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Renesas Electronics Corporation

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M16C/62A Group

Operation of A-D Converter (in repeat sweep mode 1)

1.0 Abstract

In repeat sweep 0 mode, choose functions from those listed in Table 1. Operations of the circled items are described below.

Table 1. Chosen functions

Item	Set-up	Item	Set-up
Operation clock f_{AD}	○ Divided-by-4 f_{AD} / divided-by-2 f_{AD} / f_{AD}	Trigger for starting A-D conversion	○ Software trigger
			○ Trigger by ADTRG
Resolution	○ 8-bit / 10-bit	Expanded analog input pin	○ Not used
Analog input pin	○ AN ₀ and AN ₁ (2 pins) / AN ₀ to AN ₃ (4 pins) / AN ₀ to AN ₅ (6 pins) / AN ₀ to AN ₇ (8 pins)		External ope-amp connection mode
		○ Not activated	
		○ Activated	

2.0 Introduction

- Operation (1) Setting the A-D conversion start flag to "1" causes the A-D converter to start the conversion on voltage input to the AN₀ pin.
- (2) After the A-D conversion on voltage input to the AN₀ pin is completed, the content of the successive comparison register (conversion result) is transmitted to A-D register 0.
- (3) Every time the A-D converter carries out A-D conversion on a selected analog input pin, the A-D converter carries out A-D conversion on only one unselected pin, and then the A-D converter carries out A-D conversion from the AN₀ pin again. (See Figure 2.7.19.) The conversion result is transmitted to A-D register i every time conversion on a pin is completed. The A-D conversion interrupt request bit does not go to "1".
- (4) The A-D converter continues operating until software goes the A-D conversion start flag to "0".

Figure 1 shows AN_i pin's sweep sequence, Figure 2 shows timing chart

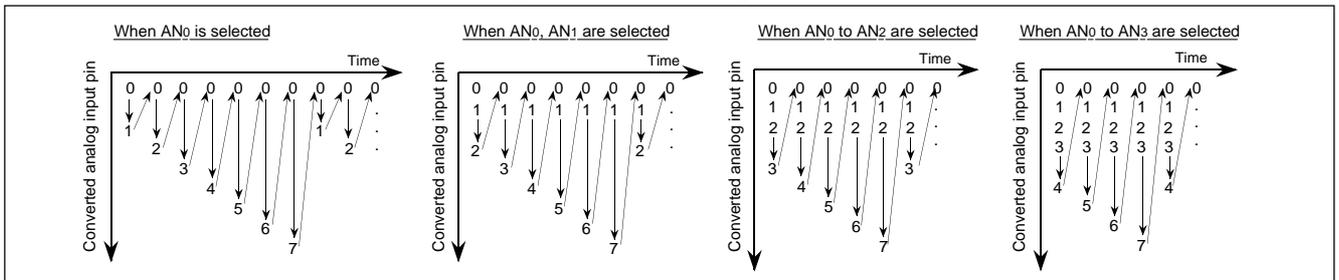


Figure 1. AN_i pin's sweep sequence in repeat sweep mode

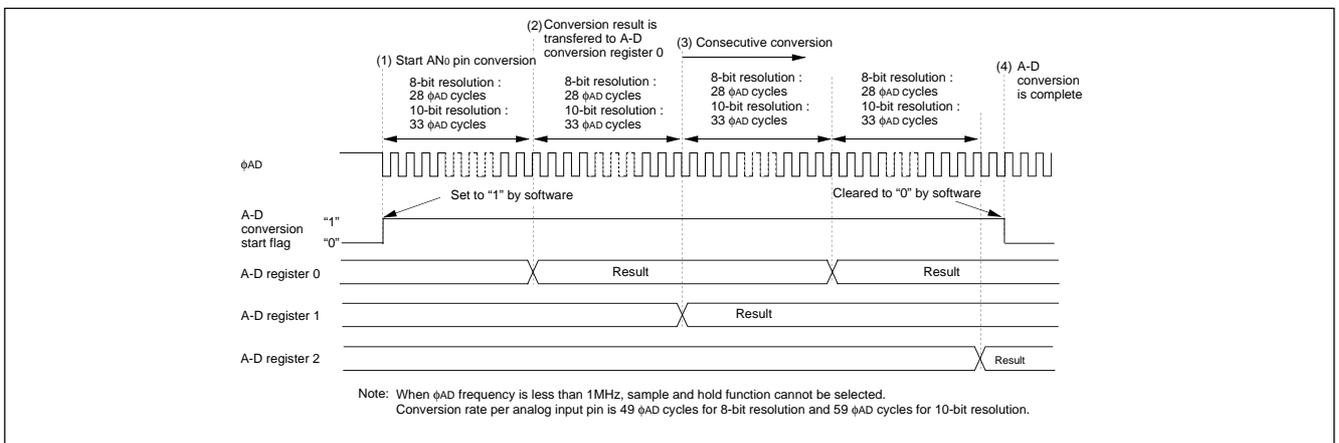
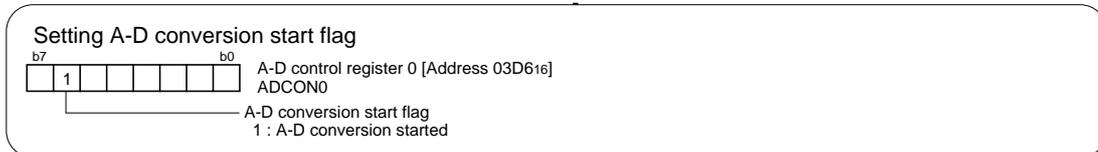
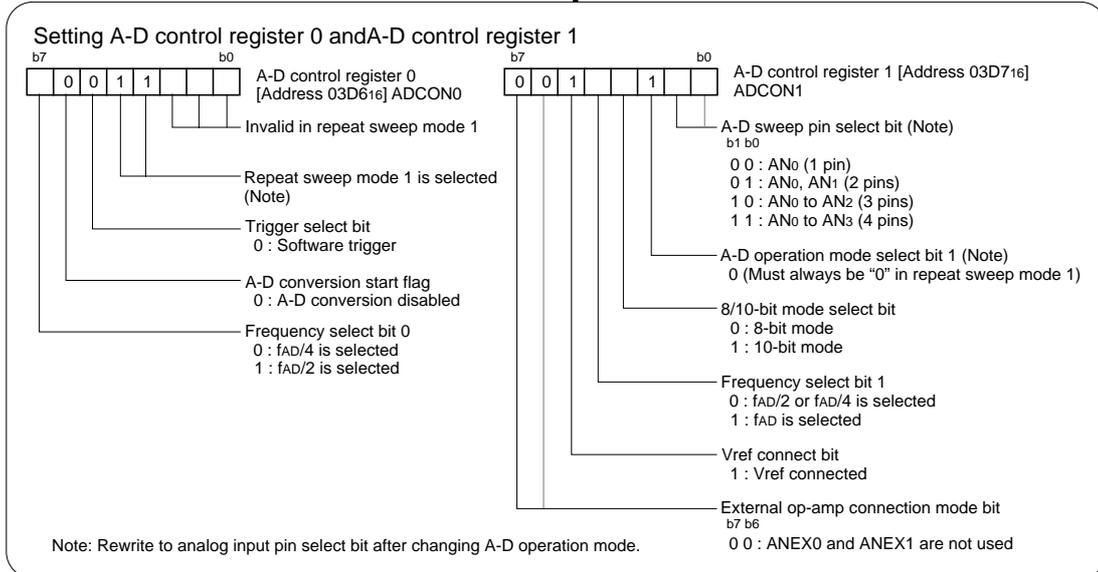


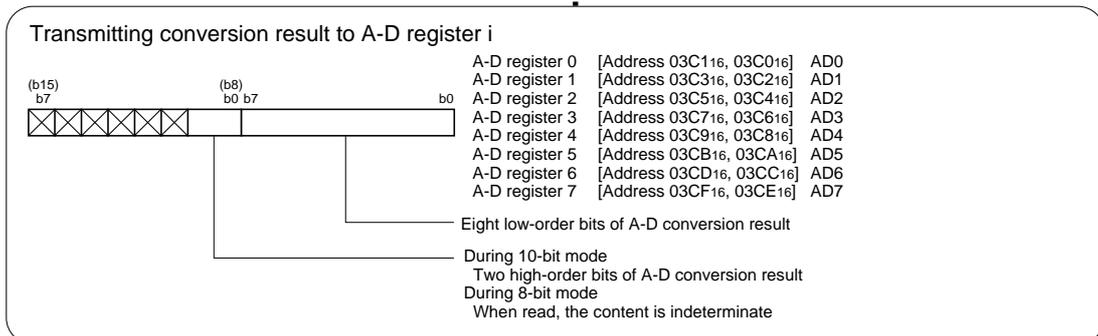
Figure 1. Operation timing of repeat sweep 1

3.0 Set-up procedure



Start A-D conversion

Converts non-selected pin after converting pins selected through the A-D sweep pin select bit.



Stop A-D conversion


```

=====
;
;   A-D Converter (in repeat sweep mode 1)
;
=====
MOV.B   #00000001B, adcon2   ;Selecting Sample and hold
;
;           +-----;A-D conversion method select bit
;           (1:With sample and hold)
MOV.B   #10011000B, adcon0   ;Setting A-D control register 0
;
;   ||| | |+++-----;Invalid in repeat sweep mode 1
;   ||| | |+++-----;Repeat sweep mode 1 is selected
;   ||| | |+++-----;Trigger select bit (0:Software trigger)
;   |+-----;A-D conversion start flag (0:A-D conversion disabled)
;   +-----;Frequency select bit 0 (1:fAD/2 is selected)
MOV.B   #00101100B, adcon1   ;Setting A-D control register 1
;
;   ||| | |+++-----;A-D sweep pin select bit (00:AN0(1pins))
;   ||| | |+++-----;Must always be "0" in repeat sweep mode 1
;   ||| | |+++-----;8/10-bit mode select bit (1:10-bit mode)
;   ||| | |+++-----;Frequency select bit 1 (0:fAD/2 or fAD/4 is selected)
;   |+-----;Vref connect bit (1:Vref connected)
;   +-----;External op-amp connection mode bit
;           (00:ANEX0 and ANEX1 are not used)
MOV.B   #00H, pd10          ;Set the direction register of the relevant port to input
;                               ;(AN0-AN7:Analog input pin)
;
;-----
;
;   Start A-D conversion
;
;-----
START_AD:
    BSET   adst              ;Setting A-D conversion start flag
;
REPEAT_AD_CNV:
;
;   ; Processing of reading A-D conversion result
;   ; depending on the application program.
;
    JMP    REPEAT_AD_CNV
;
;-----
;
;   Stop A-D conversion
;
;-----
STOP_AD:
    BCLR   adst              ; A-D conversion stop
;
STOPPED_AD:
    JMP    STOPPED_AD
;

```

```
=====
;      Dummy interrupt processing program
;=====
dummy:
    REIT
;
;*****
;      Setting of fixed vector
;*****
    .SECTION    F_VECT, ROMDATA
    .ORG        FIXED_VECT_TOP
;
    .LWORD     dummy    ;Undefined instruction interrupt vector
    .LWORD     dummy    ;Overflow (INT0 instruction) interrupt vector
    .LWORD     dummy    ;BRK instruction interrupt vector
    .LWORD     dummy    ;Address match interrupt vector
    .LWORD     dummy    ;Single-step interrupt vector
    .LWORD     dummy    ;Watchdog timer interrupt vector
    .LWORD     dummy    ;DBC interrupt vector
    .LWORD     dummy    ;NMI interrupt vector
    .LWORD     RESET    ;Sets reset vector
;
    .END
```

5.0 Reference

Renesas Technology Corporation Semiconductor Home page
<http://www.renesas.com/>

Technical Support

E-mail: support_apl@renesas.com

Data Sheet

M16C/62A group Rev. C.1
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User's Manual

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