eman ta zabal zazu

Universidad del País Vasco
Euskal Herriko Unibertsitatea

BILBOKO INGENIARITZA ESKOLA
ESCUELA DE INGENIERÍA DE BILBAO

Teknologia Elektronikoa Saila

KONPUTAGAILUEN ARKITEKTURA
80c552 - Timer0

Kudeaketa eta Informazio Sistemen Informatikaren Ingenieritzako Graduaren 3. maila

Irakaslea: Alain Sanchez
(alain.sanchez@ehu.eus)

2019-2020, 1. lauhilabetea

HELBURUAK

Timer bat zer den ezagutzea

80c552-aren Timer0-a zelan konfiguratzen den ikastea

Timer 0

Zer egiten du timer batek? Zertarako erabiltzen da?

Timer 0

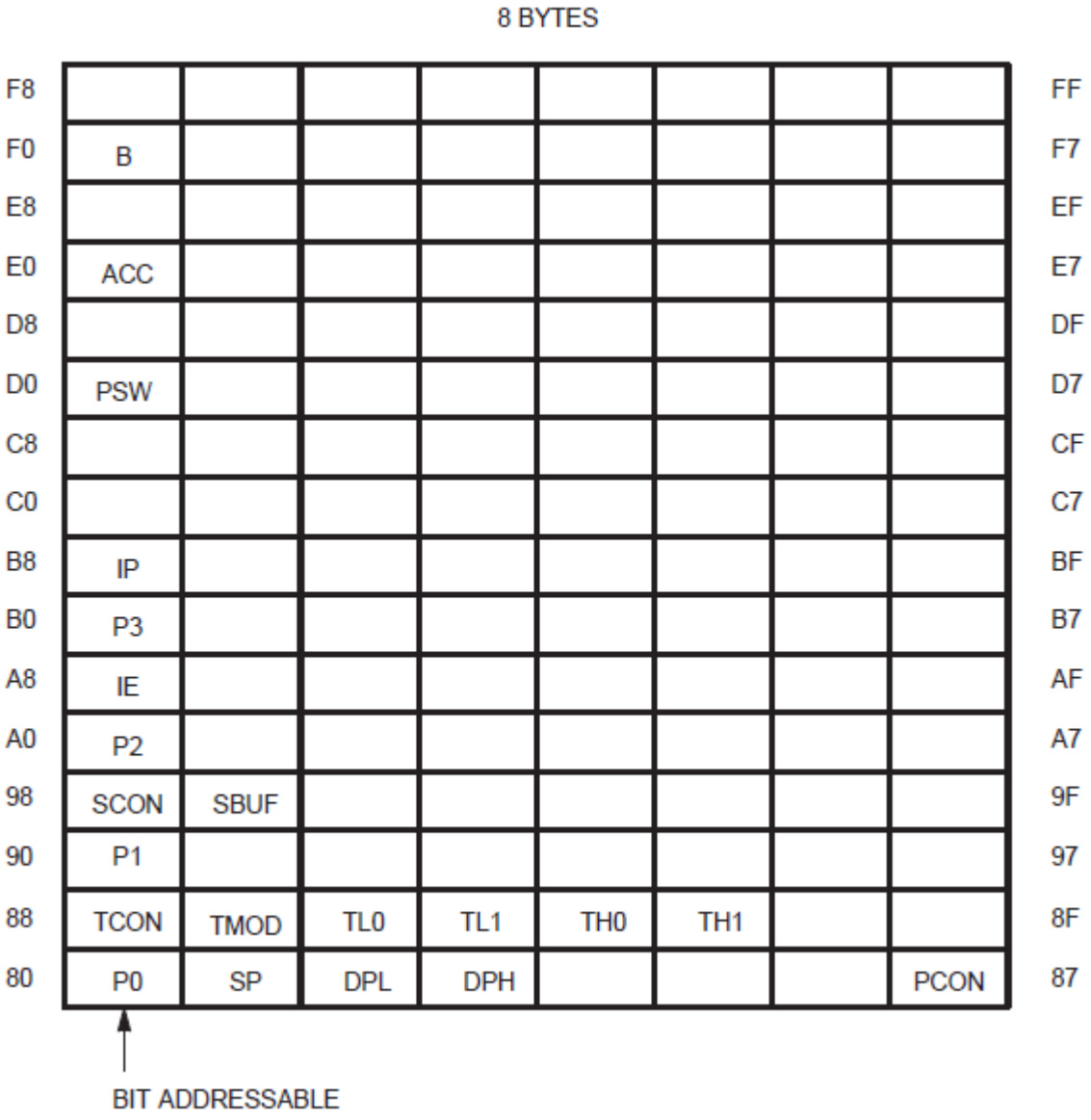
Bi timer: Timer0 eta Timer1.

Denbora kalkulatzeko

Ebentu kopurua kontatzeko

Serie komunikazioaren abiadura fijatzeko

Timer 0


8 BYTES
F8
F0
E8
E0
D8
D0
C8
C0
B8
B0
A8
A0
98
90
88
80
FF
F7
EF
E7
DF
D7
CF
C7
BF
B7
AF
A7
9F
97
8F
87
B
ACC
PSW
IP
P3
IE
P2
SCON
SBUF
P1
TCON
TMOD
TL0
TL1
TH0
TH1
P0
SP
DPL
DPH
PCON
BIT ADDRESSABLE

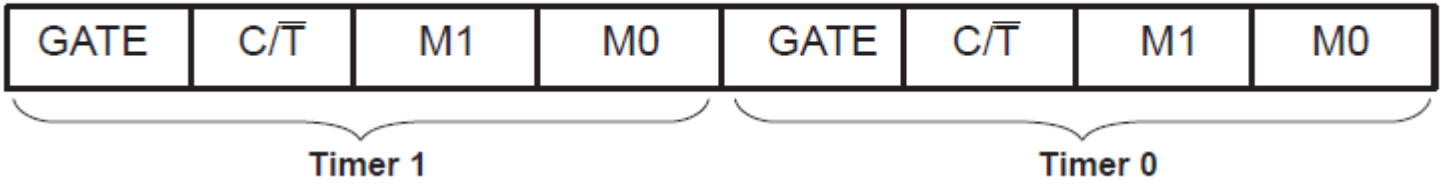
Timer 0

Timer-ak konfiguratzeko

Timer 0

Zelan konfiguratzen dira? TMOD erregistroa.

TMOD: TIMER/COUNTER MODE CONTROL REGISTER. NOT BIT ADDRESSABLE.



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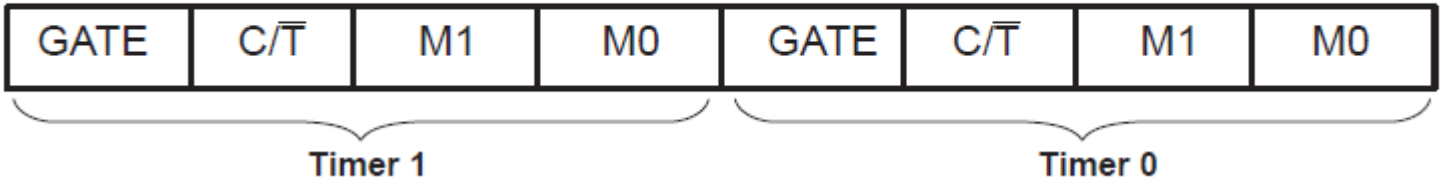

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C/T	Timer or Counter selector. Cleared for Timer operation (input from internal system clock). Set for Counter operation (input from Tx input pin).
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NOTE 1:

M1	M0		Operating Mode
0	0	0	13-bit Timer (8048 compatible)
0	1	1	16-bit Timer/Counter
1	0	2	8-bit Auto-Reload Timer/Counter
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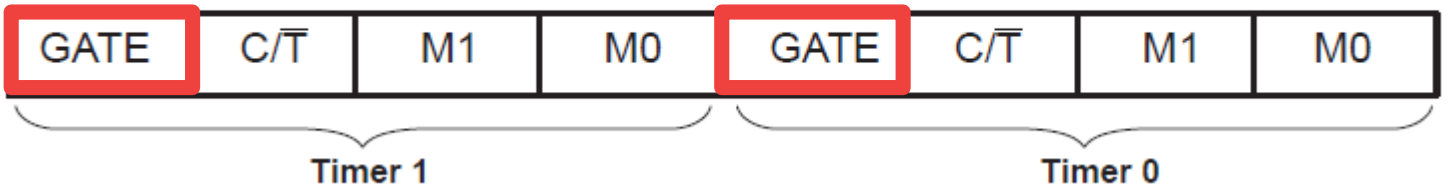

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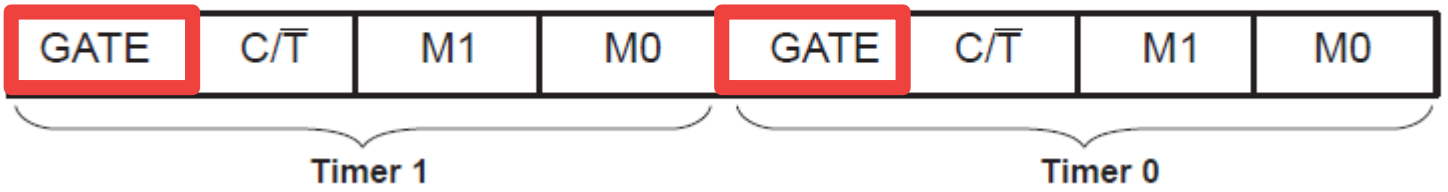

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GATE = 1 → HW

GATE = 0 → SW

NOTE 1:

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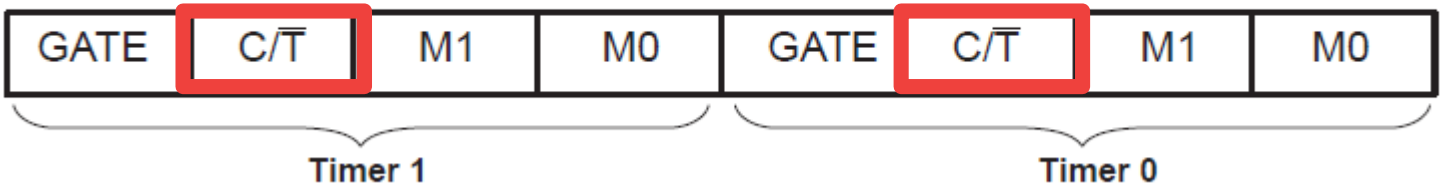

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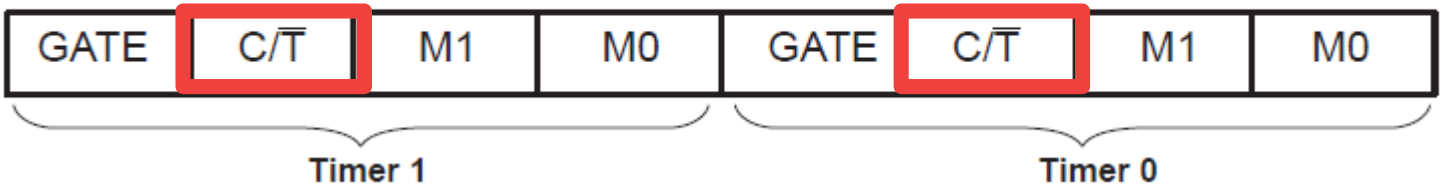

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C/T = 1 → Counter

C/T = 0 → Timer

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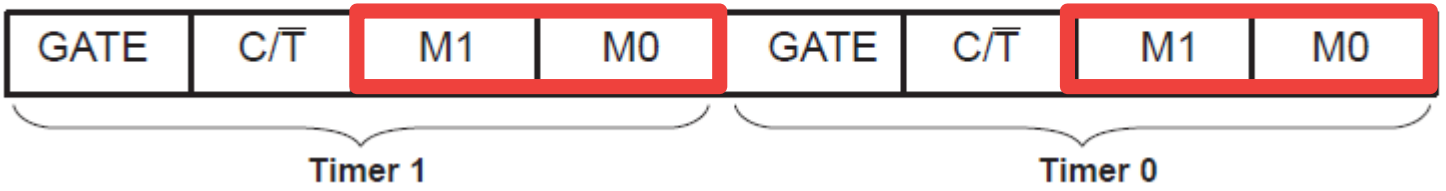

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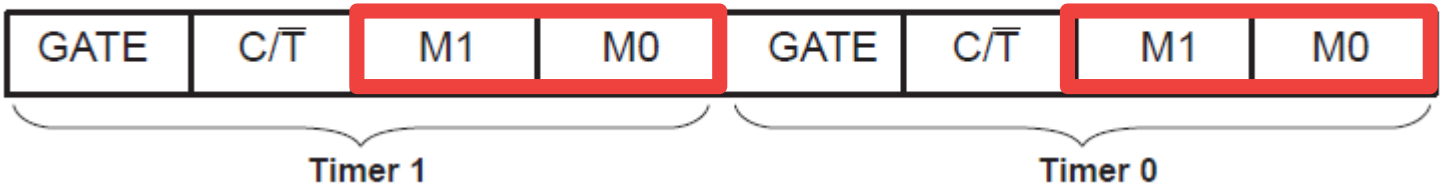

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0000H-tik 1FFFFH-ra

0000H-tik FFFFFH-ra

Timer 0

Zelan konfiguratzen dira? TCON erregistroa.

TCON: TIMER/COUNTER CONTROL REGISTER. BIT ADDRESSABLE.

TF1	TR1	TF0	TR0	IE1	IT1	IE0	IT0

Timer 0

Zelan konfiguratzen dira? TCON erregistroa.

TCON: TIMER/COUNTER CONTROL REGISTER. BIT ADDRESSABLE.

TF1	TR1	TF0	TR0	IE1	IT1	IE0	IT0

TF1	TCON.7	Timer 1 overflow flag. Set by hardware when the Timer/Counter 1 overflows. Cleared by hardware as processor vectors to the interrupt service routine
TR1	TCON.6	Timer 1 run control bit. Set/cleared by software to turn Timer/Counter 1 ON/OFF.
TF0	TCON.5	Timer 0 overflow flag. Set by hardware when the Timer/Counter 0 overflows. Cleared by hardware as processor vectors to the service routine.
TR0	TCON.4	Timer 0 run control bit. Set/cleared by software to turn Timer/Counter 0 ON/OFF.
IE1	TCON.3	External Interrupt 1 edge flag. Set by hardware when External Interrupt edge is detected. Cleared by hardware when interrupt is processed.
IT1	TCON.2	Interrupt 1 type control bit. Set/cleared by software to specify falling edge/low level triggered External Interrupt.
IE0	TCON.1	External Interrupt 0 edge flag. Set by hardware when External Interrupt edge detected. Cleared by hardware when interrupt is processed.
IT0	TCON.0	Interrupt 0 type control bit. Set/cleared by software to specify falling edge/low level triggered External

Timer 0

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Timer 0 - Konklusio generalak

Timer0-a SW edo HW-etik gobernatu daiteke.

Timer0-a kontagailu edo timer bezala erabili daiteke.

Operazio modu ezberdinak dauzka.

Overflow-a ematerakoan interrupzio flag-a aktibatzen da.

CLK eta hasierako balioekin konfiguratuko da denbora kontaketa.

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Timer 0

Zein operazio modu daude?

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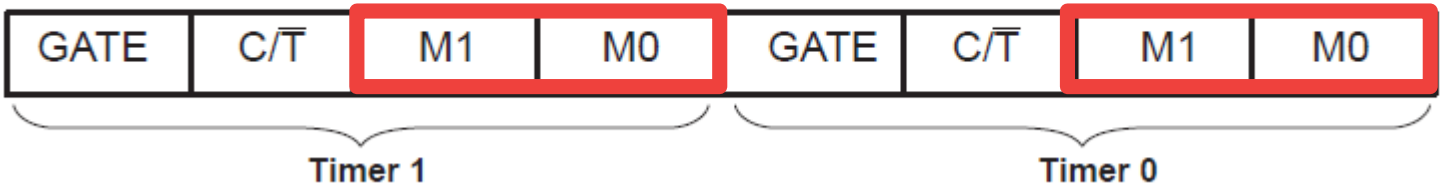

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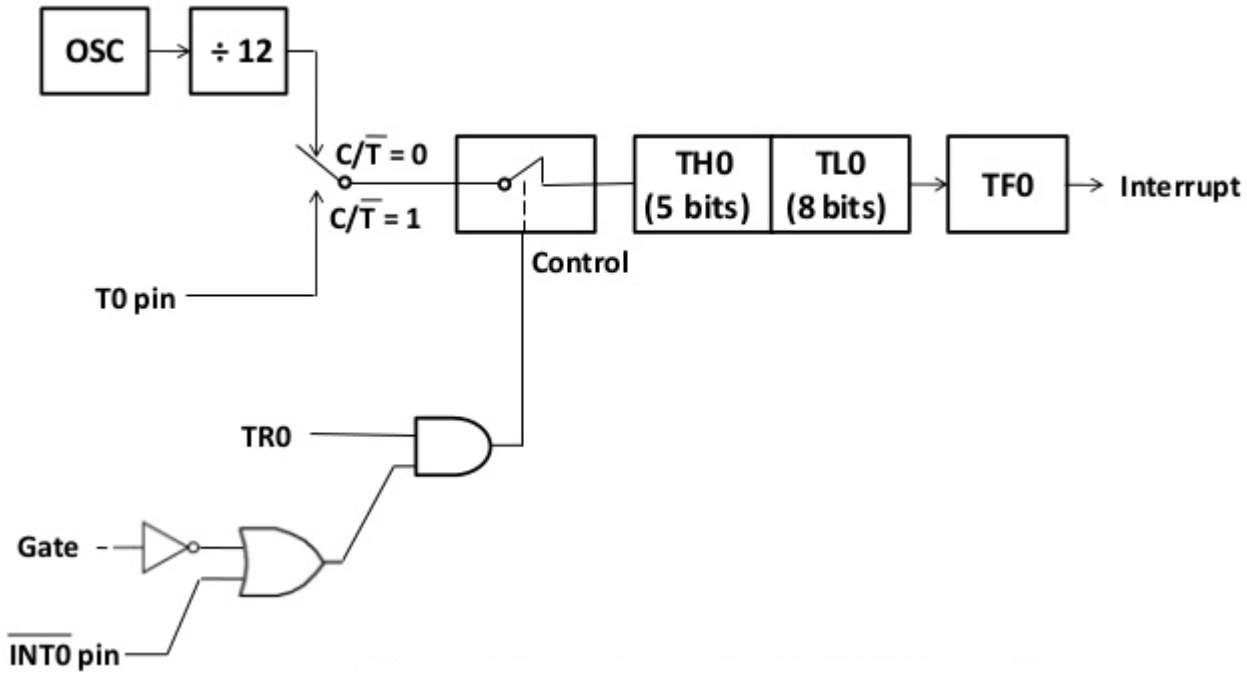
Timer 0

Mode0: 13bit counter.



Timer 0

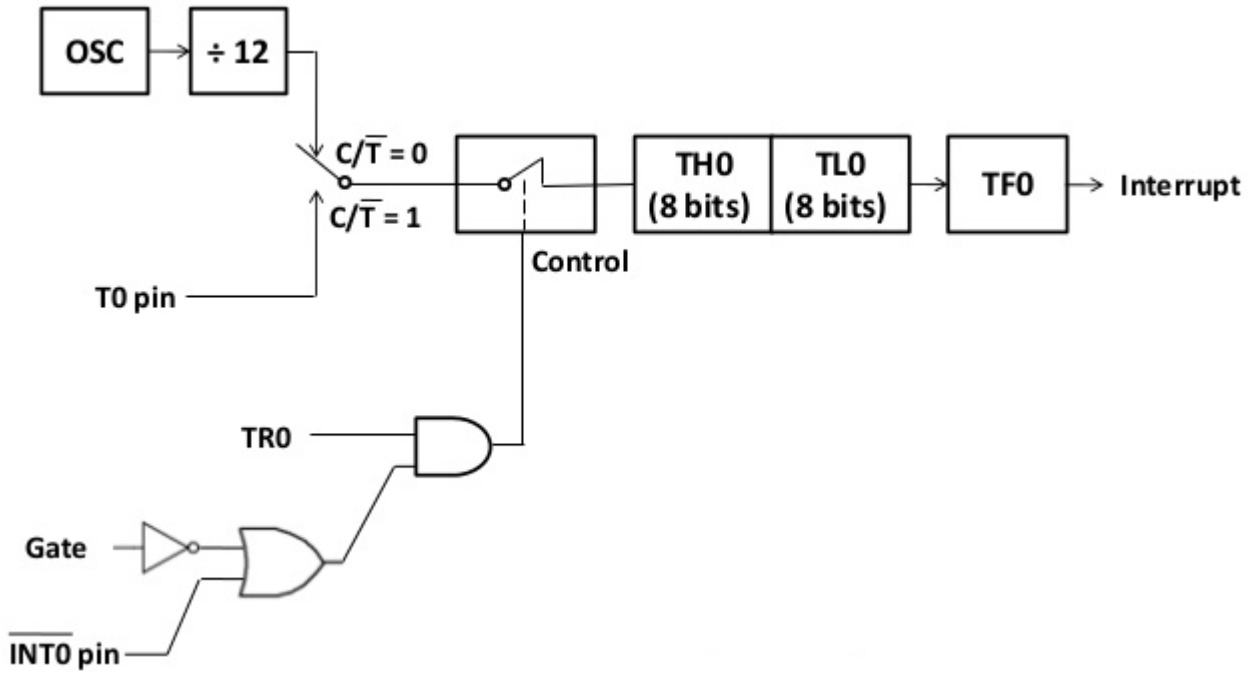
Mode0: 13bit counter. 1FFFH

TL0-tik 8 bit erabili eta TH0-tik 5 bit.

TF0 interrupt flag-a gainezkatzean.

Timer 0

Mode1: 16bit counter.



Timer 0

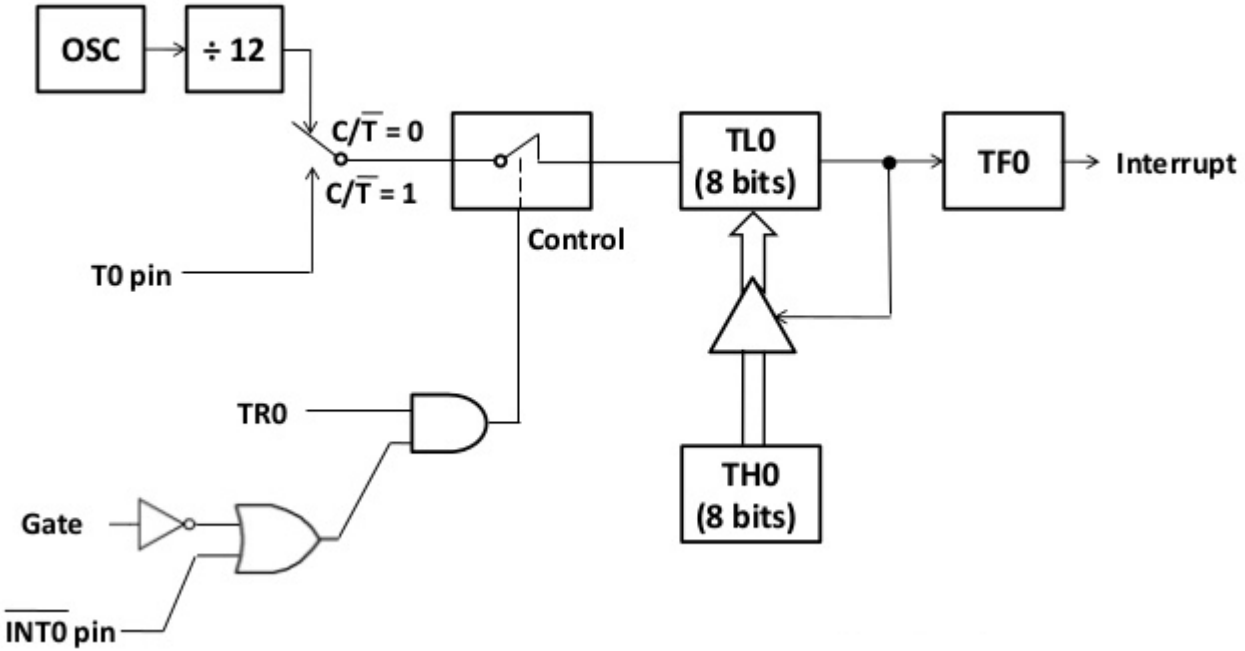
Mode1: 16bit counter. FFFFH

TL0-tik 8 bit erabili eta TH0-tik 8 bit.

TF0 interrupt flag-a gainezkatzean.

Timer 0

Mode2: 8bit counter with auto reload.



Timer 0

Mode2: 8bit counter with auto reload.

TL0-tik 8 bit erabili.

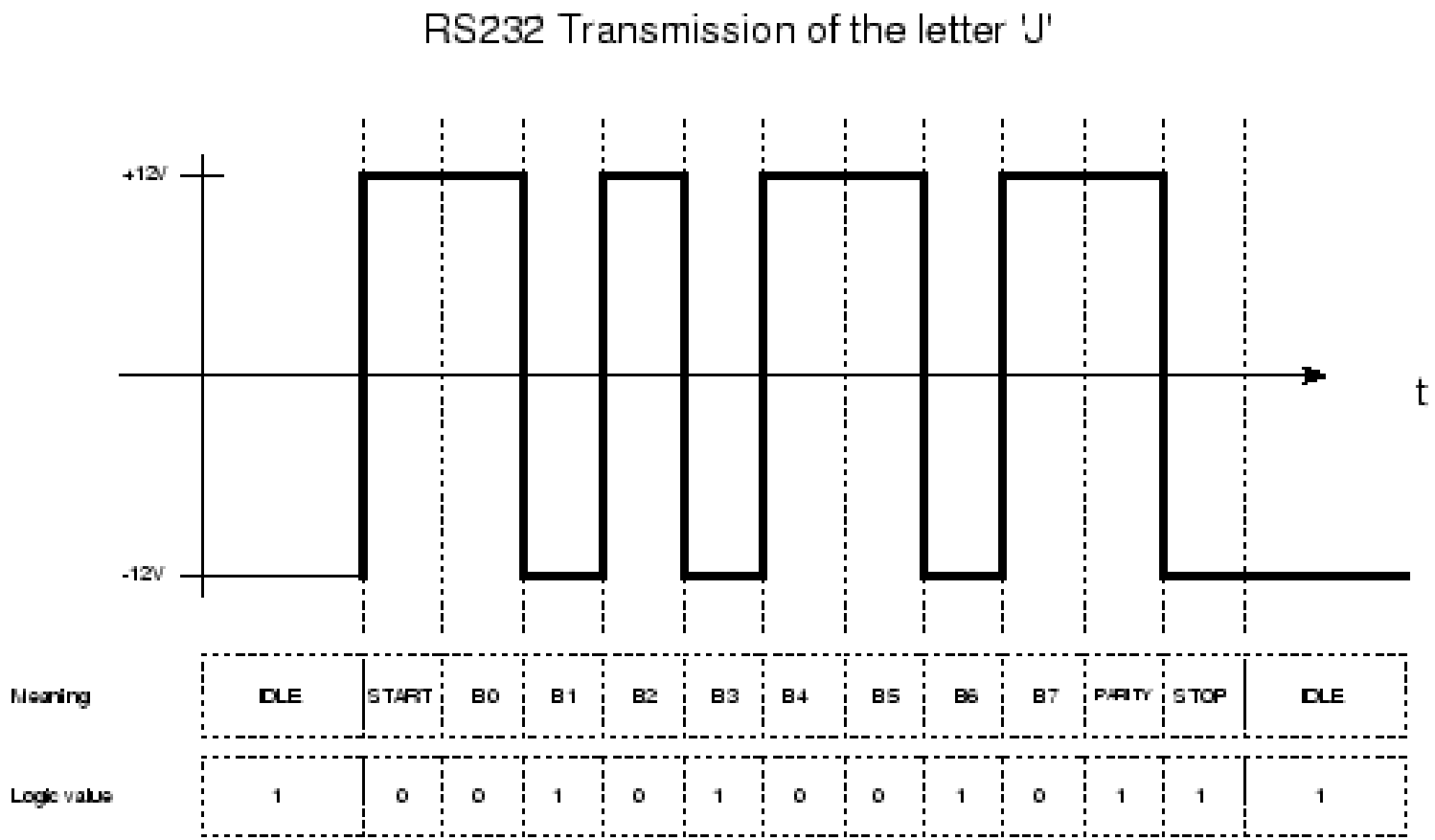
TF0 interrupt flag-a gainezkatzean.

TL0 = TH0 egin TF0 = ‘1’ denean.

Aplikazio tipikoa: serie komunikazioa.

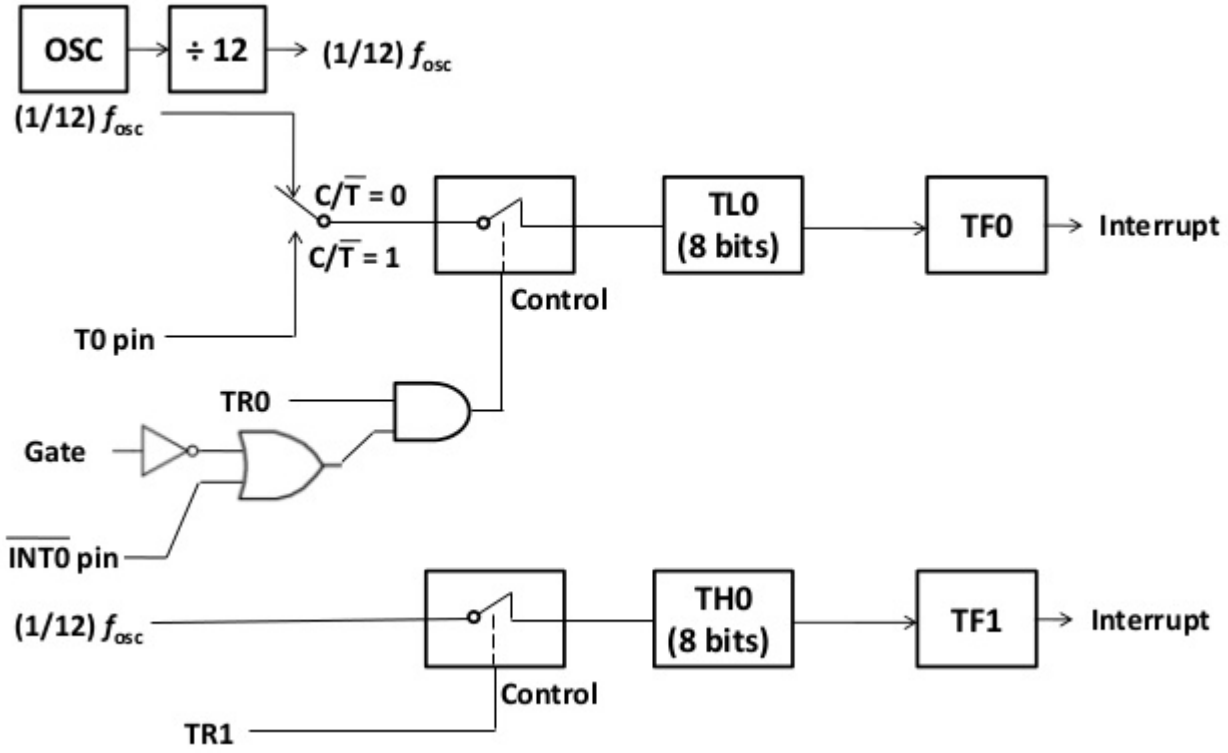
Timer 0

Mode2: 8bit counter with auto reload. RS232, baudrate.



Timer 0

Mode3: T0 two 8bit counters and T1 16bit counter.



Timer 0

Mode3: T0 two 8bit counters and T1 16bit counter.

TL0-tik 8 bit erabili, TH0-tik 8 bit erabili, T1-etik 16 bit erabili.

TF0 interrupt flag-a TL0 gainezkatzean.

TF1 interrupt flag-a TH0 gainezkatzean.

Timer 0

Inizializazioa!!! Zelan kalkulatzen da zenbatera hasieratu?

Timer 0

Inizializazioa!!! Zelan kalkulatzen da zenbatera hasieratu?

1.- fclk zein den ezagutu.

Timer 0

Inizializazioa!!! Zelan kalkulatzen da zenbatera hasieratu?

1.- fclk zein den ezagutu.

2.- ftimer = fclk/12, timer frekuentzia kalkulatu.

Timer 0

Inizializazioa!!! Zelan kalkulatzen da zenbatera hasieratu?

1.- fclk zein den ezagutu.

2.- ftimer = fclk/12, timer frekuentzia kalkulatu.

3.- Timer = 1/ftimer, timer periodoa kalkulatu.

Timer 0

Inizializazioa!!! Zelan kalkulatzen da zenbatera hasieratu?

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4.- Tobj/Ttimer = $(n)_{10}$

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5.- $(z)_{10}$ = (timer OV value + 1) - $(n)_{10}$

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6.- $(z)_{10}$ to $(YYXX)_{16}$, nun TH0 = YY eta TL0 = XX.

Timer 0

Espezifikatu M1 eta M0 modua, eta timerraren hasieraketa.

fclk	tobj	Mode0 (TH0, TL0)	Mode1 (TH0, TL0)	Mode2 (TH0)	Mode3 (TL0)
12MHz	6ms				
24MHz	34ms				
10MHz	50ms				
12Hz	1seg				
24MHz	30ms				
12MHz	555us				
12MHz	255us				

HELBURUAK

Timer bat zer den ezagutzea

80c552-aren Timer0-a zelan konfiguratzen den ikastea

eman ta zabal zazu

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Kudeaketa eta Informazio Sistemen Informatikaren Ingenieritzako Graduaren 3. maila

Irakaslea: Alain Sanchez
(alain.sanchez@ehu.eus)

2019-2020, 1. lauhilabetea