

78K0R/Kx3 Microcontroller Sample Program Operation Manual (Frequency Division Function (Timer Array Unit), C Source)

This software is for reference only and NEC Electronics does not guarantee its operation.
Thoroughly evaluate this software on your set prior to use.

ZUD-CC-07-0076-E
January, 2008

1st Product Solution Group, Multipurpose Microcomputer Systems Division,
Microcomputer Operations Unit
NEC Electronics Corporation

CONTENTS

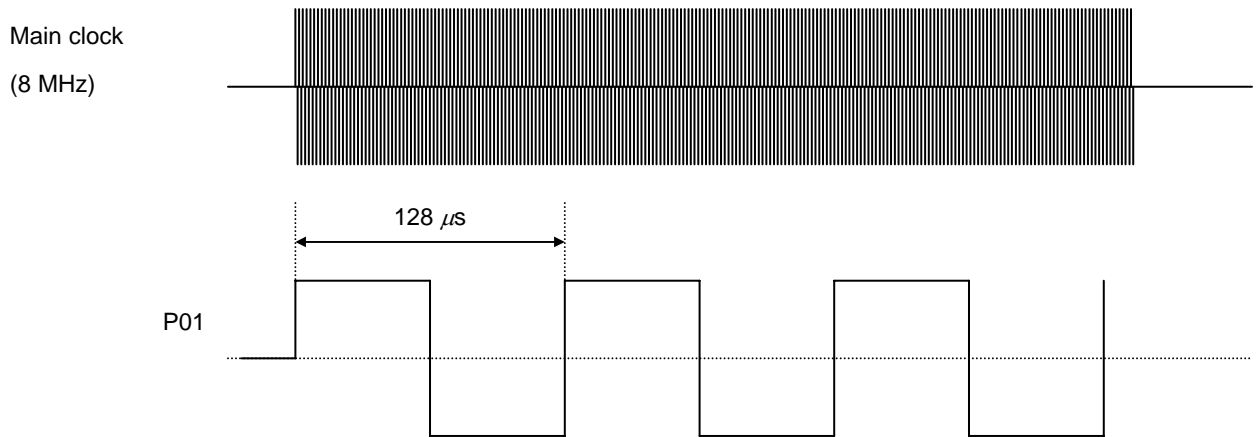
1. OVERVIEW.....	4
2. RESOURCES USED	5
3. SOFTWARE CONFIGURATION.....	6
4. FUNCTION EXPLANATIONS	7
5. FLOWCHARTS.....	9

1. OVERVIEW

This manual explains the sample program functions of the frequency division function for the 78K0R/Kx3 microcontroller.

In this sample program, timer channel 0 is used to operate the frequency division function.

P00 is used as an input pin and P01 as an output pin. The main clock (8 MHz) is input to P00, and a clock whose frequency is $1/2^{10}$ of the main clock is output from P01.



2. RESOURCES USED

Resource	Description	Remark
Main clock specification	Internal high-speed oscillator used (8 MHz (TYP.))	Supplied to CPU and peripheral hardware
	High-speed system clock used (20 MHz)	Oscillated by initial processing
Subclock	XT1 (32.768 kHz)	Oscillated by initial processing
Related hardware	Peripheral enable register 0 (PER0)	Controls the input clock of the timer array unit.
	Timer clock select register 0 (TPS0)	Operation clock: CK01, 8 MHz (0.125 μ s)
	Timer mode register 00 (TMR00)	Operation clock: CK01, 8 MHz (0.125 μ s)
	Timer data register 00 (TDR00)	Interval period: $8/2^{10}$ MHz (128 μ s)
	Timer output mode register 0 (TOM0)	Channel 0 toggle operation mode
	Timer output level register 0 (TOL0)	Channel 0 positive logic output (active high)
	Timer output register 0 (TO0)	Channel 0 timer output value is "0".
	Timer channel start register 0 (TS0)	
	Timer channel stop register 0 (TTO)	
	Port mode register (PM0)	
	Port register (P0)	
I/O	Input: TI00 (P00) Output: TO00 (P01)	
Interrupt	Timer channel 0	
Others	Not used	

3. SOFTWARE CONFIGURATION

Files

File Name	Processing Outline
K0R_def.h	Definition file
K0R_init.c	Initialization processing
K0R_ext.h	External declaration
K0R_main.c	Main processing
K0R_sfr_set.c	Frequency division function

4. FUNCTION EXPLANATIONS

[File name]

K0R_main.c

Function

Function Name	Processing Outline	Argument	Return Value
main	Frequency division function main processing	None	None

Function explanations

Function name	main
Processing	Frequency division function main processing
Argument	–
Return value	–
Description	Executes initialization processing and then starts frequency division function.
Remark	–

[File name]

K0R_sfr_set.c

Functions

Function Name	Processing Outline	Argument	Return Value
STM_FINI	Initializes frequency division function.	None	None
STM_FSTT	Starts frequency division function operation.	None	None
STM_FSTP	Stops frequency division function operation.	None	None

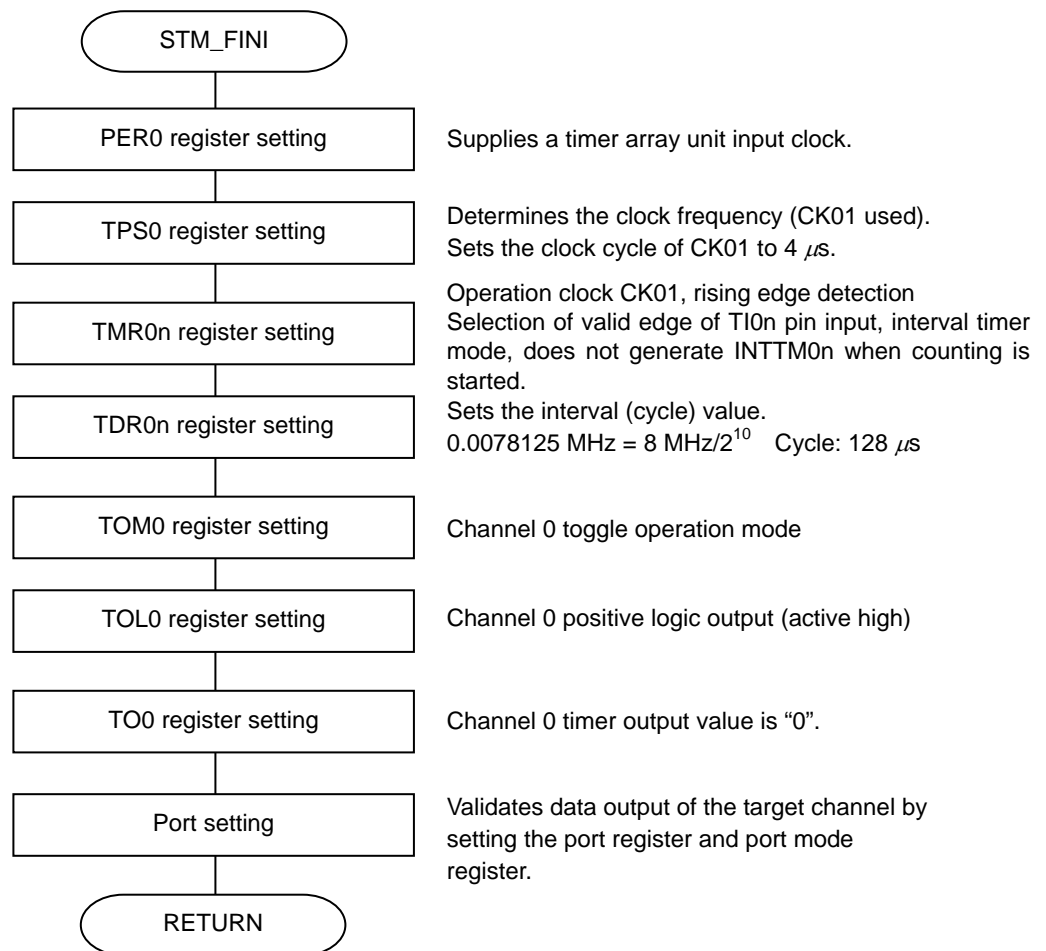
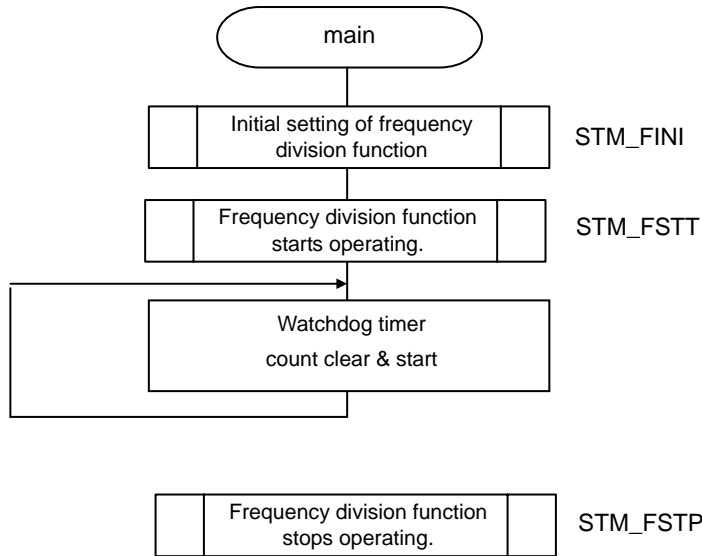
Function explanations

Function name	STM_FINI
Processing	Initializes frequency division function.
Argument	–
Return value	–
Description	<p>Initializes the timer array unit.</p> <ul style="list-style-type: none"> • Supplies a timer array unit input clock. <p>Initializes timer channel 0.</p> <ul style="list-style-type: none"> • Operation mode: Operation clock CK01, selection of the valid edge of the TI00 pin input, rising edge detection, interval timer mode • Output mode: Toggle operation mode • Sets the interval (cycle) value to 9 ($8/2^{10}$ MHz). <p>Sets the ports.</p> <ul style="list-style-type: none"> • Sets P00 (TI00) to the input mode. • Sets P01 (TO00) to the input mode.
Remark	–

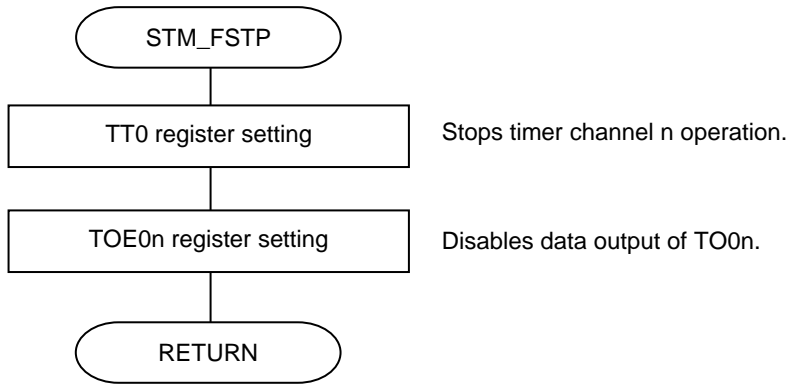
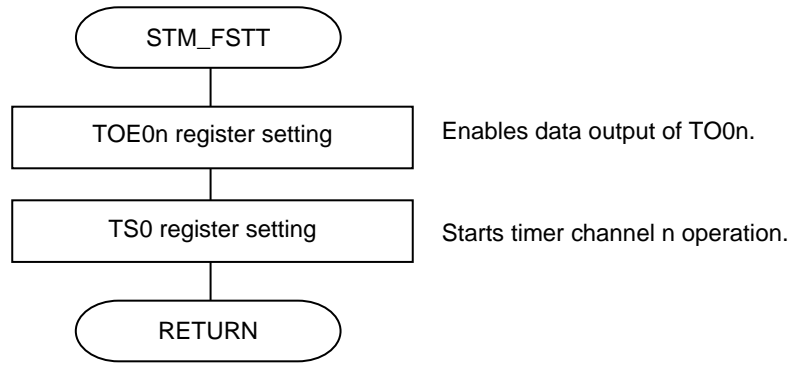
Function name	STM_FSTT
Processing	Starts frequency division function operation.
Argument	–
Return value	–
Description	<p>Starts timer channel 0 operation.</p> <ul style="list-style-type: none"> • Enables output. • Starts operation.
Remark	–

Function name	STM_FSTP
Processing	Stops frequency division function operation.
Argument	–
Return value	–
Description	<p>Stops timer channel 0 operation.</p> <ul style="list-style-type: none"> • Stops operation. • Disables output.
Remark	–

5. FLOWCHARTS



Remark n = 0 to 7 can be set.
 n = 0 for this sample program.



Remark n = 0 to 7 can be set.
n = 0 for this sample program.