

V_{REF} (DAC0800)

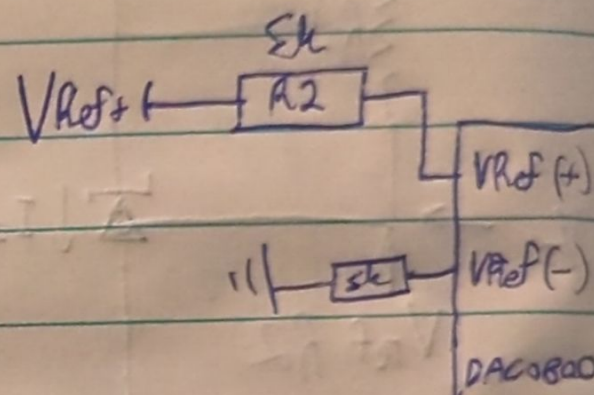
↳ Output of V_{REF} coming from TL431 circuit.

↳ V_{REF} will be between 2.495V & 14V (ish)

↳ V_{REF} then goes to V_{REF} pin in DAC0800.

↳ V_{REF} controls I_{out} values.

$$I_{out} = I_{ref} \times \left(\frac{D}{256} \right) \quad \text{Digital input val.}$$



$$I_{out} = \frac{V_{REF+}}{R2} \left(\frac{D}{256} \right)$$

$$I_{out} = \frac{(2.495V - 14V)}{5k} \left(\frac{D}{256} \right)$$

min. coarseness

$$V_{REF+} = 2.495V$$

~~D~~ = 0 = 1 (see how "fine" it is)

$$I_{out \text{ MIN}} = \frac{2.495}{5k} \left(\frac{1}{256} \right)$$

$$= 0.499 \mu A \left(\frac{1}{256} \right)$$

$$I_{out \text{ MIN}} = 0.00195 \mu A$$

$$= I_{out \text{ MIN}} \times 256$$

$$= 0.4992 \mu A$$

For every digital input val increase of 1, we have increase of current at I_{out} of 0.00195 μA.

max coarseness

$$V_{REF+} = 14V$$

D = 1 (see how "coarse" it is)

$$I_{out \text{ MAX}} = \frac{14}{5k} \left(\frac{1}{256} \right)$$

$$= 2.8 \mu A \left(\frac{1}{256} \right)$$

$$I_{out \text{ MAX}} = 0.0109375 \mu A$$

$$\rightarrow I_{out \text{ MAX}} \times 256 = 2.8 \mu A$$