To our customers,

_____

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

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1. Abstract

This program processes bits.

2. Introduction

This program uses bit processing instructions (BTSTC, BTST, BNTST) and condition store instructions (STNZ, STZX) to perform its function. When it is executed, a value is output to PORT1, or PORT2 that corresponds to the bit content of a variable area (FLAG1).

<table>
<thead>
<tr>
<th>Subroutine name</th>
<th>ROM capacity : 32 bytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interrupt during execution</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Register/memory</th>
<th>Input</th>
<th>Output</th>
<th>Usage condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>R0</td>
<td>-</td>
<td>-</td>
<td>Unused</td>
</tr>
<tr>
<td>R1</td>
<td>-</td>
<td>-</td>
<td>Unused</td>
</tr>
<tr>
<td>R2</td>
<td>-</td>
<td>-</td>
<td>Unused</td>
</tr>
<tr>
<td>R3</td>
<td>-</td>
<td>-</td>
<td>Unused</td>
</tr>
<tr>
<td>A0</td>
<td>-</td>
<td>-</td>
<td>Unused</td>
</tr>
<tr>
<td>A1</td>
<td>-</td>
<td>-</td>
<td>Unused</td>
</tr>
</tbody>
</table>

Usage precautions
3. Flowchart

```
ENTER

Requested? (Request cleared)

Yes

Content of F_IOdata1

0

O_IOdata ← 0

1

Content of F_IOdata1

0

O_IOdata1 ← 0

1

Content of F_IOdata2

0

Content of F_IOdata3

0

Output "FFH" to PORT1

1

Output "55H" to PORT2

0

Output "AAH" to PORT2

EXIT

No

Requested?

(REquest cleared)

O_IOdata ← 1

1

Content of F_IOdata1

0

Content of F_IOdata2

1

Output "FFH" to PORT1

0

Content of F_IOdata3

1

Output "55H" to PORT2

1

Content of F_IOdata2

0

Content of F_IOdata3

0

Output "AAH" to PORT2

EXIT
```

4. The example of a reference program

;************************************************************************
; *  M16C General-purpose Programs  *
;  CPU : M16C  *
;  *  ;************************************************************************

VramTOP .EQU 000400H ; Declares start address of RAM
VromTOP .EQU 0F0000H ; Declares start address of ROM
PORT0 .EQU 003E0H
O_IOdata1 .BTEQU 0,PORT0
PORT1 .EQU 003E1H
PORT2 .EQU 003E4H

; .SECTION RAM,DATA
; .ORG VramTOP

FLAG1: .BLKB 1 ;
F_REQ .BTEQU 0,FLAG1 ; Output request flag
F_IOdata1 .BTEQU 1,FLAG1
F_IOdata2 .BTEQU 2,FLAG1
F_IOdata3 .BTEQU 3,FLAG1

; .SECTION PROGRAM, CODE
; .ORG VromTOP

BTSTC F_REQ ; Confirms and clears request
JEQ BITsetEXIT ; --> No request

BMC O_IOdata1 ; Checks memory content

BNTST F_IOdata2 ; Checks memory content
STNZ #0FFH,PORT1 ; Outputs “FF” if memory content = 1

BITsetEXIT:

; .END
;
5. Reference

SOFTWARE MANUAL
M16C/60 M16C/20 Series SOFTWARE MANUAL
(Acquire the most current version from Renesas web-site)

6. Web-site and contact for support

Renesas Web-site

http://www.renesas.com

Contact for Renesas technical support
Mail to: support_apl@renesas.com
## REVISION HISTORY

<table>
<thead>
<tr>
<th>Rev.</th>
<th>Date</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1.00</td>
<td>Jul 08, 2002</td>
<td>First edition issued</td>
</tr>
</tbody>
</table>
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