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Renesas Electronics Corporation

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M16C/62A Group

Operation of A-D Converter (in repeat mode)

1.0 Abstract

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

Table 1. Chosed functions

Item	Set-up	Item	Set-up
Operation clock ϕ_{AD}	<input type="radio"/> Divided-by-4 f_{AD} / divided-by-2 f_{AD} / f_{AD}	Expanded analog input pin	<input type="radio"/> Not used
			Either ANEX0 pin or ANEX1 pin
			External operation amplifier connection mode
Resolution	<input type="radio"/> 8-bit / 10-bit	Sample & Hold	<input type="radio"/> Not activated
Analog input pin	<input type="radio"/> One of AN ₀ pin to AN ₇ pin		<input type="radio"/> Activated
Trigger for starting A-D conversion	<input type="radio"/> Software trigger		
	<input type="radio"/> Trigger by \overline{ADTRG}		

2.0 Introduction

- Operation
- (1) Setting the A-D conversion start flag to "1" causes the A-D converter to start operating.
 - (2) After the first conversion is completed, the content of the successive comparison register (conversion result) is transmitted to A-D register i. The A-D conversion interrupt request bit does not go to "1".
 - (3) The A-D converter continues operating until the A-D conversion start flag is set to "0" by software. The conversion result is transmitted to A-D register i every time a conversion is completed.

Figure 1 shows the operation timing

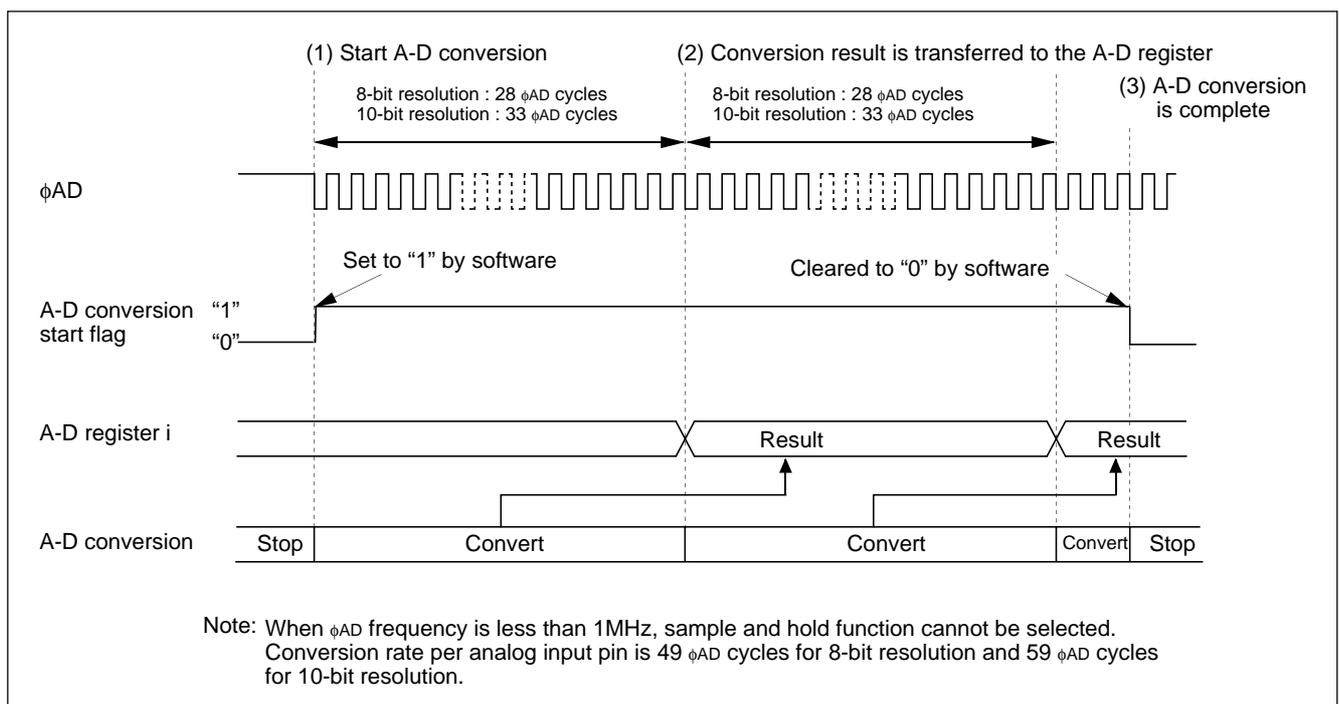
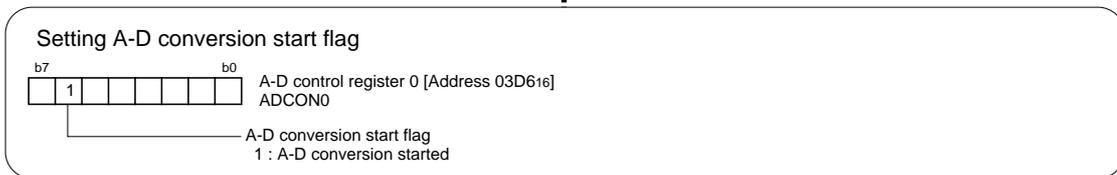
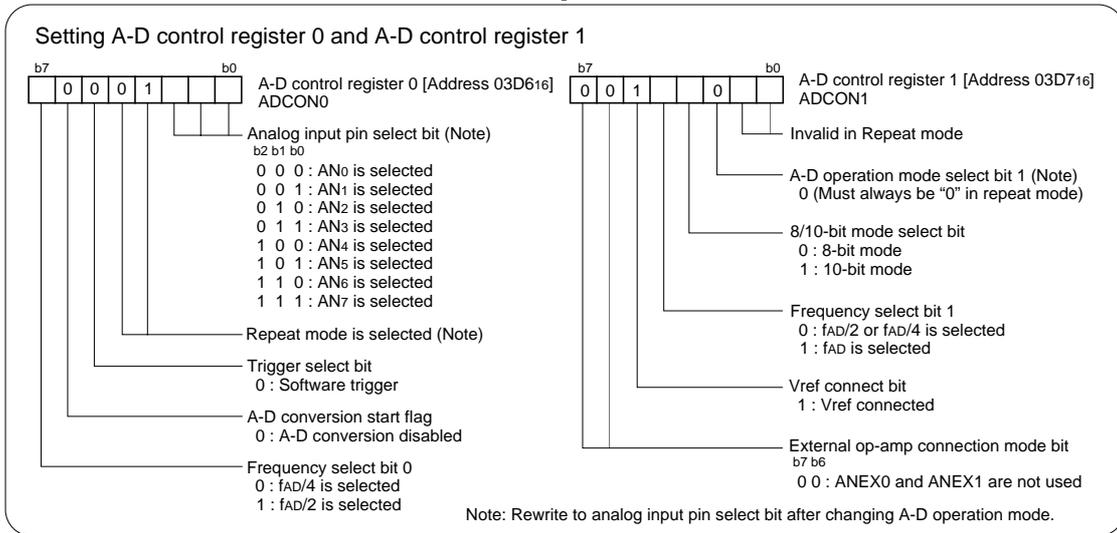
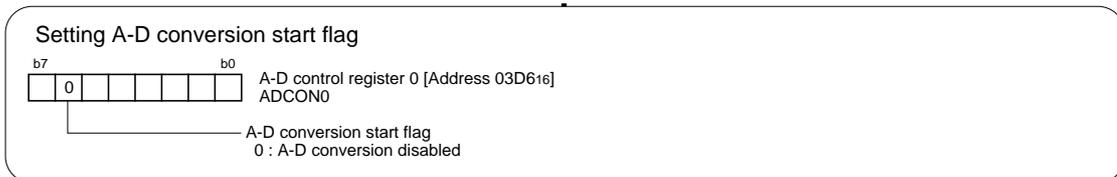
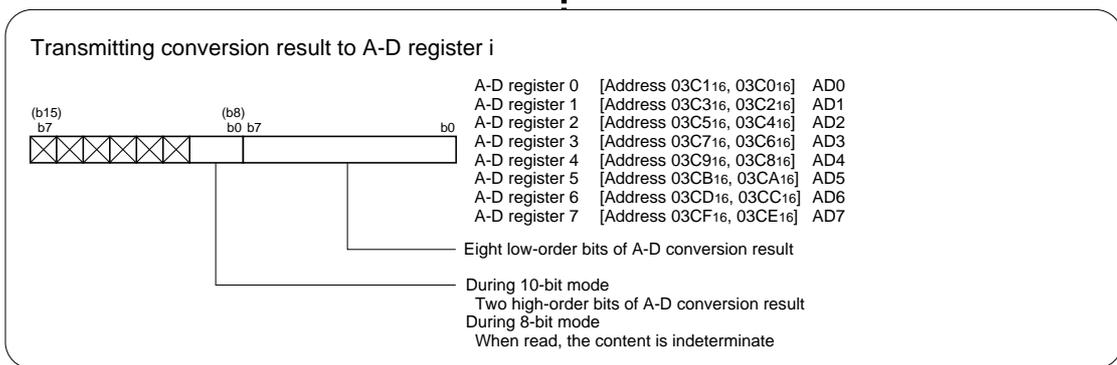


Figure 1. Operation timing of repeat mode

3.0 Set-up procedure



Repeatedly carries out A-D conversion on pins selected through the analog input pin select bit **Start A-D conversion**



Stop A-D conversion


```

=====
;
;   A-D Converter (in repeat mode)
;
=====
MOV.B   #00000001B, adcon2   ;Selecting Sample and hold
;
;           +-----;A-D conversion method select bit
;           (1:With sample and hold)
MOV.B   #10001000B, adcon0   ;Setting A-D control register 0
;
;   ||| | |+++-----;Analog input pin select bit (000:AN0 is selected)
;   ||| | |+++-----;Repeat mode 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   #00101000B, adcon1   ;Setting A-D control register 1
;
;   ||| | |+++-----;Invalid in Repeat mode
;   ||| | |+++-----;Must always be "0" in repeat mode
;   ||| | |+++-----;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)
BCLR    pd10_0               ;Set the direction register of the relevant port to input
;                               ;(AN0: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
(Use the latest version on the Home page: <http://www.renesas.com/>)

User's Manual

M16C/62A group Rev. 1.0
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