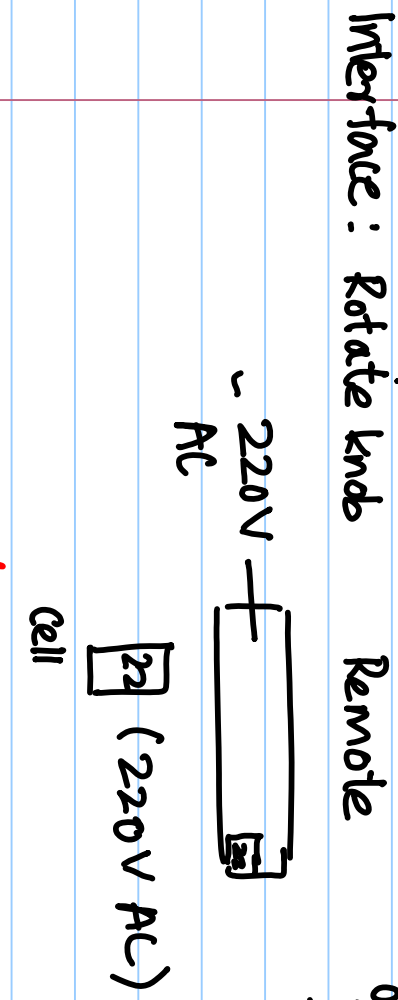
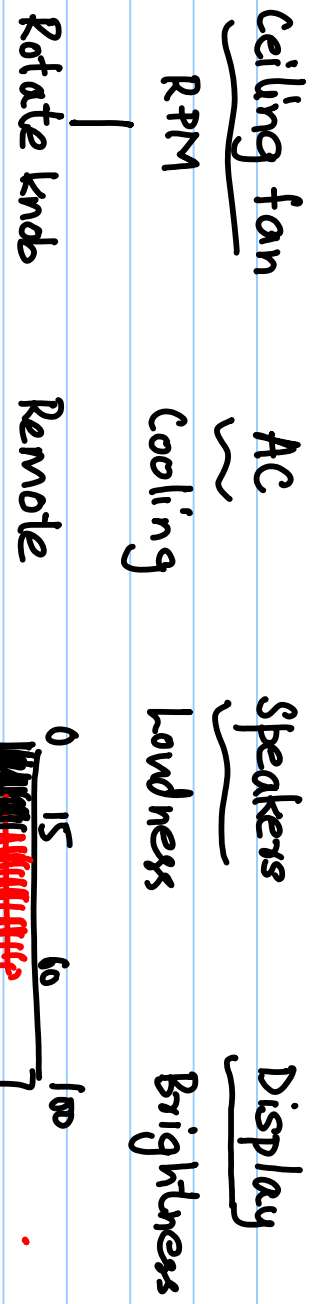
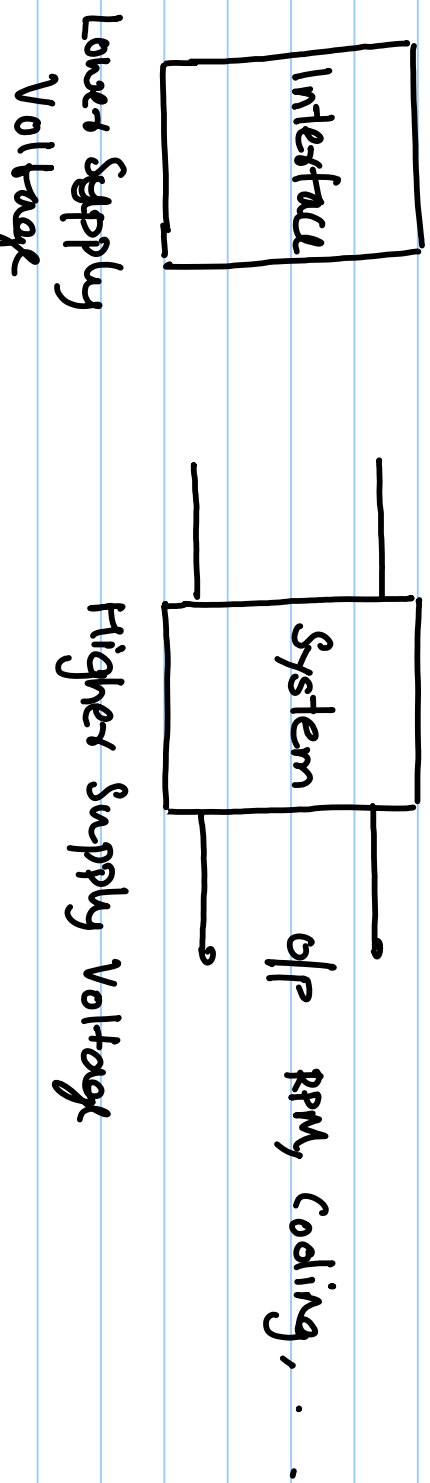


Analog Systems - Electrical & electronic

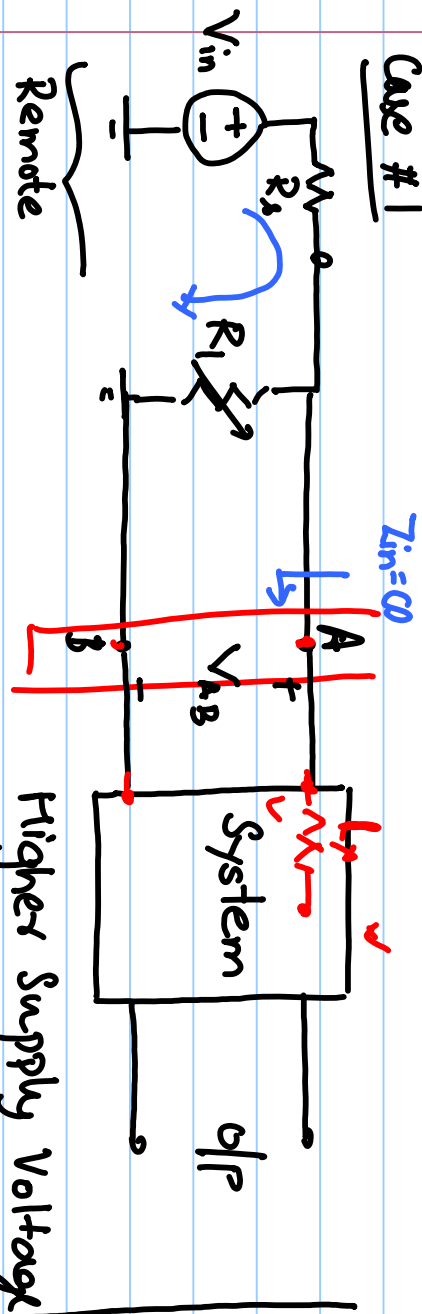


Control Current Voltage.



- All electrical / electronic systems are working with AC/DC power supply.
 - We control their physical outputs through an interface.

Case #1



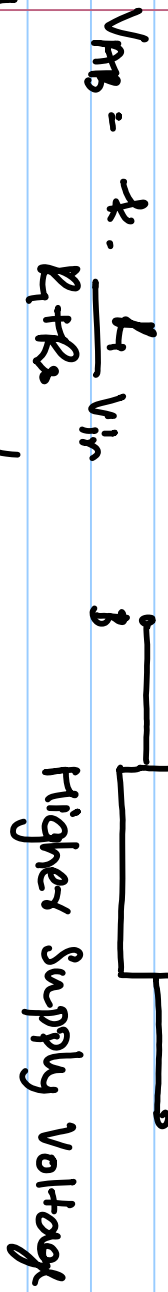
$$V_{AB} = \frac{R_1}{R_1 + R_s} V_{in}$$

- $0 < V_{AB} \leq V_{in}$
 Limited V_{in} constrains the o/p of the system

- $0 \leq R_1 \leq \infty$

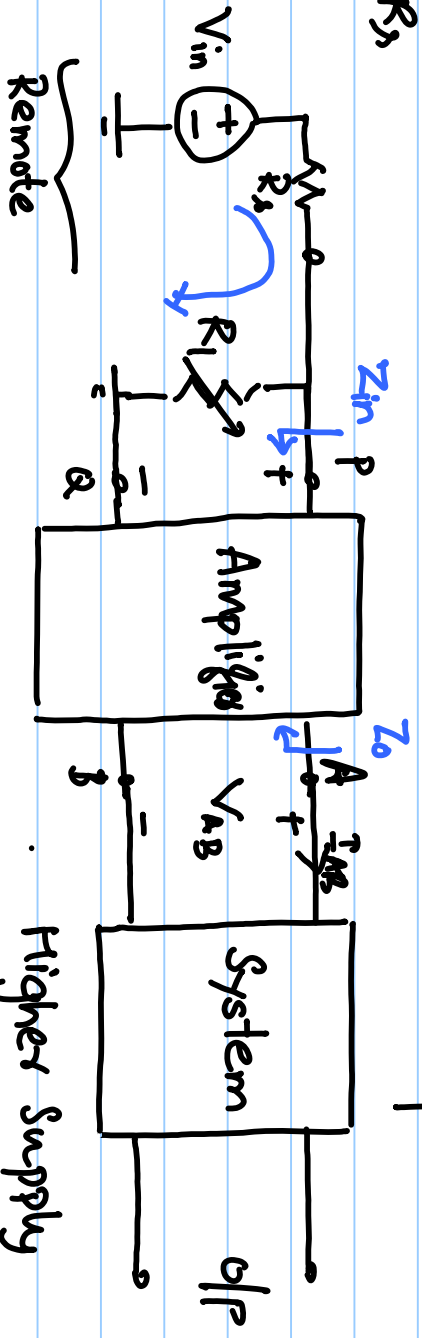
- $P_{in} = \frac{V_{in}^2}{R_1 + R_s}$

↓ Amplifying



$$V_{AB} = k \cdot \frac{k}{R_1 + R_s} V_{in}$$

$$V_{AB} > V_{in}$$



Higher Supply

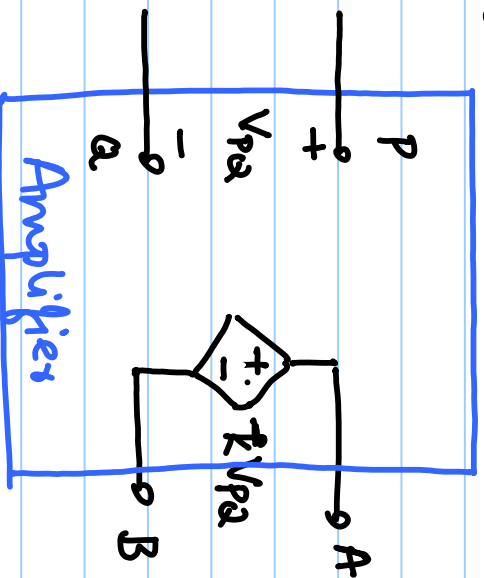
$$V_{AB} > V_{pQ}$$

$$V_{AB} = k V_{pQ}$$

where $k > 1$

$$V_{pQ} = \frac{R_1}{R_1 + R_3} V_{in} \rightarrow Z_{in} = \infty$$

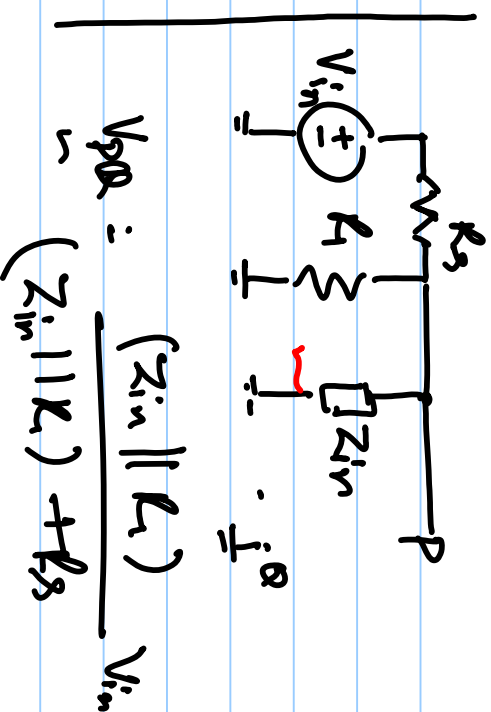
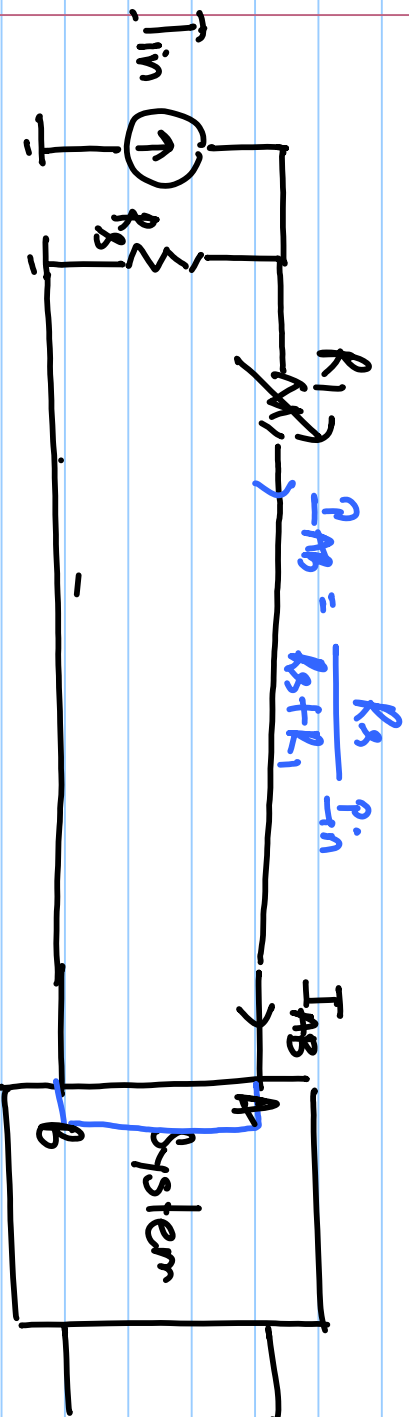
$$Z_o = 0$$



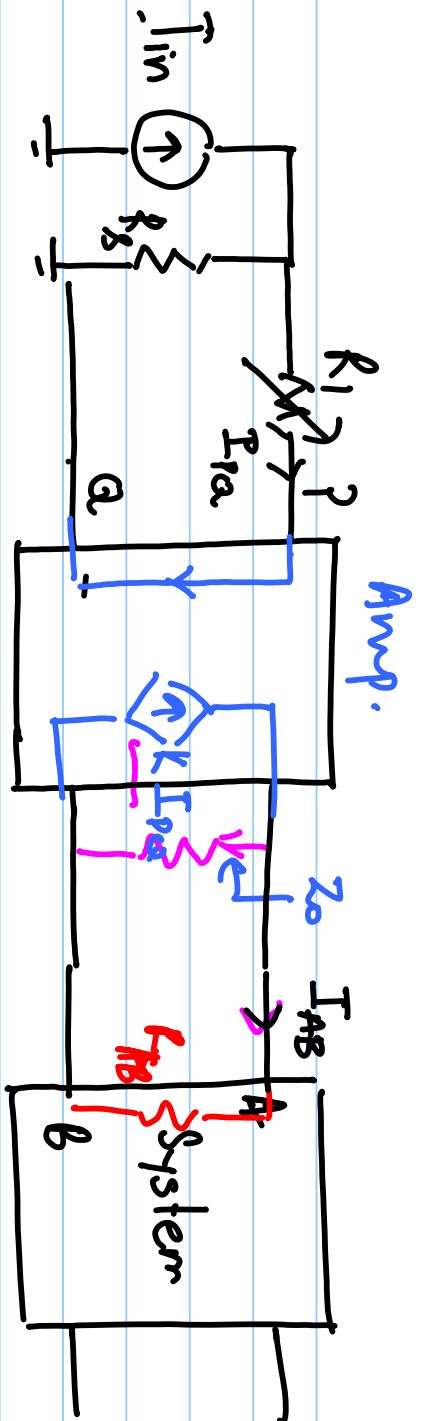
VCVS: Voltage Controlled Voltage

Source.

$$Z_{in} = \infty, Z_o = 0$$



$$V_{pQ} = \frac{(Z_{in} \parallel R_1)}{(Z_{in} \parallel R_1) + R_3} V_{in}$$



$$I_{AB} \gg I_{Pa}$$

$$I_{AB} = k I_{Pa}, \quad k \gg 1$$

$$Z_{in} = 0, \quad Z_0 = \infty$$

Current controlled Current Source

(CCCS)

VCCS: Voltage Controlled Current Source.

CCVS:

