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Renesas Electronics Corporation

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78K0R/Kx3 Microcontroller Sample Program Operation Manual (Master Transmission/Reception (Serial Interface IIC0), 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.

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1. OVERVIEW

This manual explains the sample program functions of a master operation by a single-master system with serial interface IIC0 for the 78K0R/Kx3.

In this sample program, a master operation by a single-master system is performed with serial interface IIC0.

The communication conditions are as follows.

- $f_{CLK} = 20 \text{ MHz}$
- Transmission format
 - Number of transmit data: 1
 - Number of receive data: 2
 - Transmit data: A9H
 - Receive data: Any
- Slave address: A0H
- INTIIC0 (Interrupt of end of IIC0 communication servicing) is used.
- The following communication format is assumed.

ST + ADR/W + DT + ST + ADR/R + DT + DT + SP

ST: Start condition

SP: Stop condition

ADR/W: Slave address + W

ADR/R: Slave address + R

DT: Data

When this sample program is actually used, the transmission format must conform to the specifications of the product that is communicating.

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	Slave address register 0 (SVA0)	Sets the slave address.
	IIC shift register 0 (IIC0)	
	Peripheral enable register 0 (PER0)	
	IIC function expansion register 0 (IICX0)	Selects the transfer clock.
	IIC clock select register 0 (IICCL0)	Selects the transfer clock.
	IIC flag register 0 (IICF0)	Sets IIC operation mode.
	IIC control register 0 (IICC0)	Selects the transfer clock.
	Port mode register 6 (PM6)	
	Port register 6 (P6)	
I/O	Clock output: SCL0 (P60)	
	Data I/O: SDA0 (P61)	
Interrupt	INTIIC0: Interrupt of end of IIC0 communication	
Others	Not used	

3. SOFTWARE CONFIGURATION

Files

File Name	Processing Outline	Remark
K0R_def.h ^{Note}	Definition file	
K0R_init.c ^{Note}	Initialization processing	
K0R_ext.h	External declaration	
K0R_main.c	Main processing	
K0R_sfr_set.c	Serial interface IIC0 (master operation by single-master system)	

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 starts communication operation.
Remark	–

[File name]

K0R_sfr_set.c

Functions

Function Name	Processing Outline	Argument	Return Value
IIC_SMMIN	Initializes serial interface IIC0 (master operation by single-master system).	None	None
IIC_SMMST	Communication processing of serial interface IIC0 (master operation by single-master system)	None	None
IIC_SMMSP	Communication end of serial interface IIC0 (master operation by single-master system)	None	None

Function explanations

Function name	IIC_SMMIN
Processing	Initializes serial interface IIC0 (master operation by single-master system).
Argument	–
Return value	–
Description	Executes initialization.
Remark	–

Function name	IIC_SMMST
Processing	Communication processing of serial interface IIC0 (master operation by single-master system)
Argument	–
Return value	–
Description	Executes communication processing.
Remark	–

Function name	IIC_SMMSP
Processing	Communication end of serial interface IIC0 (master operation by single-master system)
Argument	–
Return value	–
Description	Generates a stop condition.
Remark	–

5. FLOWCHARTS







