



78K0R/Kx3 Microcontroller Sample Program Operation Manual

**(3-Wire Serial I/O Processing (Slave Transmission/Reception,
Continuous Transmission/Reception Mode) (Serial Array Unit), ASM Source)**

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1. OVERVIEW

This manual explains the sample program functions of 3-wire serial I/O processing (slave transmission/reception (continuous transmission/reception mode)) for the 78K0R/Kx3.

In this sample program, slave transmission/reception (continuous transmission/reception) operation in 3-wire serial I/O communication is performed.

The communication conditions are as follows.

- $f_{CLK} = 20 \text{ MHz}$
- CSI00 (unit 0, channel 0) is used.
- 8-bit data
- LSB first
- Transmit data: 3BH (10 bytes)
- Receive data: 10 bytes
- INTCSI00 buffer empty interrupt/transfer end interrupt servicing is used.

2. RESOURCES USED

Resource	Description	Remark
Main clock specification	Internal high-speed oscillator used (8 MHz (TYP.))	Always oscillated
	High-speed system clock used (20 MHz)	Oscillated by initial processing. Supplied to CPU and peripheral hardware
Subclock	XT1 (32.768 kHz)	Oscillated by initial processing
Related hardware	Peripheral enable register 0 (PER0)	
	Serial clock select register 0 (SPS0)	Clock used: CK00 ($1/2^4$ of main clock), 1.25 MHz (0.8 μ s)
	Serial mode register 00 (SMR00)	
	Serial communication operation setting register 00 (SCR00)	Transmission/reception, data length: 8 bits
	Serial data register 00 (SDR00)	Sets the transfer rate.
	Serial flag clear trigger register 00 (SIR00)	Used to clear an error flag.
	Serial channel start register 0 (SS0)	
	Serial channel stop register 0 (ST0)	
	Serial output register 0 (SO0)	
	Serial output enable register 0 (SOE0)	
	Port mode register 1 (PM1)	
	Port register 1 (P1)	
	SIO00 register (SIO00)	
I/O	Data input: SI00 (P11)	
	Data output: SO00 (P12)	
	Clock input: SCK00 (P10)	
Interrupt	Transfer end interrupt (INTCSI00) of CSI00	
Others		

3. SOFTWARE CONFIGURATION

Files

File Name	Processing Outline	Remark
K0R_vct.asm	Vector processing	
K0R_init.asm ^{Note}	Initialization processing	
K0R_main.asm	Main processing	
K0R_sfr_set.asm	3-wire serial I/O processing Slave transmission/reception (continuous transmission/reception mode)	

Note This file is commonly used by the sample programs.

4. FUNCTION EXPLANATIONS

[File name]

K0R_main.asm

Function

Function Name	Processing Outline	Argument	Return Value
MMA_STRT	Main routine	None	None

Function explanations

Function name	MMA_STRT
Processing	Main routine
Argument	–
Return value	–
Description	Executes initialization processing and then starts transmission operation.
Remark	–

[File name]

K0R_sfr_set.asm

Functions

Function Name	Processing Outline	Argument	Return Value
SER_STRCIN	Initializes 3-wire serial I/O.	None	None
SER_STRCRE	Resumes 3-wire serial I/O operation.	None	None
SER_STRCST	Starts 3-wire serial I/O operation.	None	None
SER_STRCBK	Aborts 3-wire serial I/O operation.	None	None
SER_STRCSP	Stops 3-wire serial I/O operation.	None	None
SER_STRCIT	INTCSI00 buffer empty interrupt/transfer end interrupt servicing	None	None

Function explanations

Function name	SER_STRCIN
Processing	Initializes 3-wire serial I/O.
Argument	–
Return value	–
Description	Executes initialization.
Remark	–

Function name	SER_STRCRE
Processing	Resumes 3-wire serial I/O operation.
Argument	–
Return value	–
Description	Performs transmission/reception operation resume processing.
Remark	–

Function name	SER_STRCST
Processing	Starts 3-wire serial I/O operation.
Argument	–
Return value	–
Description	Enables clock output.
Remark	–

Function name	SER_STRCBK
Processing	Aborts 3-wire serial I/O operation.
Argument	–
Return value	–
Description	Performs transmission/reception operation abort processing.
Remark	–

Function name	SER_STRCSP
Processing	Stops 3-wire serial I/O operation.
Argument	–
Return value	–
Description	Performs transmission/reception operation stop processing.
Remark	–

Function name	SER_STRCIT
Processing	3-wire serial I/O transmission/reception
Argument	–
Return value	–
Description	<p>INTCSI00 buffer empty interrupt/transfer end interrupt servicing</p> <p>3-wire serial I/O transmission/reception operates by a buffer empty interrupt during initialization, and by a transfer end interrupt when reception is completed.</p> <p>The operation is completed when the transfer end interrupt is generated.</p>
Remark	–

5. FLOWCHARTS









