

To our customers,

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Renesas Electronics Corporation

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## 7544 Group

### A-D Converter

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#### 1. Abstract

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

#### 2. Introduction

The explanation of this issue is applied to the following condition:  
Applicable MCU: 7544 Group

### 3. Contents

#### 3.1 Setting of A-D converter

Figure 1 shows the relevant registers setting.

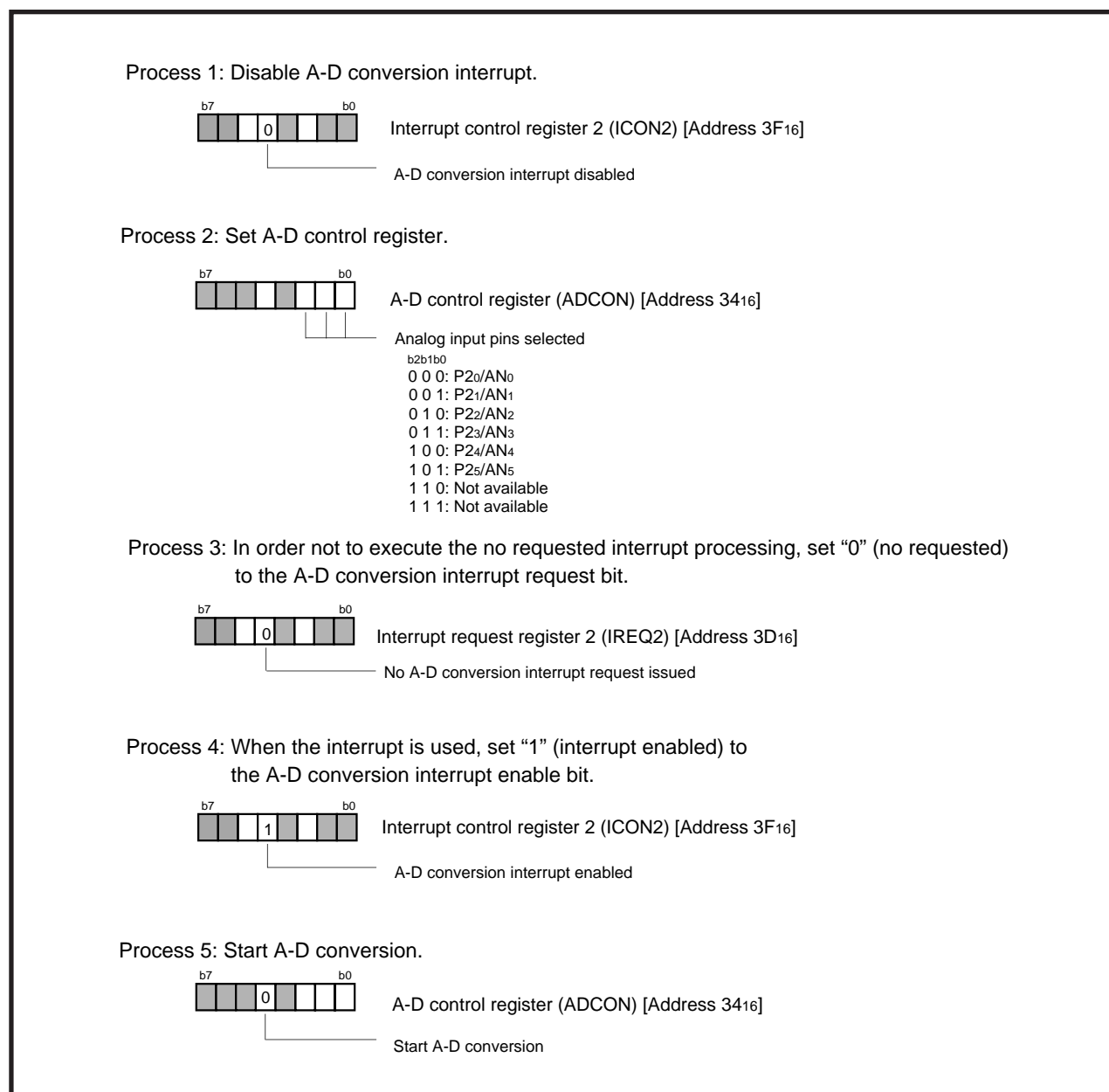


Figure 1 Relevant registers setting

### 3.2 Example of Control Procedure

**Outline:** The analog input voltage input from a sensor is converted to digital values.

**Specifications:** •The analog input voltage input from a sensor is converted to digital values.

•P20/AN0 pin is used as an analog input pin.

Figure 2 shows a connection diagram, and Figure 3 shows an example of control procedure.

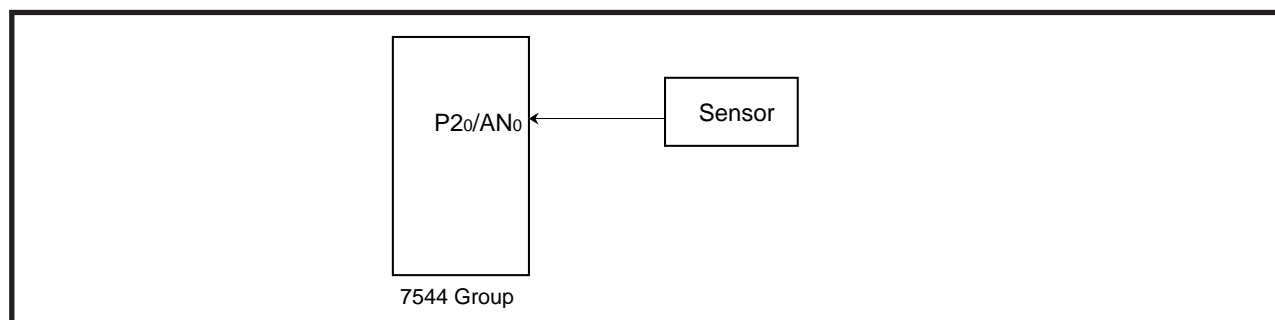


Figure 2 Connection diagram

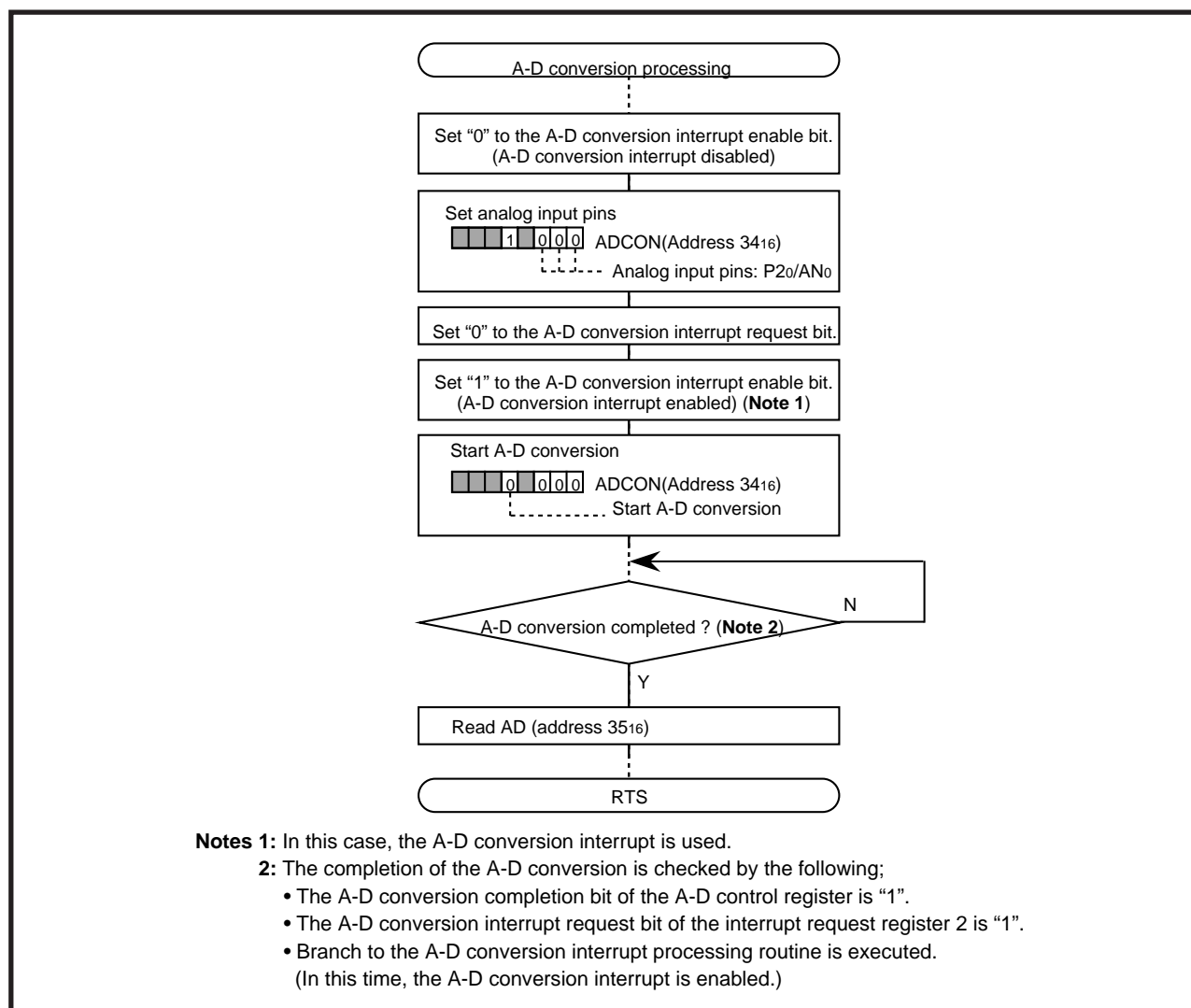


Figure 3 Control procedure

## 4. Sample Programming Code

### [Reset Start •• Main Routine Process]

```

RESET:
    SEI                      ; Interrupt disable
    CLD
    CLT
;
    LDX  #$FF                ; Set stack bottom
    TXS
;
    LDM  #%10000000,CPUM     ; Set CPU mode register
;
; Wait f(XIN) oscillation stabilizing time
;
    LDM  #%00000000,CPUM     ; Set CPU mode register
;
    LDA  #0
    LDX  #>RAM_top
RAM_clear: STA  $00,X
           INX
           BNE  RAM_clear
;
;
;-----

```

### \_\_MAIN:

```
    JSR  AD_CONVERT
```

### \_\_MAIN\_00:

```
    BRA  __MAIN
```

```
;
```

### [A-D Conversion Process]

```

AD_CONVERT:
    CLB  4,ICON2              ; disable A/D converter interrupt
    LDM  #%00010000,ADCON     ; set analog input pin (P2_0/AN0)
    CLB  4,IREQ2              ; clear A/D converter interrupt request
;
    SEB  4,ICON2              ; enable A/D converter interrupt
;                               ; (When A/D interrupt is used)
    CLB  4,ADCON              ; start A/D convert
;
AD_CONVERT_00:
    BBC  4,ADCON,AD_CONVERT_00; completed A/D convert ? -> no
    LDA  AD
    STA  Read_Data            ; read A/D convert value
    RTS
;

```

## 5. Reference

Data Sheet  
7544 Group Data sheet  
7544 Group Data sheet (QzROM Version)

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Renesas Technology Corporation Semiconductor Home Page  
<http://www.renesas.com/en/740>

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REVISION HISTORY	7544 Group A-D Converter
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Rev.	Date	Description	
		Page	Summary
1.00	Apr 01, 2003	-	First Edition issued
2.00	Nov 12, 2004	4	Sample Programming Code added.



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