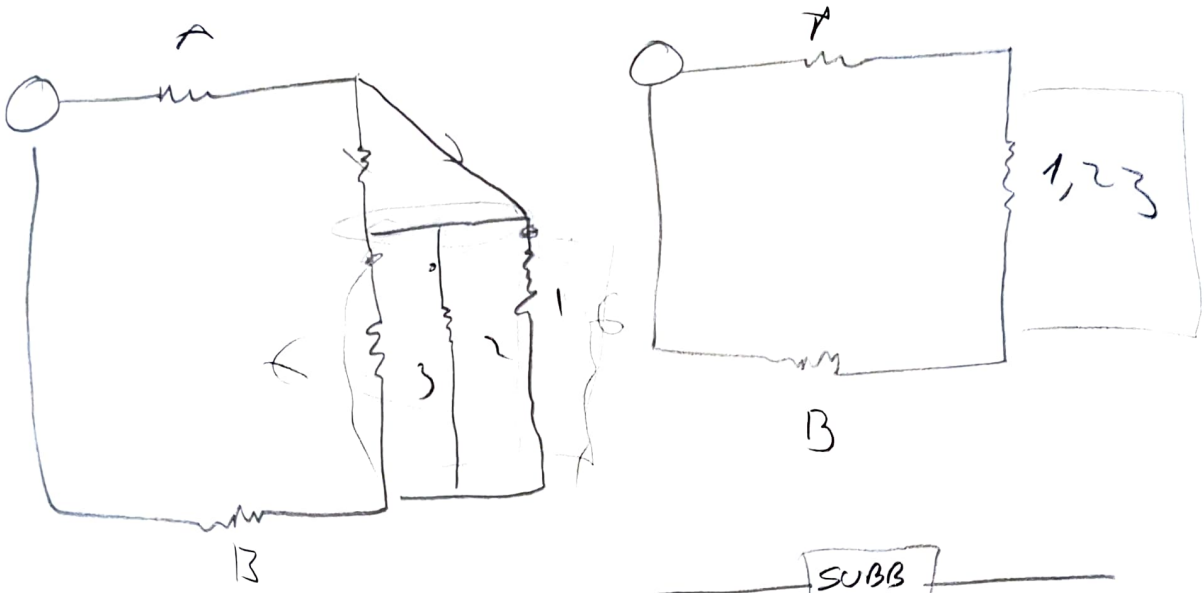
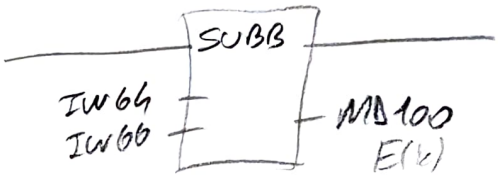




$$\frac{U_1(z)}{E(z)} = K_1 \frac{z}{z-1} \quad \frac{z-1}{z^{-1}} \cdot \frac{X(z)}{X(z)} = \frac{K_1 X(z)}{X(z) - z^{-1}X(z)}$$

$$\frac{U_2(z)}{Y(z)} = \left(\frac{z K_p}{z} + K_d \frac{z-1}{z} \right) \cdot \frac{z^{-1}}{z-1} \frac{X(z)}{X(z)} = \frac{K_p X(z) + K_d X(z) - z^{-1} K_d X(z)}{X(z)}$$

$$U_1(z) = K_1 X_1(z) \longrightarrow U_1(k) = K_1 X_1(k)$$

$$E(z) = X_1(z) - z^{-1} X_1(z) \longrightarrow E(k) = X_1(k) - X_1(k-1)$$

$$U_2(k) = K_p X_2(k) + K_d X_2(k) - K_d X_2(k-1)$$

$$Y(k) = X_2(k)$$

$$U(k) = U_1(k) - U_2(k) = K_1 X_1(k) - K_p X_2(k) - K_d X_2(k) + K_d X_2(k-1)$$

OB30 → Cyclic Interrupt

OB1 → Main Block

OB100 → Startup

$x_1(k-1) = MD104$

$x_2(k-1) = MD112$

$x_1(k) = MD100$

$x_2(k) = MD108$

$U_1(k) = MD116$

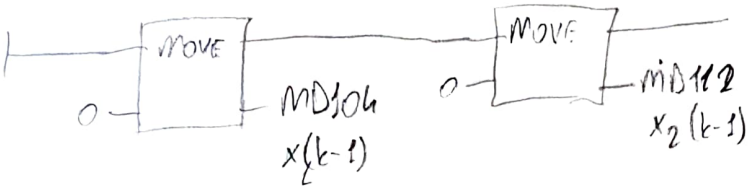
$U_2(k) = MD132$

$y = 50$

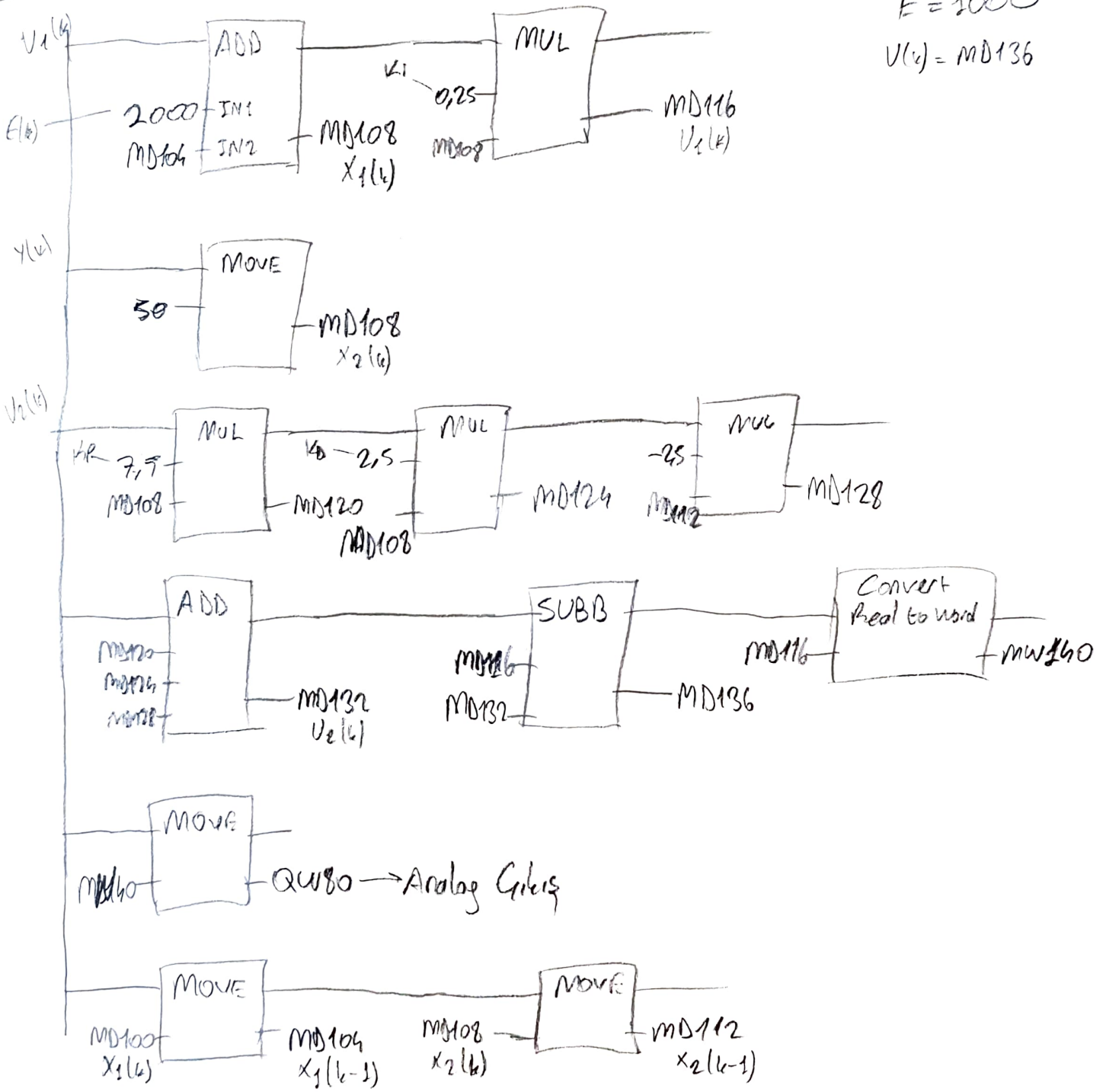
$E = 1000$

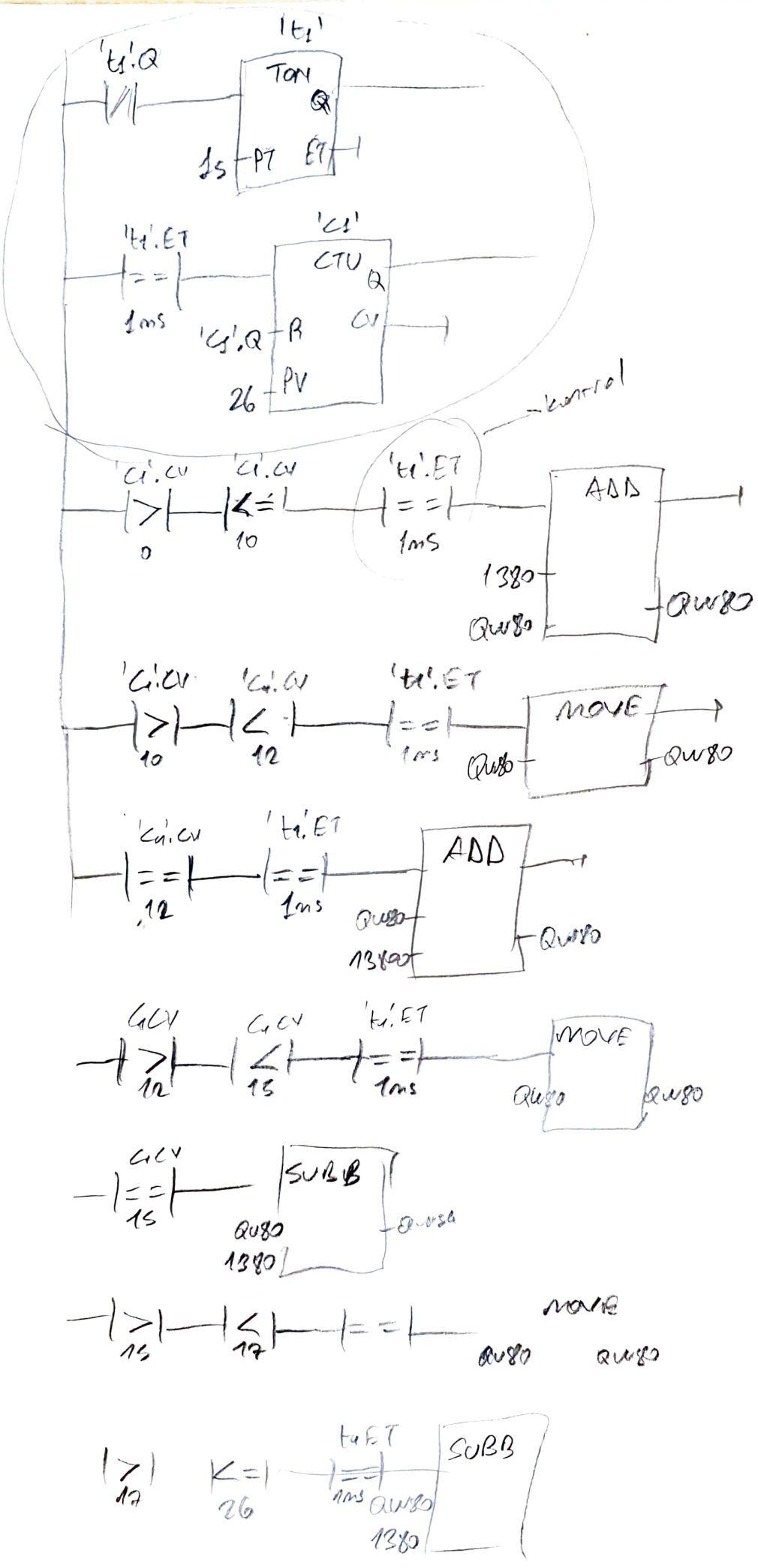
$U(k) = MD136$

OB100



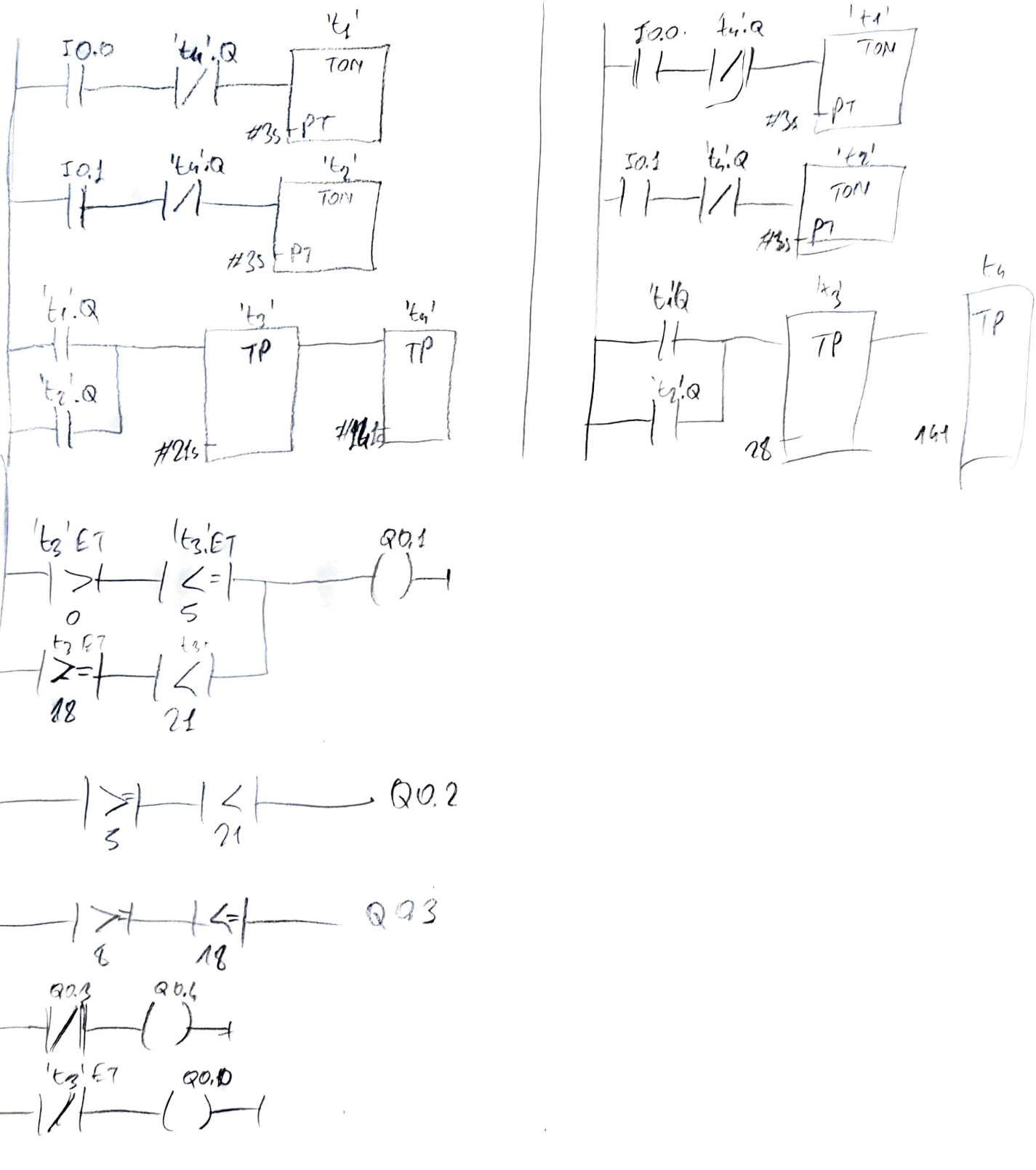
OB30





10V 27800
5V 13800
0.5V 1380

2


I0.0
't4'.Q
't1'
TON
#3s
PT
I0.1
't4'.Q
't2'
TON
#3s
PT
't1'.Q
't2'.Q
't3'
TP
#21s
't4'
TP
't3'.ET
>
0
't3'.ET
<=
5
Q0.1
't3'.ET
>=
18
<
21
>=
5
<
21
Q0.2
>=
8
<=
18
Q0.3
Q0.4
't3'.ET
Q0.0