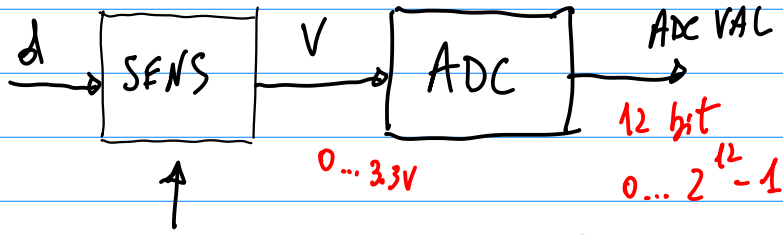


$$V = \frac{30}{90 - d}$$

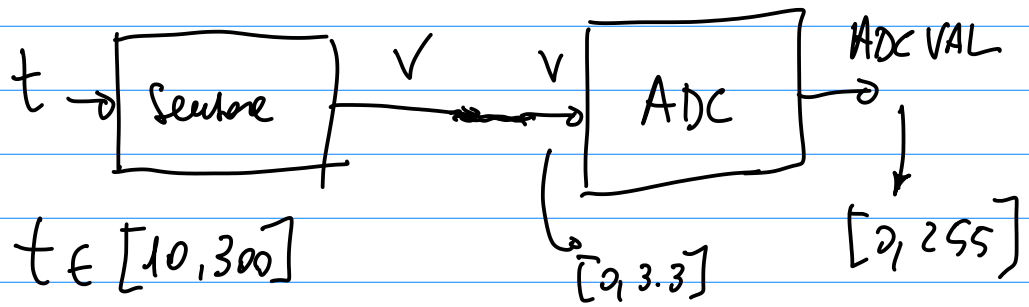
$$ADCVAL = \frac{V}{3.3} \cdot (2^{12} - 1) =$$

$$= \frac{V}{3.3} \cdot 4095$$

$$ADCVAL = \frac{30}{90 - d} \cdot \frac{4095}{3.3} = \alpha$$

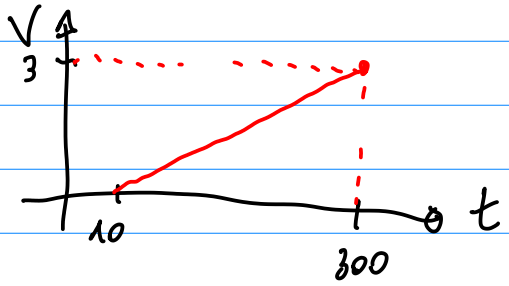
$$ADCVAL = \frac{\alpha}{90 - d} \Rightarrow 90 - d = \frac{\alpha}{ADCVAL}$$

$$d = 90 - \frac{\alpha}{ADCVAL}$$



$t \in [10, 300]$

$V \in [0, 3]$



$$ADC\ VAL = \frac{V}{3.3} \cdot 255$$

(x_0, y_0)
(x_1, y_1)

$$\frac{x - x_0}{x_1 - x_0} = \frac{y - y_0}{y_1 - y_0}$$

$$\frac{t - 10}{300 - 10} = \frac{V - 0}{3 - 0}$$

$$V = \frac{3}{290} \cdot (t - 10)$$

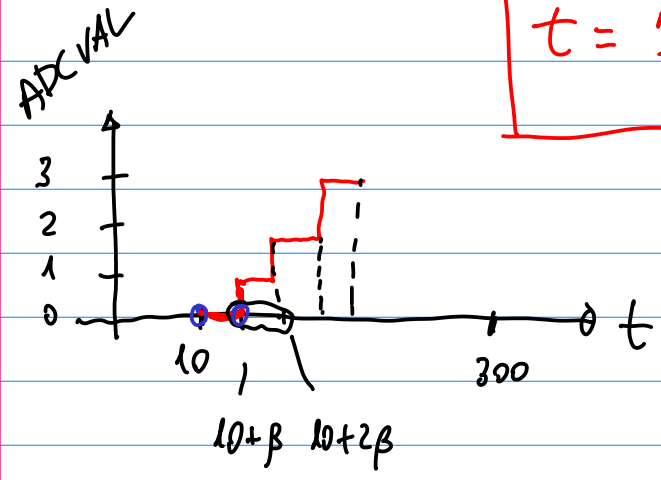
$$ADC\ VAL = \frac{3}{290} \cdot \frac{255}{3.3} (t - 10)$$

$\alpha = 0.8$

$$ADC\ VAL = \alpha\,(t - 10)$$

$$ADC\ VAL = \alpha \cdot t - 10 \cdot \alpha$$

$$t = \frac{ADC\ VAL + 10 \cdot \alpha}{\alpha} = \frac{ADC\ VAL}{\alpha} + 10$$



$t(ADC\ VAL = 0) = 10$
$t(ADC\ VAL = 1) = 11.25$

$\Delta t = 1.25$

Adc 12bit

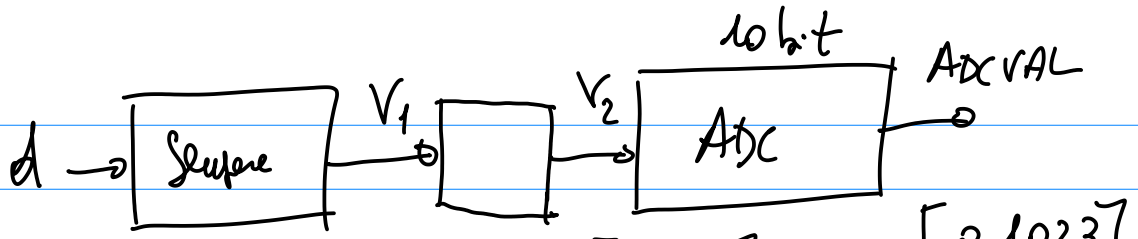
$$ADC\,VAL = \frac{3}{290} \cdot \frac{4095}{3.3} (t - 10)$$

$$\alpha = 12.84$$

$$t = \frac{ADC\,VAL + 10 \cdot \alpha}{\alpha} = \frac{ADC\,VAL}{\alpha} + 10$$

$$t(ADC\,VAL = 0) = 10$$
$$t(ADC\,VAL = 1) = 10.08$$

$$\Delta t = 0.08°$$



$d \in [10, 80]$ cm

$V_1 \in [0, 5]$ V

→ Partitore di tensione

$$V_2 = \frac{V_1}{5} \cdot 3.3$$