



78K0R/Kx3 Microcontroller

Sample Program

Operation Manual

(D/A Conversion (Real-Time Output Mode)

(D/A Converter), ASM Source)

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1. OVERVIEW

This manual explains the sample program functions of the D/A converter (real-time output mode) for the 78K0R/Kx3.

In this sample program, D/A conversion is performed, triggered by the interrupt request signal (INTTM04) of timer channel 4.

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) | Controls supplying and stopping of the input clock supply. |
| | D/A converter mode register (DAM) | Sets real-time output mode. |
| | 8-bit D/A conversion value setting register 0 (DACS0) | |
| | Port mode register 11 (PM11) | |
| | Port register 11 (P11) | |
| I/O | Analog output: ANO0 (P110) | |
| Interrupt | Timer channel 4 count end or capture end interrupt (INTTM04) | |
| Others | Not used | |

3. SOFTWARE CONFIGURATION

Files

| File Name | Processing Outline | Remark |
|-------------------------------------|---|--------|
| K0R_vct.asm | Vector processing | |
| K0R_init.asm ^{Note 1} | Initialization processing | |
| K0R_main.asm | Main processing | |
| K0R_sfr_set.asm | D/A converter processing (real-time output mode) | |
| K0R_timer_int.asm ^{Note 2} | Timer array unit (interval timer) | |

Notes 1. This file is commonly used by the sample programs.

2. This file generates an interrupt each time the interval timer counts 10 ms.

For details of this module, refer to Timer Array Unit Processing (Interval Timer/Square Wave Output).

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 performs D/A conversion processing. |
| Remark | – |

[File name]

K0R_sfr_set.asm

Functions

| Function Name | Processing Outline | Argument | Return Value |
|---------------|---|----------|--------------|
| SDA_RINI | Initializes D/A converter processing. | None | None |
| SDA_RSTP | Stops D/A converter processing operation. | None | None |

Function explanations

| | |
|---------------|---------------------------------------|
| Function name | SDA_RINI |
| Processing | Initializes D/A converter processing. |
| Argument | – |
| Return value | – |
| Description | Initializes the D/A converter. |
| Remark | – |

| | |
|---------------|---|
| Function name | SDA_RSTP |
| Processing | Stops D/A converter processing operation. |
| Argument | – |
| Return value | – |
| Description | Stops D/A conversion operation. |
| Remark | – |

5. FLOWCHARTS



