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Renesas Electronics Corporation

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## **M16C/64 Group**

### **Operation of key-input interrupt**

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#### **1. Abstract**

The following is an operation of key-input interrupt. Figure 1 shows an example of a circuit that uses the key-input interrupt. Figure 2 shows an example of operation of key-input interrupt.

#### **2. Introduction**

This application note is applied to the M16C/64 group microcomputers.

This program can be operated under the condition of M16C family products with the same SFR (Special Function Register) as M16C/64 Group products. Because some functions may be modified of the M16C family products, see the user's manual. When using the functions shown in this application note, evaluate them carefully for an operation.

### 3. Specifications

Use the following peripheral functions:

- Key-input interrupts
- Stop mode
- Pull-up function

(1) Use P10\_0 through P10\_3 for the scan output pin pins of a key matrix. Use the input pins ( $\overline{\text{KI0}}$  through  $\overline{\text{KI3}}$ ) of the key-input interrupt function for the key-input reading pins. The pull-up function is also used.

(2) If a key-input interrupt request occurs, clear the stop mode and read a key.

### 4. Operation

(1) Set the direction register of the ports to be changed to key-input interrupt pins to input, and set the pull-up function.

(2) Setting the key-input interrupt control register and setting the interrupt enable flag makes the interrupt-enabled state ready.

(3) If a falling edge is input to either  $\overline{\text{KI0}}$  through  $\overline{\text{KI3}}$ , the key-input interrupt request bit goes to “1”.

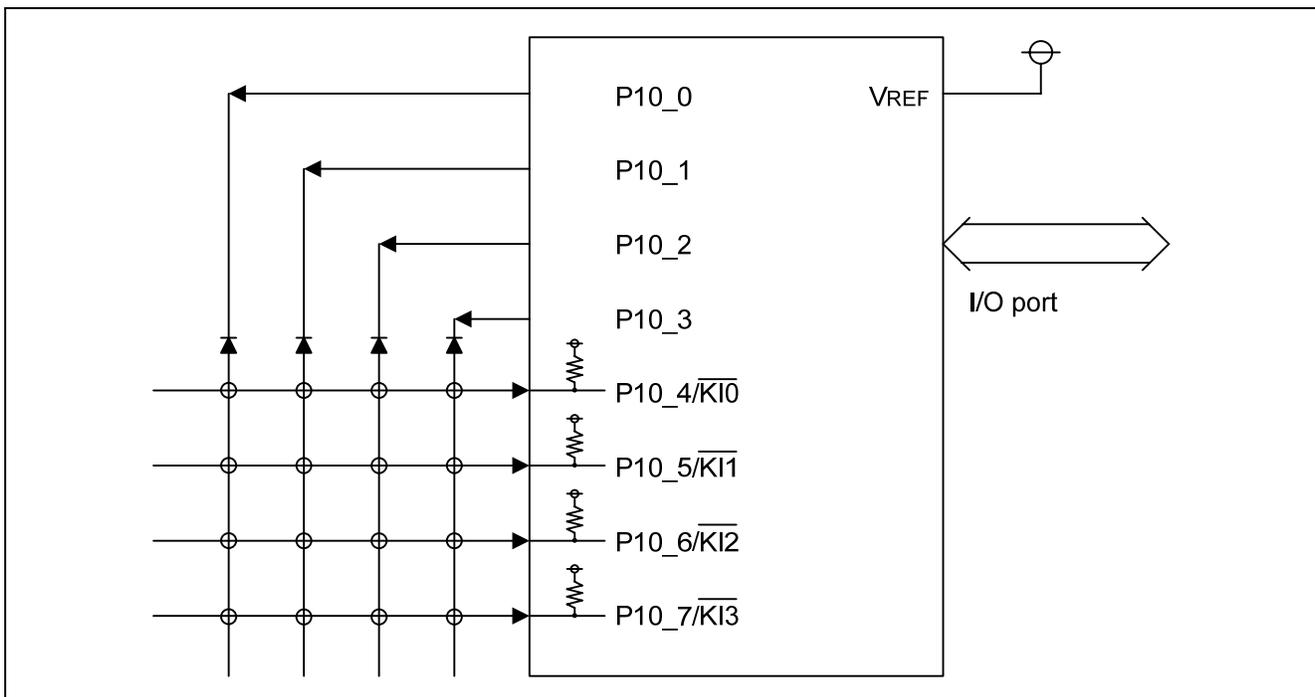


Figure 1. Example of circuit using the key-input interrupt

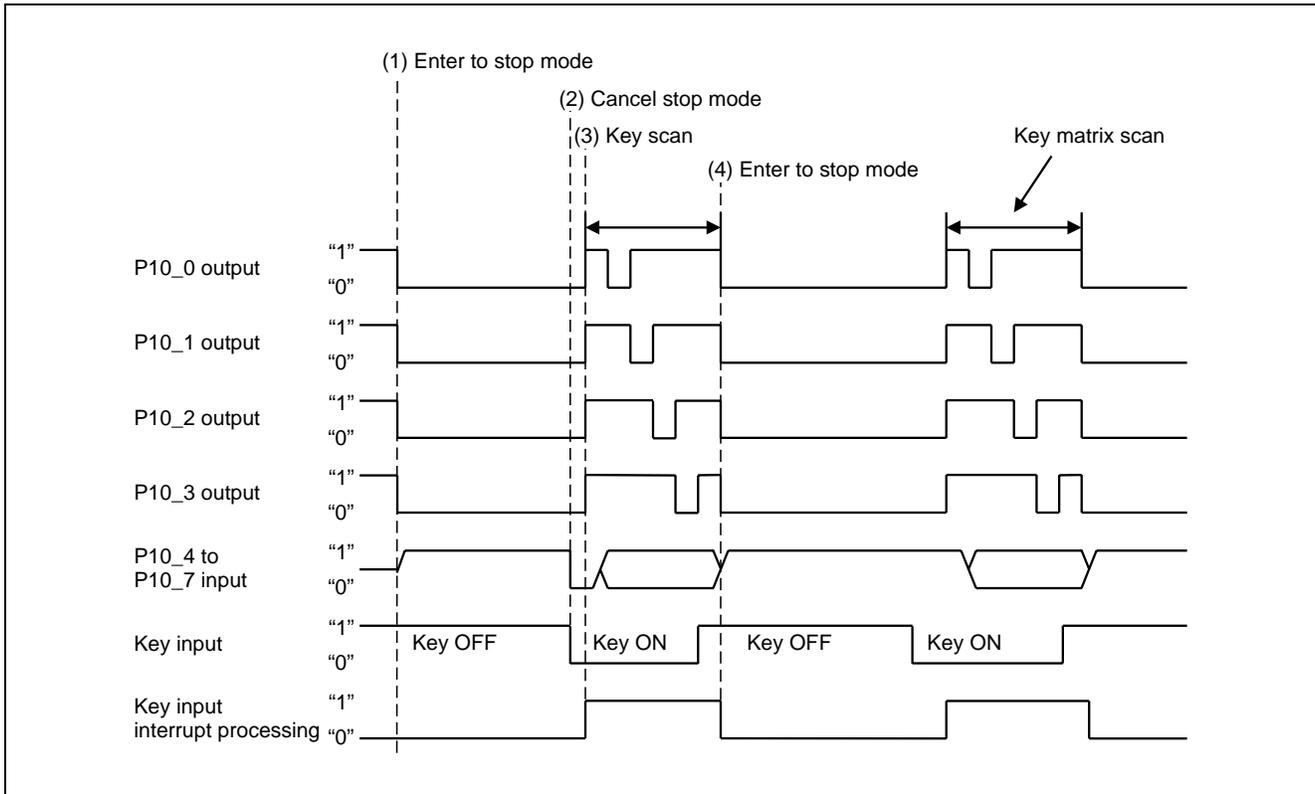
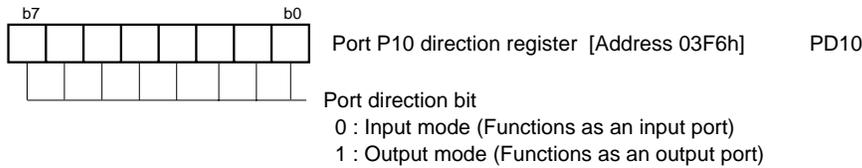


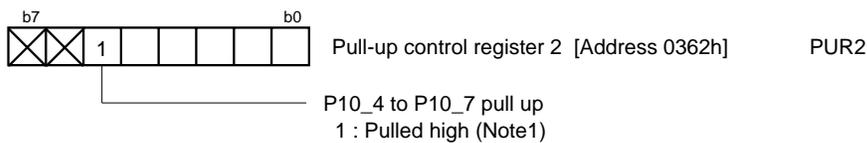
Figure 2. Example of operation of key-input interrupt

### 5. Set-up procedure

#### Setting port P10 direction register

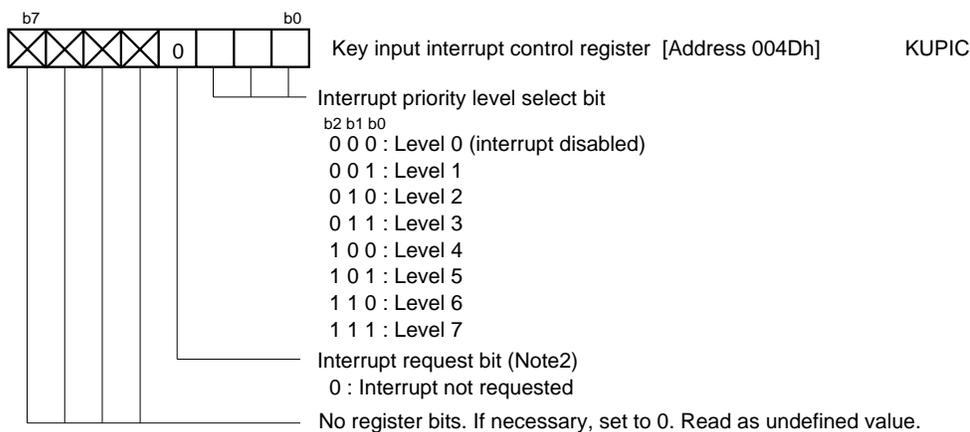


#### Setting pull-up control register 2



Note 1: To enable the pull-up registers, the corresponding bit in the register should be set to 1 (pulled high) and the respective bits in the direction register should be set to 0 (input mode).

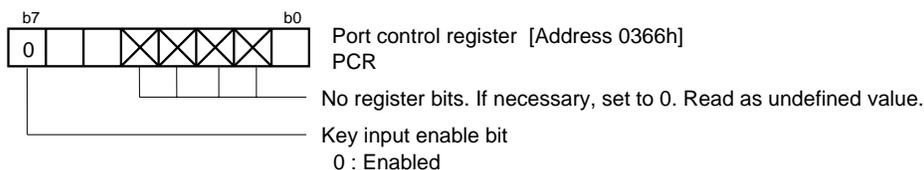
#### Setting interrupt control register (Note1)



Note 1: To rewrite the interrupt control register, do so at a point that does not generate the interrupt request for that register. To use the key input interrupts, set the PCR7 bit in the PCR register to 0 (key input enabled).

Note 2: Interrupt request bit can only be reset by writing a 0. (Do not write a 1).

#### Setting port control register



## 6. Reference

### Hardware manual

M16C/64 Group Hardware Manual

(Use the most recent version of the document on the Renesas Technology Web site.)

### Technical news/Technical update

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**Revision**

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		Page	Point
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