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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# **78K0R/Kx3 Microcontroller Sample Program Operation Manual (UART Reception (Serial Array Unit), C Source)**

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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-07-0233-E  
January, 2008

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Microcomputer Operations Unit  
NEC Electronics Corporation

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## 1. OVERVIEW

This manual explains the sample program functions of UART (reception mode) for the 78K0R/Kx3.

In this sample program, UART (reception mode) operation is performed.

The communication conditions are as follows.

- $f_{CLK} = 20$  MHz
- UART0 (unit 0, channel 1) is used.
- 9,600 bps, 8-bit data, stop bit: 1, no parity
- LSB first
- Number of receive data: 10 bytes
- Receive data: (any)
- INTSR0 reception 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 $\mu$ s)
	Serial mode register 00 (SMR00)	
	Serial mode register 01 (SMR01)	
	Serial communication operation setting register 00 (SCR00)	Reception only, data length: 8 bits
	Serial data register 00 (SDR00)	Transfer rate: 9,600 bps
	Serial data register 00 (SDR01)	Transfer rate: 9,600 bps
	Serial output level register 0 (SOL0)	Sets output data level.
	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)	
I/O	Data input: RxD0 (P11)	
Interrupt	Reception end interrupt (INTSR0) of UART0	
Others	Not used	

### 3. SOFTWARE CONFIGURATION

#### Files

File Name	Processing Outline	Remark
K0R_def.h <sup>Note</sup>	Definition file	
K0R_init.c <sup>Note</sup>	Initialization processing	
K0R_ext.h	External declaration	
K0R_main.c	Main processing	
K0R_sfr_set.c	UART processing (reception mode)	

**Note** These files are commonly used by the sample programs.

## 4. FUNCTION EXPLANATIONS

[File name]

K0R\_main.c

Function

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

Function explanations

Function name	main
Processing	Main routine
Argument	–
Return value	–
Description	Executes initialization processing and then waits for receive data. Once reception has been completed, the operation is aborted and resumed after a specific time.
Remark	–

[File name]

K0R\_sfr\_set.c

Functions

Function Name	Processing Outline	Argument	Return Value
UAR_RVIN	Initializes UART.	None	None
UAR_RVBK	Aborts UART operation.	None	None
UAR_RVRE	Resumes UART operation.	None	None
UAR_RVSP	Stops UART operation.	None	None
UAR_RVIT	UART reception interrupt servicing	None	None

Function explanations

Function name	UAR_RVIN
Processing	Initializes UART.
Argument	–
Return value	–
Description	Executes initialization.
Remark	–

Function name	UAR_RVBK
Processing	Aborts UART operation.
Argument	–
Return value	–
Description	Transits to a communication operation stop state.
Remark	–

Function name	UAR_RVRE
Processing	Resumes UART operation.
Argument	–
Return value	–
Description	Resumes reception operation.
Remark	–

Function name	UAR_RVSP
Processing	Stops UART operation.
Argument	–
Return value	–
Description	Stops clock supply.
Remark	–

Function name	UAR_RVIT
Processing	UART reception interrupt servicing
Argument	–
Return value	–
Description	The start condition is a transfer end interrupt. An interrupt is generated when 1-byte data has been received. When 10 bytes of data have been received, a reception completion flag is set.
Remark	–

5. FLOWCHARTS







