Calculation of Z-measurement:

assumption:

$0 \leq ADC_1 \leq 4095$ idle state: 4095

$0 \leq ADC_2 \leq 4095$ idle state: 0

annotation: $12\,bit = 2^{12} = 4095$

$$Z_1 \propto ADC_1$$
$$Z_2 \propto ADC_2$$

$$Z_1 = 4095 - R_t + R_X$$
$$Z_2 = R_X$$

linear equations:

$$4095 - R_t + R_X = ADC_1$$
$$R_X = ADC_2$$

subtract

$$4095 - R_t = ADC_1 - ADC_2$$

$$R_t = 4095 + ADC_1 - ADC_2$$

if R_t > threshold, then active

Calculation of X- and Y-measurement:

$$R_X = 4095 - \left(ADC_{11} + ADC_{12} + \ldots + ADC_{1n} / n \right)$$

or

$$R_Y = \left(ADC_{21} + ADC_{22} + \ldots + ADC_{2n} / n \right)$$

R = right, L = Left, B = Bottom, T = Top, p = Point, S = Size,

$$p_X = R_X - R_R * \frac{S_X}{R_L - R_R}$$

$$p_Y = R_Y - R_B * \frac{S_Y}{R_T - R_B}$$