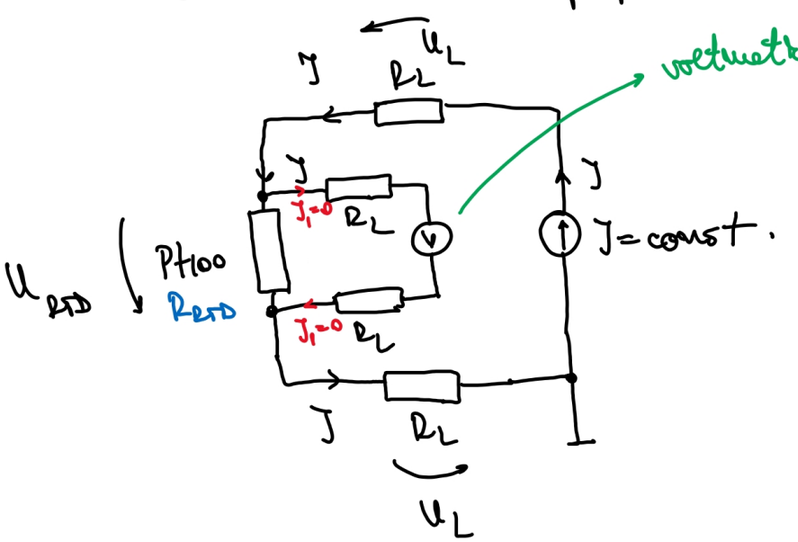
Curs 6:

RTD:

Acuratețe **maximă** (metoda celor 4 contacte)

→ Pt100 cu 4 fire (contacte)
→ sursă de curent constant
→ voltmetru sau amplificator



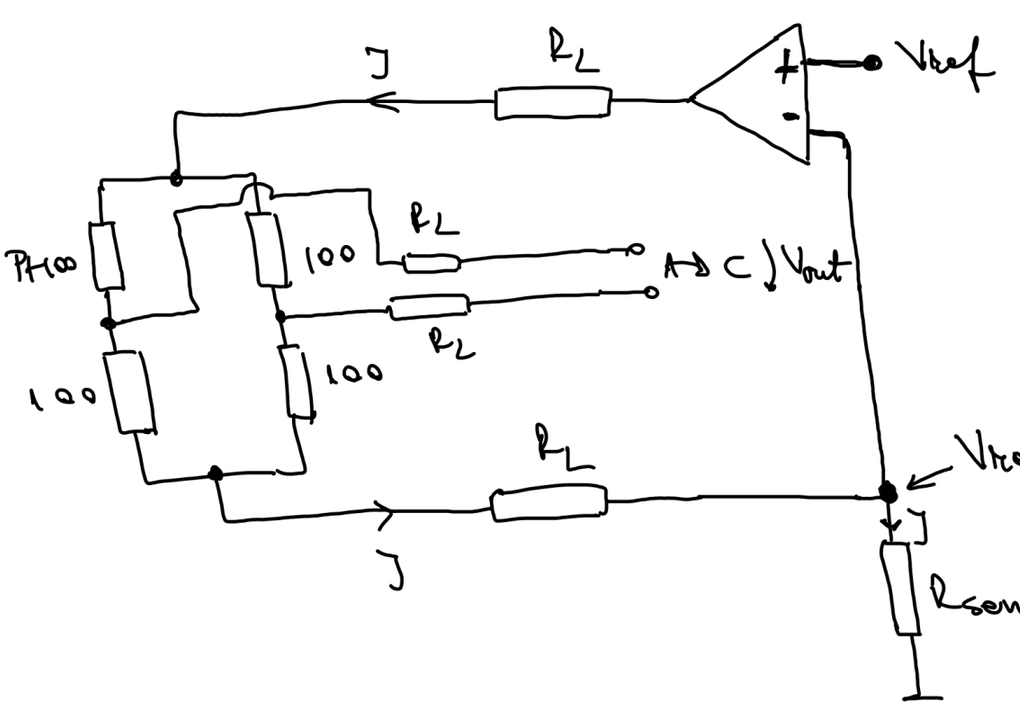
voltmetru, amplificator, buffer sau ADC etc.

$U_{RTD} = R_{RTD} \cdot J \Rightarrow$

$R_{RTD} = \frac{U_{RTD}}{J} \Rightarrow T = \dots$ } →

$\Rightarrow U_{RTD} = f(T)$

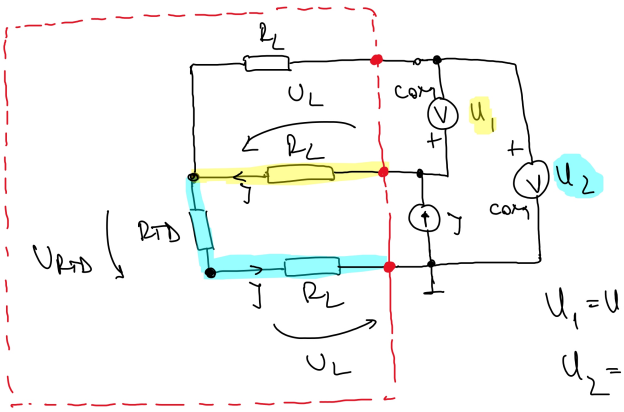
Traductor de temperatură cu Pt100 și A.O.



} $\Rightarrow J = \frac{V_{ref}}{R_{sense}}$

RTD cu 3 fire: (firele au lungimi egale) $\equiv R_L$ identic pt. fiecare fir

Metoda 1:

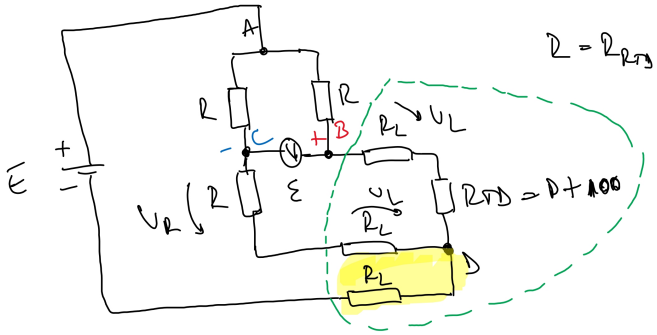


$U_1 = U_L$

$U_2 = U_{RTD} + U_L$

$U_2 - U_1 = U_{RTD} + U_L - U_L = U_{RTD}$

Metoda 2: Punte Wheatstone 1.



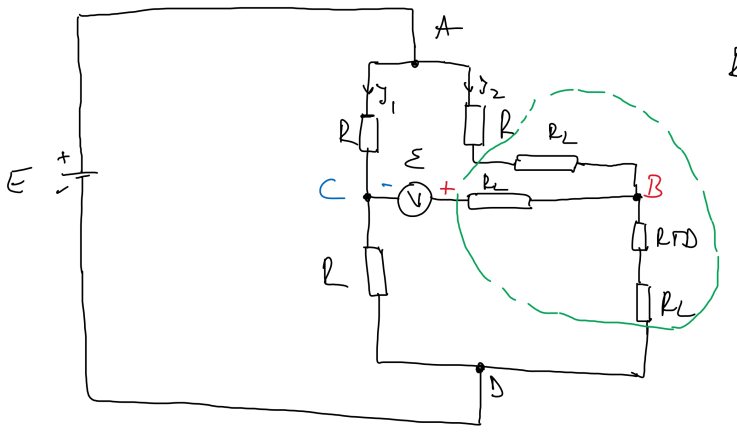
$R = R_{RTD}(0°C) = 100\ \Omega$

$\mathcal{E} = U_{BD} - U_{CD} =$

$= U_L + U_{RTD} - U_R - U_L =$

$= U_{RTD} - U_R$

Punctea Wheatstone 2:



$R = R_{RTD}(0°C)$

$\mathcal{E} = U_{BD} - U_{CD}$

$\mathcal{E} = I_1 \cdot 2R$

$U_{CD} = I_1 R$

$\frac{U_{CD}}{\mathcal{E}} = \frac{I_1 R}{I_1 \cdot 2R} = \frac{\mathcal{E}}{2}$

$\mathcal{E} = I_2 (R + R_L + R_{RTD} + R_L)$

$U_{BD} = I_2 (R_{RTD} + R_L)$

$\frac{U_{BD}}{\mathcal{E}} = \frac{I_2 (R_{RTD} + R_L)}{I_2 (R_{RTD} + R + 2R_L)}$

Rămâne de văzut