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## M16C/64A Group, M16C/64C Group

Differences between M16C/64A and M16C/64C

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### Abstract

The following document describes differences between M16C/64A 100-pin version and M16C/64C 100-pin version. Refer to each device's hardware manual for details.

### Products

MCUs: M16C/64A Group, M16C/64C Group

With its improved functions, the M16C/64C Group MCU has pin assignments and peripheral functions that are compatible with the M16C/64A Group, making it simple to replace the M16C/64A Group with the M16C/64C Group.

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## 1. Differences

### 1.1 Differences in Functions

Table 1.1 lists Differences in Functions.

**Table 1.1 Differences in Functions**

Item		M16C/64A	M16C/64C
Timer/peripheral clock stop function		Not available	Available
Flash memory	Suspend function	Not available	Available

## 2. Detailed Comparison

### 2.1 Difference in Protection

Table 2.1 lists Difference in the Register Associated with the Protect Function.

**Table 2.1 Difference in the Register Associated with the Protect Function**

Symbol	Address		Bit	Differences	
	M16C/64A	M16C/64C		M16C/64A	M16C/64C
PRCR	000Ah	000Ah	0	Protect bit 0 Enable write access to registers CM0, CM1, CM2, PLC0, and PCLKR	Protect bit 0 Enable write access to registers CM0, CM1, CM2, PLC0, PCLKR, and PCLKSTP1

### 2.2 Differences in Clock Generator

Table 2.2 lists Difference in Clock Generator, and Table 2.3 lists Difference in the Register Associated with Clock Generator.

**Table 2.2 Difference in Clock Generator**

Item	M16C/64A	M16C/64C
Timer/peripheral clock stop function	Not available	Available

**Table 2.3 Difference in the Register Associated with Clock Generator**

Symbol	Address		Bit	Differences	
	M16C/64A	M16C/64C		M16C/64A	M16C/64C
PCLKSTP1	—	0016h	—	—	M16C/64C only

## 2.3 Differences in Timers

Table 2.4 lists Difference in Timers, and Table 2.5 lists Difference in the Register Associated with Timers.

**Table 2.4 Difference in Timers**

Item	M16C/64A	M16C/64C
Timer clock source selection	Not available (always f1)	f1, selectable from main clock

**Table 2.5 Difference in the Register Associated with Timers**

Symbol	Address		Bits	Differences	
	M16C/64A	M16C/64C		M16C/64A	M16C/64C
PCLKSTP1	—	0016h	—	—	M16C/64C only

## 2.4 Flash Memory Differences

Table 2.6 lists Difference in Flash Memory and 2.7 lists Difference in the Register Associated with Flash Memory.

**Table 2.6 Difference in Flash Memory**

Item	M16C/64A	M16C/64C
Suspend function	Not available	Available

**Table 2.7 Difference in the Register Associated with Flash Memory**

Symbol	Address		Bit	Differences	
	M16C/64A	M16C/64C		M16C/64A	M16C/64C
FMR3	—	0223h	—	—	M16C/64C only

## 2.5 Difference in Development Tool

Table 2.8 lists Difference in Development Tool.

**Table 2.8 Difference in Development Tool**

Tools	M16C/64A	M16C/64C
Renesas starter kits	R0K53650ES000BE	—

### 3. Reference Documents

M16C/64A Group User's Manual: Hardware Rev.2.00

M16C/64C Group User's Manual: Hardware Rev.1.00

The latest version can be downloaded from the Renesas Electronics website.

Technical Update/Technical News

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		Page	Summary
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## General Precautions in the Handling of MPU/MCU Products

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this manual, refer to the relevant sections of the manual. If the descriptions under General Precautions in the Handling of MPU/MCU Products and in the body of the manual differ from each other, the description in the body of the manual takes precedence.

### 1. Handling of Unused Pins

Handle unused pins in accord with the directions given under Handling of Unused Pins in the manual.

- The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

### 2. Processing at Power-on

The state of the product is undefined at the moment when power is supplied.

- The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.

In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.

In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

### 3. Prohibition of Access to Reserved Addresses

Access to reserved addresses is prohibited.

- The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

### 4. Clock Signals

After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.

- When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

### 5. Differences between Products

Before changing from one product to another, i.e. to one with a different part number, confirm that the change will not lead to problems.

- The characteristics of MPU/MCU in the same group but having different part numbers may differ because of the differences in internal memory capacity and layout pattern. When changing to products of different part numbers, implement a system-evaluation test for each of the products.



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