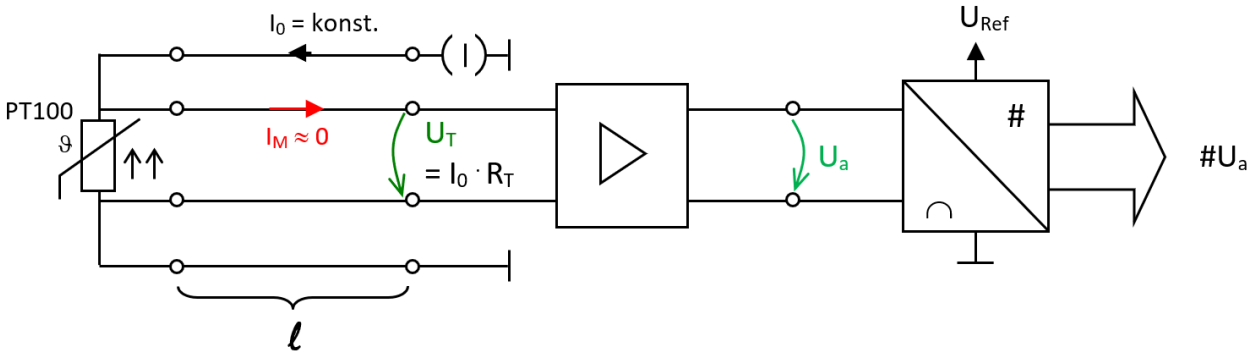
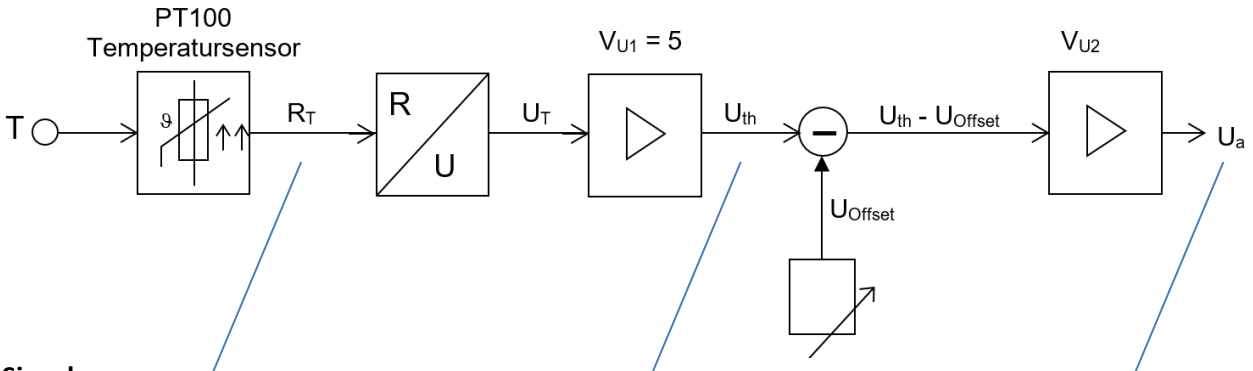
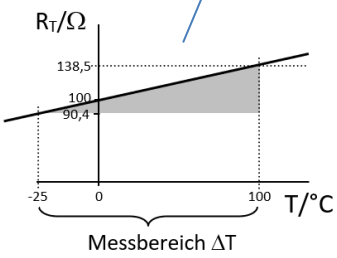
Prinzipschaltung

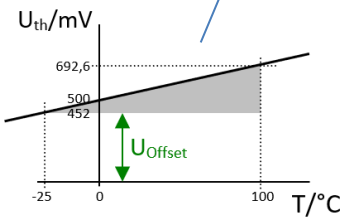


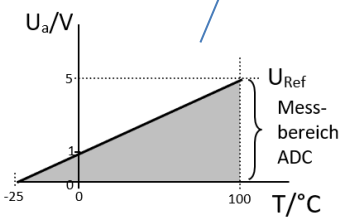
Blockschaltbild der Messkette



Signale







$$R_T = R_0 + R_0 \cdot \alpha_{PT} \cdot T$$

$$U_{th} = V_{U1} \cdot I_0 \cdot R_T$$

$$U_a = V_{U2} \cdot \left(U_{th} - U_{Offset}\right)$$

$$U_a = U_{Ref} \cdot \frac{T+25K}{\Delta T}$$

Berechnung der Abgleichspannungen:

$$U_a(0°C) = 5V \cdot \frac{0°C + 25K}{125K} = 1V$$

Berechnung der Rohwerte des ADU:

12 Bit U_{Ref} = 5V

$$U_{LSB} = \frac{U_{Ref}}{2^n - 1} = \frac{5V}{4095} = 1{,}221mV$$

$$\# = \frac{U_a}{U_{Ref}}$$

T in °C	R_T in Ω	U_a in V	#
-13	95	0,48	393
0	100	1	819
77,9	130	4,12	3374