

* Model Dinamik

⇒ Model Ruang Keadaan (State Space)

Dari Pers. (1) dan (2), motor DC ini mempunyai 2 dinamika → 2 peubah keadaan

$$x_1 \equiv i_a(t) \quad x_2 \equiv \omega(t)$$

(state variables)

SISO Model $u = e_a(t) \quad y = \omega(t)$

* Persamaan Keadaan

$$\dot{x}_1 = \frac{di_a(t)}{dt} = \frac{1}{L_a} (u - K_b x_2 - R_a x_1) = -\frac{R_a}{L_a} x_1 - \frac{K_b}{L_a} x_2 + \frac{1}{L_a} u$$

$$\dot{x}_2 = \frac{d\omega(t)}{dt} = \frac{1}{J} (K_m x_1 - B x_2) = \frac{K_m}{J} x_1 - \frac{B}{J} x_2 + \frac{1}{L_a} u$$