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瑞萨电子公司

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M16C/65 群

键输入中断的操作

1. 要点

本篇应用说明阐述了 M16C/65 群键输入中断时使用方法。图 1 是键输入中断所用的电路图，图 2 是键输入中断的工作时序图。

2. 说明

本篇资料，适用于 M16C/65 群单片机。

本篇应用说明也适用于 M16C 族中与上面所述的群具有相同 SFR（特殊功能寄存器）定义的产品。关于产品功能的改进，请参看手册中的相关信息。在使用本篇应用说明的程序前，需进行详细的评价。

3. 规格

本篇资料中所使用的外围功能如下所示：

- 键输入中断
- 停止模式
- 上拉功能

(1) 使用 P10_0 ~ P10_3 作为键矩阵的扫描输出引脚，键输入的读取引脚使用键输入中断功能的输入引脚（ $\overline{\text{KI0}} \sim \overline{\text{KI3}}$ ），并且使用上拉功能。

(2) 当发生键输入中断请求时，从停止模式中退出，并读取键值。

4. 操作

- (1) 将键输入中断引脚的方向寄存器设定为输入，并且选择上拉功能。
- (2) 设定键输入中断寄存器和中断允许标志，使中断处于允许状态。
- (3) 当 $\overline{\text{KI0}} \sim \overline{\text{KI3}}$ 中有下降沿输入时，键输入中断请求位变为“1”。

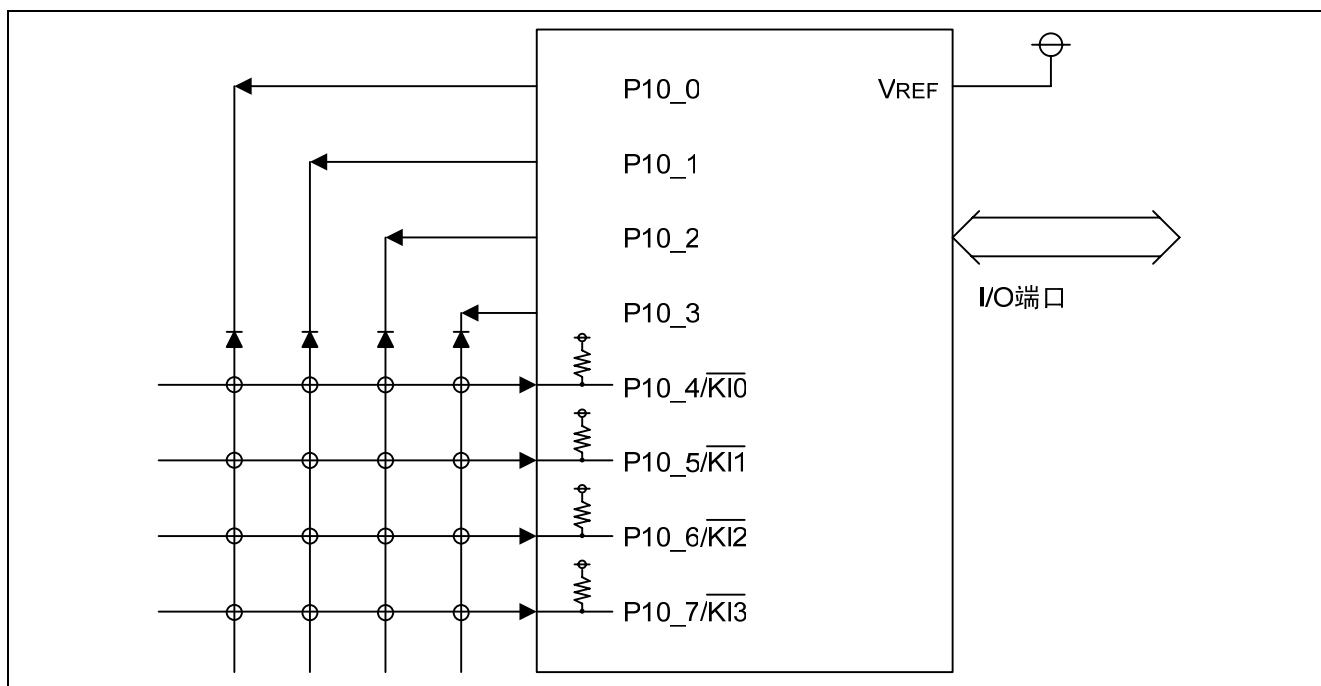


图 1. 键输入中断的电路示例图

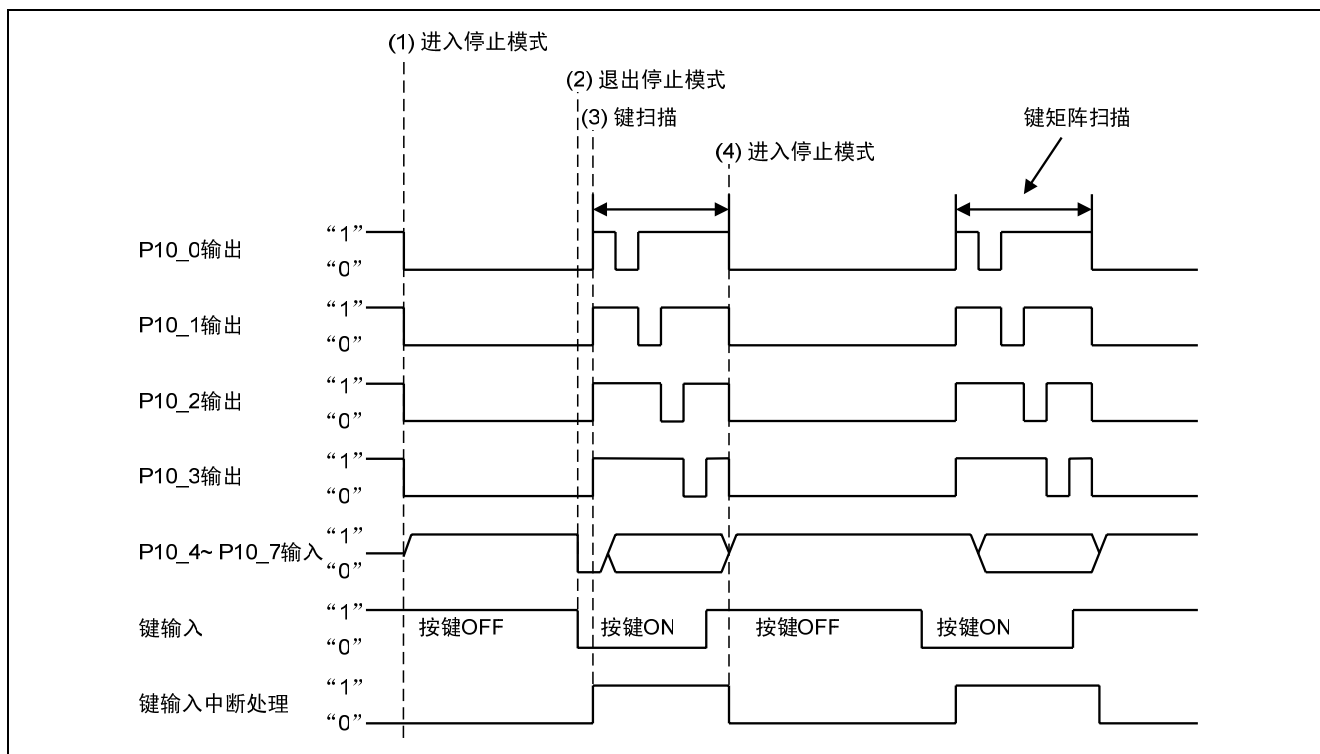
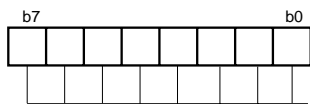


图 2. 键输入中断的工作时序图

5. 寄存器设置

为了能够实现定义在“4. 操作”的功能，下列寄存器必须按步骤顺序进行设置。对于每个寄存器的具体结构，请参考 M16C/65 群的硬件手册。

设定端口P10方向寄存器

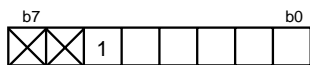


端口P10方向寄存器 PD10【地址 03F6h】

<PD10_7~PD10_0> 端口方向位
0：输入模式（输入端口功能）
1：输出模式（输出端口功能）

⋮

设定上拉控制寄存器2



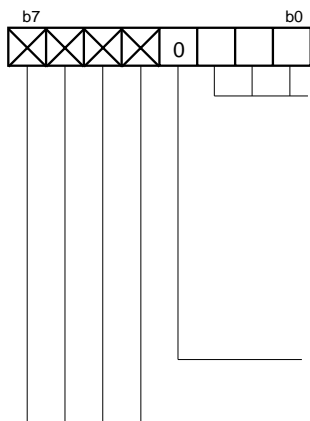
上拉控制寄存器2 PUR2【地址 0362h】

<PU25> P10_4 ~ P10_7 上拉
1：有上拉（注1）

注1：此位为“1”（有上拉）且方向位为“0”（输入模式）的引脚被上拉。

⋮

设定中断控制寄存器 (注1)



键输入中断控制寄存器 KUPIC【地址 004Dh】

<ILVL2~ILVL0> 中断优先级选择位

b2 b1 b0
0 0 0：0级（禁止中断）
0 0 1：1级
0 1 0：2级
0 1 1：3级
1 0 0：4级
1 0 1：5级
1 1 0：6级
1 1 1：7级

<IR> 中断请求位 (注2)

0：无中断请求

什么也不指定。只能写“0”，读时值不定

注1：请在该寄存器所对应的中断请求不会发生的位置对该寄存器进行改写操作。当使用键输入中断时，请将PCR寄存器的PCR7位设置为“0”（允许键输入）。

注2：IR位只能写“0”（不能写“1”）。

⋮

设定端口控制寄存器



端口控制寄存器 PCR【地址 0366h】

什么也不指定。只能写“0”，读时值不定

<PCR7> 键输入允许位

0：允许

6. 参考文献

数据手册

M16C/65 群硬件手册

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修订记录

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