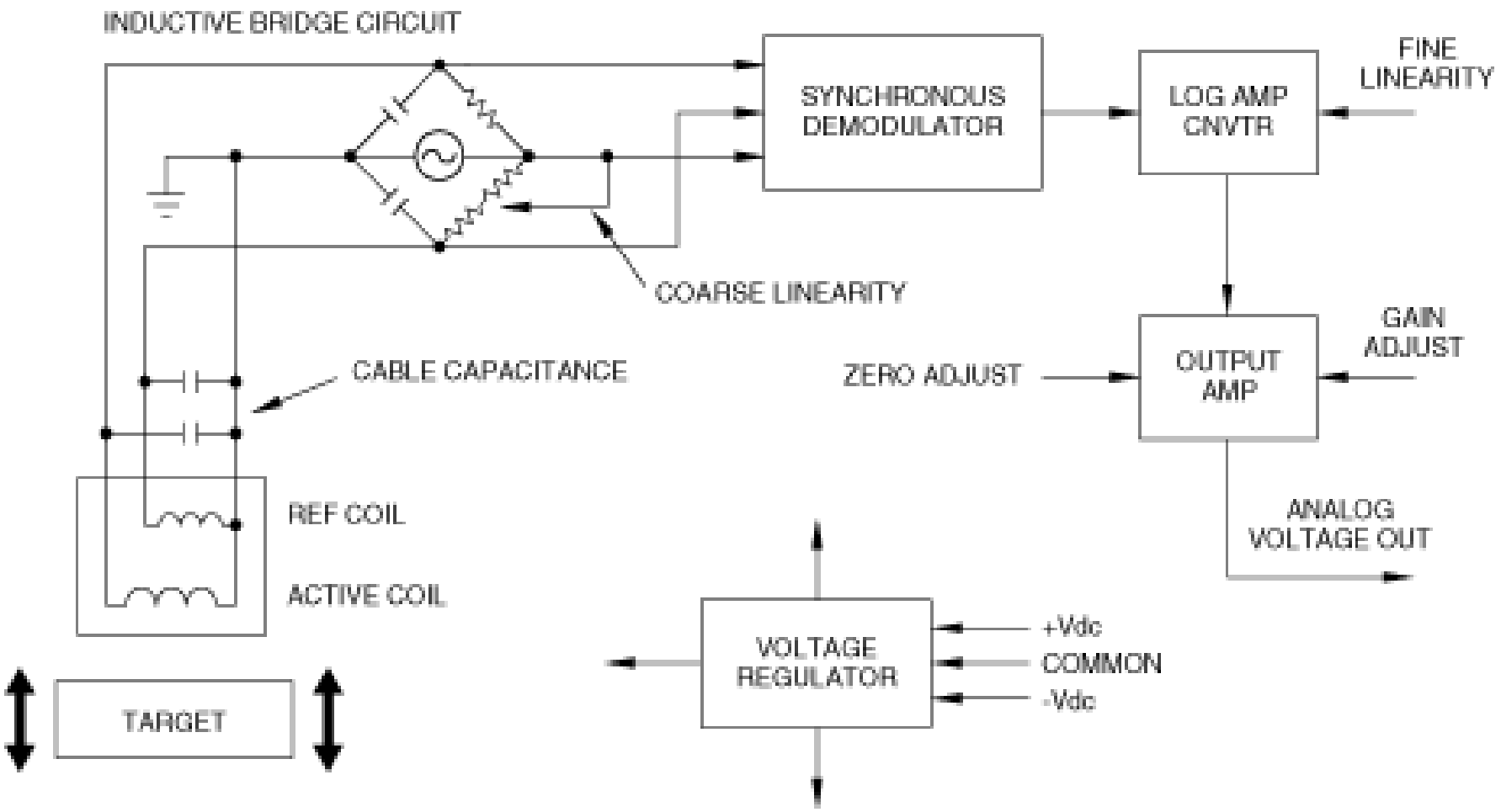
R1/R2= R3/R4



$$\frac{R_1}{R_2} = \frac{R_{gage}}{R_3}$$

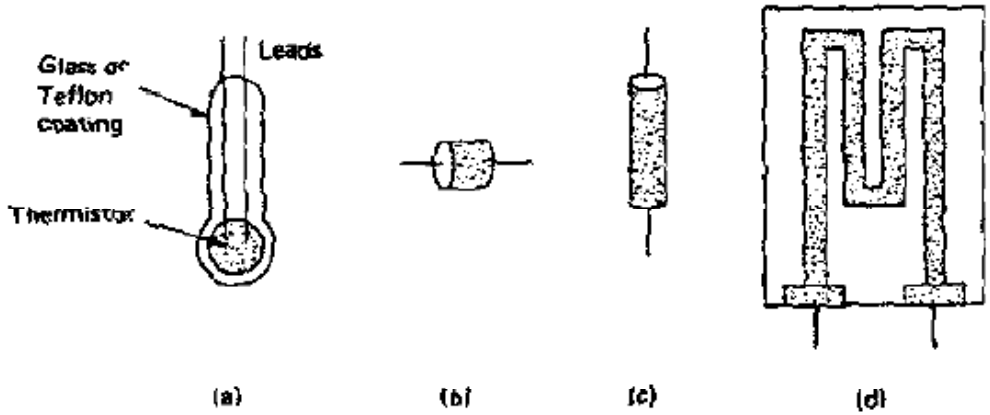
$$V_{out} = V_{in}\left(\frac{R_1}{R_1 + R_2} - \frac{R_{gage}}{R_{gage} + R_3}\right)$$

INDUCTIVE BRIDGE MEASURING SYSTEMS

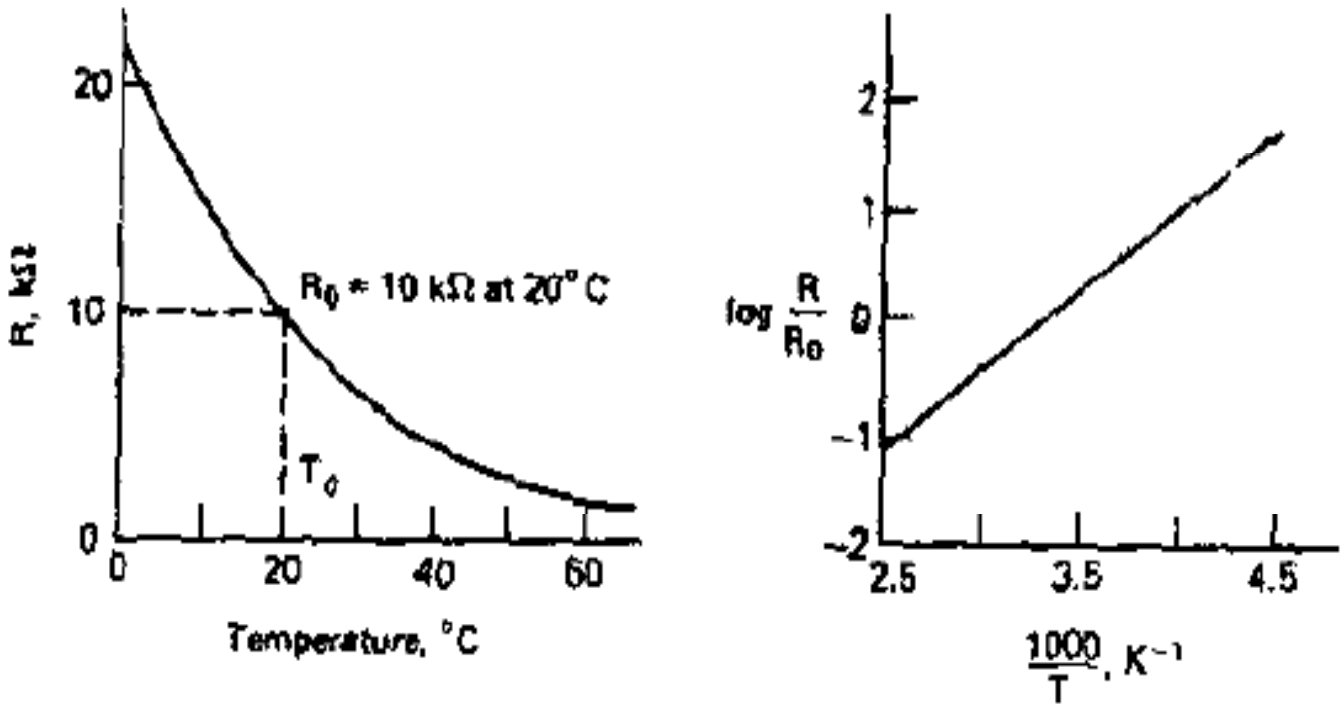


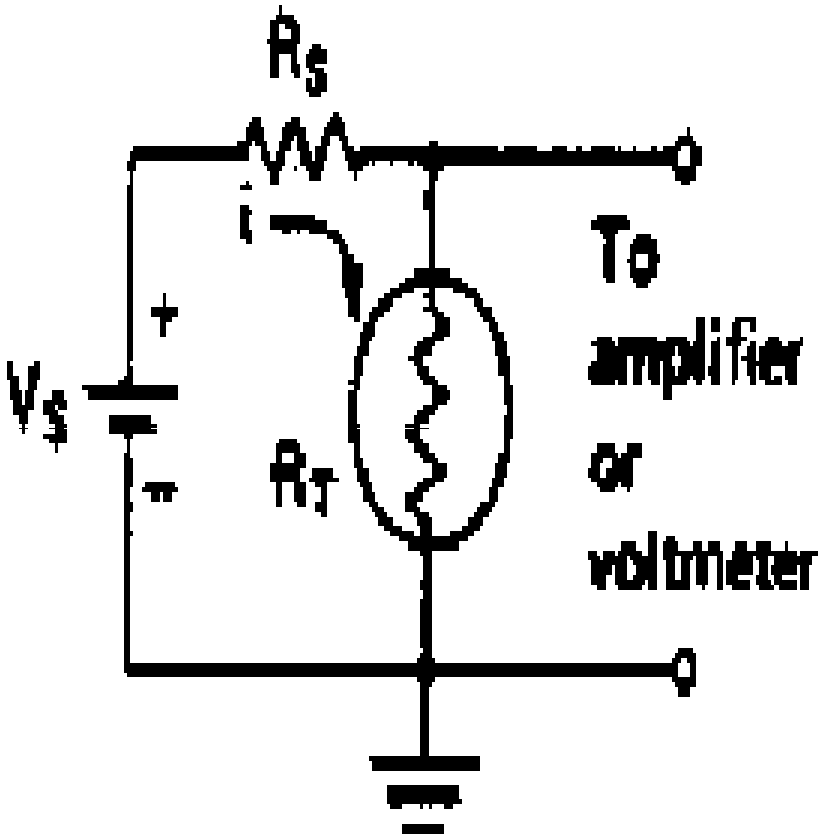
menu

Thermal transducer

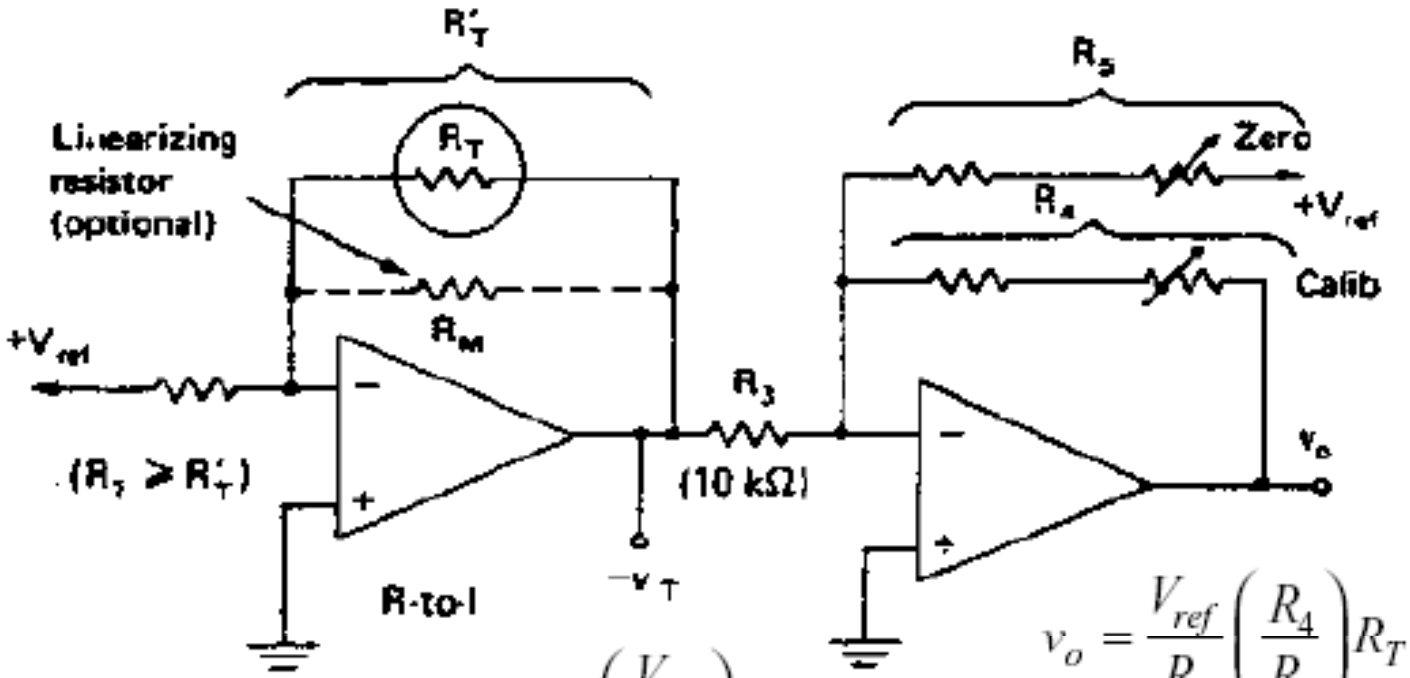


Grafik Termistor resistansi vs temperatur:
(a) logaritmik (b) skala linier





$$V_T = \frac{V_S R_T}{R_S + R_T} \approx \left(\frac{V_S}{R_S}\right) R_T$$



$$-V_T = \left(\frac{V_{ref}}{R_1}\right) R_T$$

$$v_o = \frac{V_{ref}}{R_1}\left(\frac{R_4}{R_3}\right) R_T - V_Z$$

menu