$$H_{el} = - \sum_{ij\sigma} t_{ij} \left(c_{j\sigma}^\dagger c_{i\sigma} + c_{i\sigma}^\dagger c_{j\sigma} \right),$$

$$H_{ph} = \omega_{ph} \sum_i b_i^\dagger b_i,$$

$$H_{el-ph} = g \sum_{i\sigma} \left(b_i^\dagger + b_i \right) n_{i\sigma}.$$