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April 1st, 2010
Renesas Electronics Corporation

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7546/47 Group

A/D Converter

1. Abstract

The following article introduces and shows an application example of converting input analog voltage into digital values.

2. Introduction

The application explained in this document applies to the following MCU:

Applicable MCU: 7546/47 Group

3. Contents

3.1 Example of Control Procedure

The analog input voltage from the sensor is converted to digital values using the P20/AN0 pin as an analog input pin.

Figure 1 shows the connection diagram.

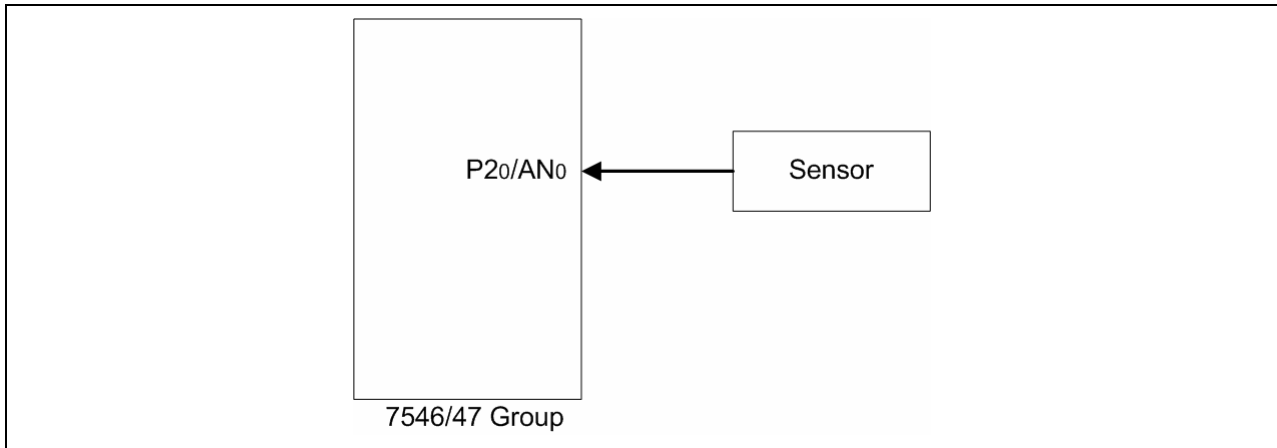
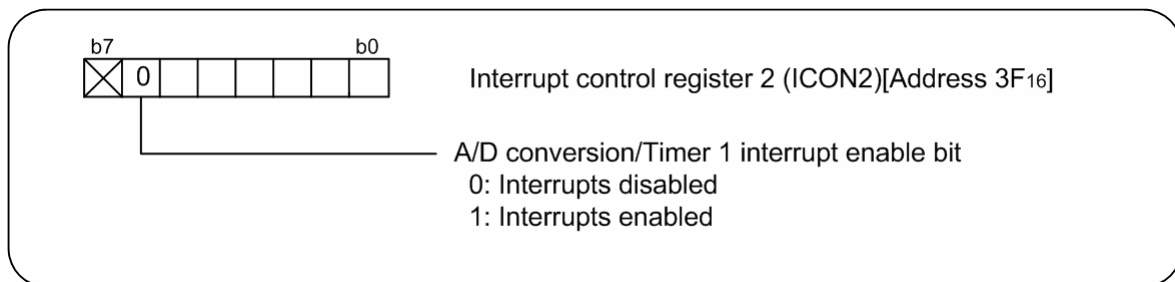


Figure 1 Connection Diagram of A/D Converter

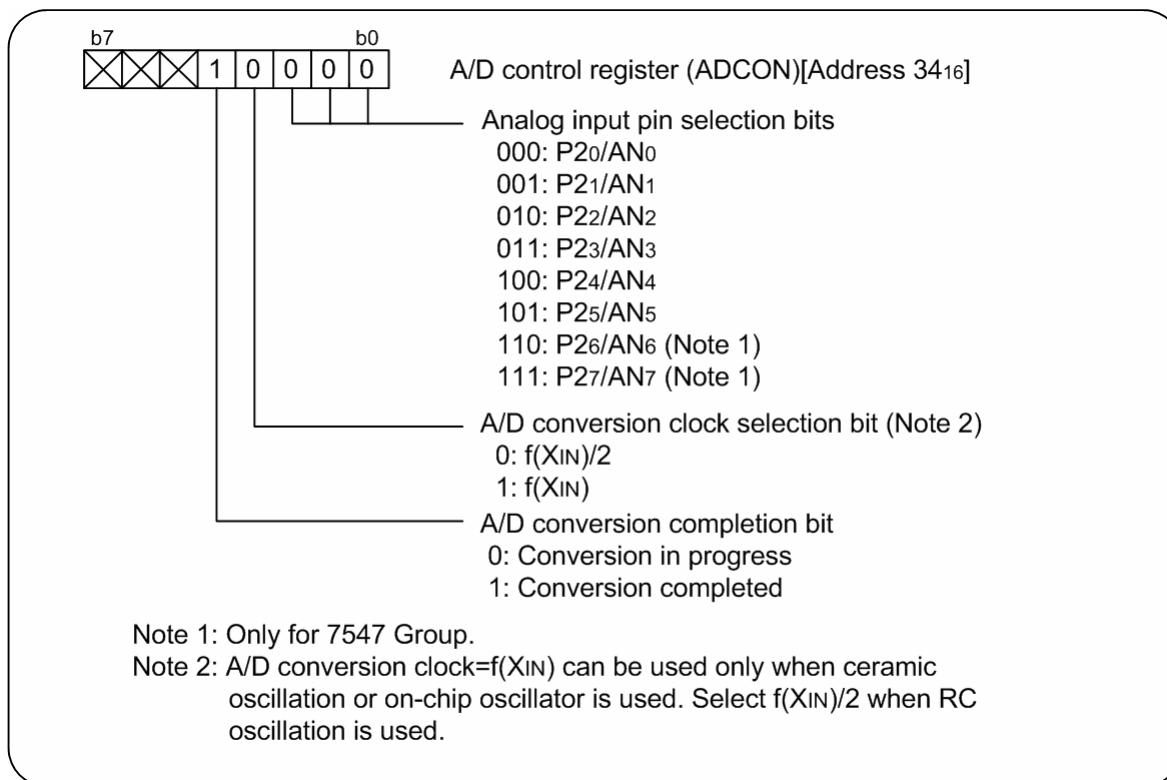
3.2 Setup

The relevant register settings are shown below.

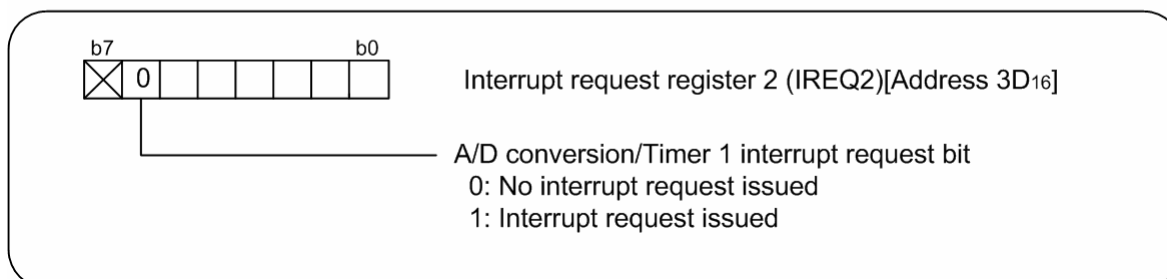
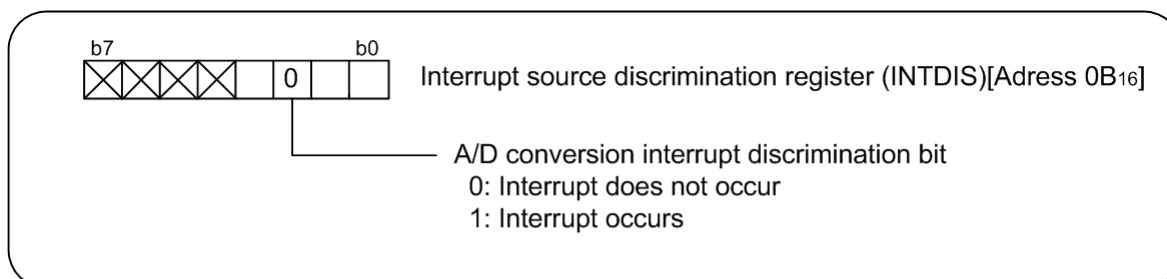
- 1) Disable A/D conversion/Timer 1 interrupt.



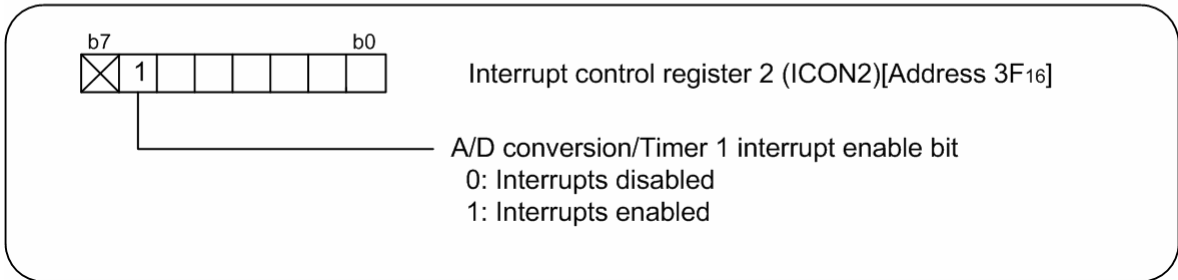
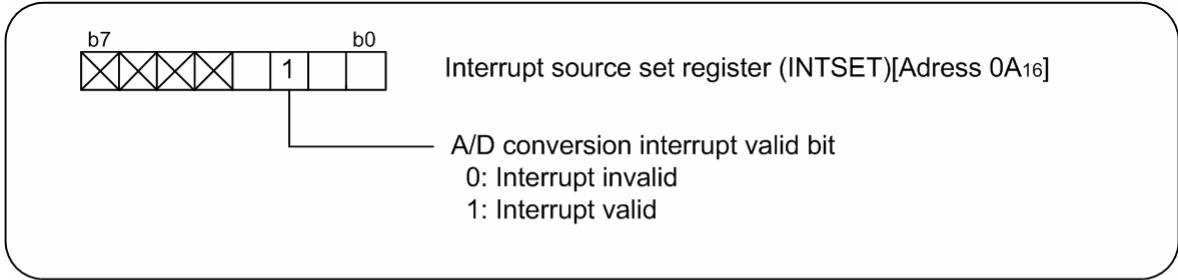
- 2) Set A/D control register.



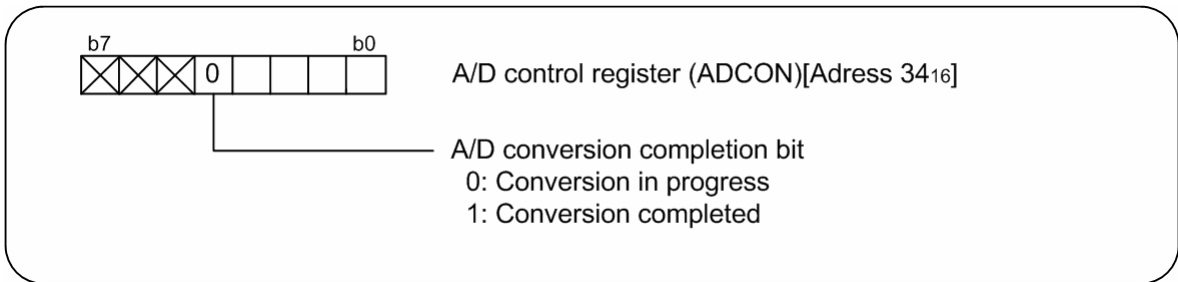
- 3) In order not to execute the unrequested interrupt processing, set “0” to the A/D conversion interrupt discrimination bit (interrupt does not occur) and the A/D conversion/Timer 1 request bit (unrequested).



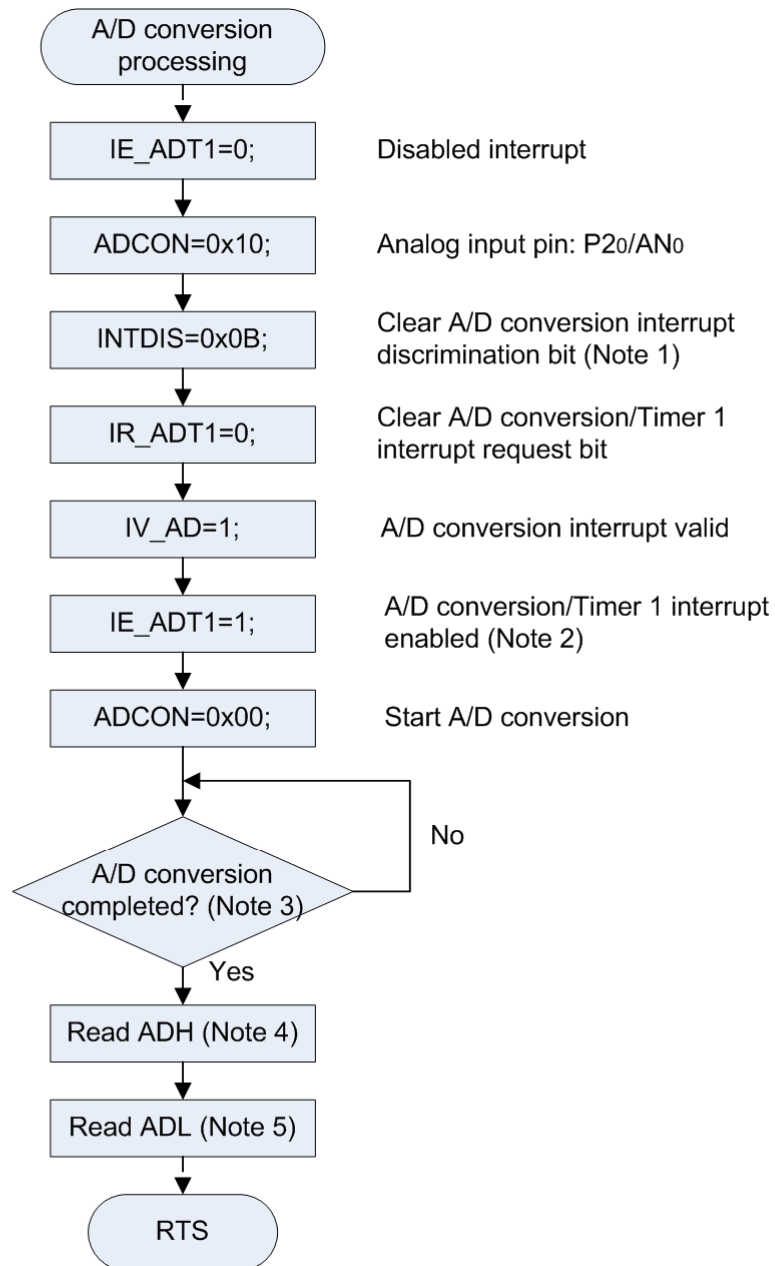
- 4) When using interrupt, set “1” to the A/D conversion interrupt valid bit (interrupt valid) and the A/D conversion/Timer 1 interrupt enable bit (interrupt enabled).



5) Start A/D conversion.



4. Flow Chart



Note 1: Use a LDM instruction to clear an interrupt discrimination bit.

Note 2: In this case, the A/D conversion interrupt is used.

Note 3: The completion of the A/D conversion is checked as follows:

The A/D conversion completion bit of A/D control register is “1” .

The A/D conversion interrupt discrimination bit of the interrupt source discrimination register is “1” .

Branch to the A/D conversion interrupt processing routine is executed.

Note 4: At 10-bit read: the conversion result of the high-order 2 bits (b9, b8) can be read.
At 8-bit read: not used

Note 5: At 10-bit read: the conversion result of the low-order 8 bits (b7 ~ b0) can be read.
At 8-bit read: the conversion result of b9 ~ b2 can be read.

5. Reference Document

Datasheet

7546 Group Datasheet

7547 Group Datasheet

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Technical News/Technical Update

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REVISION HISTORY	7546/47 Group A/D Converter
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Rev.	Date	Description	
		Page	Summary
1.00	Oct 07, 2006	—	First edition issued
1.01	Feb 13, 2009	5	Note 5: At 8-bit read, modified “b7 ~ b0” to “b9 ~ b2”

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