To our customers,

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

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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Note : Mitsubishi Electric will continue the business operations of high frequency & optical devices and power devices.

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

# M16C/80 Series

## Converting from ASCII to Hexadecimal Data

### 1.0 Abstract

This program converts ASCII code into hexadecimal data.

### 2.0 Introduction

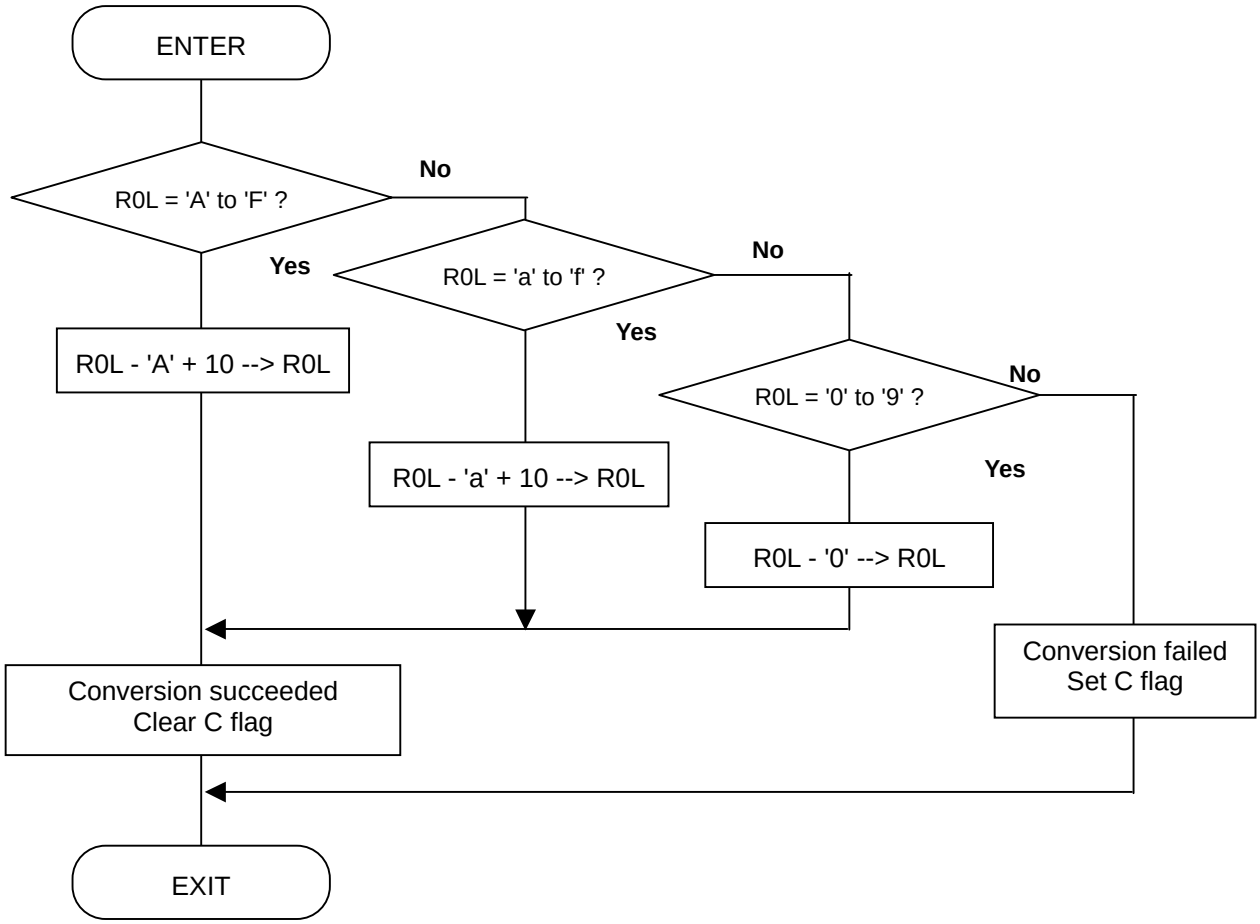
This program converts ASCII code into hexadecimal data. The ASCII code that can be converted are numbers from '0' to '9' and alphabets from 'a' to 'f' and 'A' to 'F'. Set ASCII code in R0L. The converted hexadecimal data is output to R0L. Conversion information is output to the C flag.

| C | Meaning |
|---|---|
| 0 | ASCII converted into hexadecimal |
| 1 | Not converted because inconvertible code was input |

| | |
|---|---|
| Subroutine name : ATOH | ROM capacity : 42 bytes |
| Interrupt during execution:Accepted | Number of stacks used : None |

| Register/memory | Input | Output | Usage condition |
|---|---|---|---|
| R0L | ASCII code | Hexadecimal | ← |
| R0H | - | - | Unused |
| R1 | - | - | Unused |
| R2 | - | - | Unused |
| R3 | - | - | Unused |
| A0 | - | - | Unused |
| A1 | - | - | Unused |
| C flag | - | Conversion information | ← |
| | | | |
| Usage precautions | | | |
| | | | |

## 3.0 Flowchart



## 4.0 Programming Code

```
;*****************************************************************
;       M16C Program Collection
;       CPU : M16C/80 series
;*****************************************************************
VromTOP     .EQU        0FE0000H            ; Declares start address of ROM
;===================================================================
;   Title: Converting ASCII code into hexadecimal
;   Contents of processing:
;                   The ASCII code input in R0L is converted into hexadecimal data, which is returned
;                   to R0L. The valid ASCII code are 0 to 9, A to F, and a to f. No conversion is per-
;                   formed if invalid code is input.
;   Procedure:  (1) Input ASCII code in R0L.
;               (2) Call the subroutine.
;               (3)  The converted hexadecimal data is loaded into R0L.
;   Result:     When converted into hexadecimal data, the C flag is cleared to 0.  If not converted
;               into hexadecimal data, i.e., if any code other than 0 to 9, A to F, or a to f was input,
;               the C flag is set to 1.
;   Input:      ------------------------------>      Output:
;   R0L(ASCII code)                         R0L(Hexadecimal)
;   R0H()                                   R0H(Unused)
;   R1()                                    R1(Unused)
;   R2()                                    R2(Unused)
;   R3()                                    R3(Unused)
;   A0()                                    A0(Unused)
;   A1()                                    A1(Unused)
;   Stack amount used: None
;===================================================================
            .SECTION    PROGRAM,CODE
            .ORG        VromTOP                 ; ROM area
ATOH:                                           ;
  CMP.B     #'a',R0L                            ; ‘a’ or above?
  JLTU      ATOH10                              ; --> no
  CMP.B     #'f',R0L                            ;  ‘f’ or below?
  JGTU      ATOH_ERR                            ; --> no (not converted)
  SUB.B     #(61H-10),R0L                       ; SUB.B  #'a'-10,R0L
  FCLR      C                                   ; Sets “converted” information
  RTS                                           ;
ATOH10:                                         ;
  CMP.B     #'A',R0L                            ; ‘A’ or above?
  JLTU      ATOH20                              ; --> no
  CMP.B     #'F',R0L                            ; ‘F’ or below?
  JGTU      ATOH_ERR                            ; --> no (not converted)
  SUB.B     #(41H-10),R0L                       ; SUB.B  #'A'-10,R0L
  FCLR      C                                   ; Sets “converted” information
  RTS                                           ;
ATOH20:                                         ;
  CMP.B     #'0',R0L                            ; ‘0’ or above?
  JLTU      ATOH_ERR                            ; --> no (not converted)
  CMP.B     #'9',R0L                            ; ‘9’ or below?
  JGTU      ATOH_ERR                            ; --> no (not converted)
  AND.B     #0FH,R0L                            ;
  FCLR      C                                   ; Sets “converted” information
  RTS                                           ;
ATOH_ERR:                                       ;
  FSET      C                                   ; Sets “not-converted” information
  RTS                                           ;
  ;                                             ;
            .END ;
```

## 5.0 Reference

**MCU Technical Information Homepage**

http://www.infomicom.maec.co.jp/indexe.htm
(or http://www.mdece.com/ , http://www.mitsubishichips.com/products/mcu/index.html or your local Web Site.)

**Technical Support**

E-mail: support@apl.maec.co.jp
(or your local support E-mail address. A private e-mail address should NOT be used.)

**Data Sheet**

M16C/80 group
(Use the latest version on the Homepage: http://www.infomicom.maec.co.jp/indexe.htm)

**User's Manual**

M16C/80 group
(Use the latest version on the Homepage: http://www.infomicom.maec.co.jp/indexe.htm)

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