

Derivation of highest countable time using TIMERO

$$\text{XTAL} = 16\text{MHz} \rightarrow T_{\text{xtal_clock}} = 1/16 \text{ us}$$

$$\begin{aligned} \text{Prescaler} = 1:1024 \rightarrow T_{\text{counter_clock}} &= 1024 \times (1/16) \text{ us} \\ &= 64\text{us} \end{aligned}$$

$$\begin{aligned} \text{Highest countable time interval} &= 64\text{us} \times 256 \\ &= 16384\text{us} \end{aligned}$$