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瑞萨电子公司网址：<http://www.renesas.com>

2010年4月1日
瑞萨电子公司

【发行】瑞萨电子公司（<http://www.renesas.com>）

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M16C/64 群

定时器 A 操作（事件计数模式中二相脉冲信号处理、4 倍频处理运行）

1. 要点

在事件计数模式中处理二相脉冲信号，可以选择如表 1 中所列的各种功能。在表 1 中用符号“○”表示本篇资料所选的项目，图 1 是定时器的工作时序图。本篇资料的参考例程是定时器 A4 选择事件计数模式的例子。

2. 说明

本篇资料，适用于 M16C/64 群单片机。

本篇资料中的参考例程也适用于 M16C 族产品中与 M16C/64 群具有相同 SFR（特殊功能寄存器）定义的产品。

由于 M16C 系列产品中有些功能会有所改进，请参看用户手册。如果使用本篇资料中所列功能时，请仔细检查每一步操作。

3. 选定功能

表 1. 选定功能

设定项目	设定内容	
计数工作方式		重加载方式
	○	自由运行方式
二相脉冲处理（注）		普通处理
	○	4 倍频处理

注：定时器 A3 能选择两种运行方式。定时器 A2 只能选择为正常处理运行方式，定时器 A4 只能选择为 4 倍频处理运行方式。

4. 定时器 A 的操作

(1) 把计数开始标志位置为“1”，计数器开始对计数脉冲源的有效沿计数。

(2) 即使在发生下溢时，重加载寄存器的设定值也不被加载到计数器，计数器继续进行计数。同时，定时器 Ai 中断请求位置为“1”。

(3) 即使在发生上溢时，重加载寄存器的设定值也不被加载到计数器，计数器继续进行计数。同时，定时器 Ai 中断请求位置为“1”。

注意事项：

- 递增/递减计数的条件和有效沿如下所示：

表 2. 递增/递减计数的条件和有效沿

	TAiOUT 引脚的 输入信号	TAiIN 引脚的 输入信号		TAiOUT 引脚的 输入信号	TAiIN 引脚的 输入信号
递增计数	“高”电平	上升沿	递减计数	“高”电平	下降沿
	“低”电平	下降沿		“低”电平	上升沿
	上升沿	“低”电平		上升沿	“高”电平
	下降沿	“高”电平		下降沿	“低”电平

选择事件计数模式的定时器工作时序图如下所示：

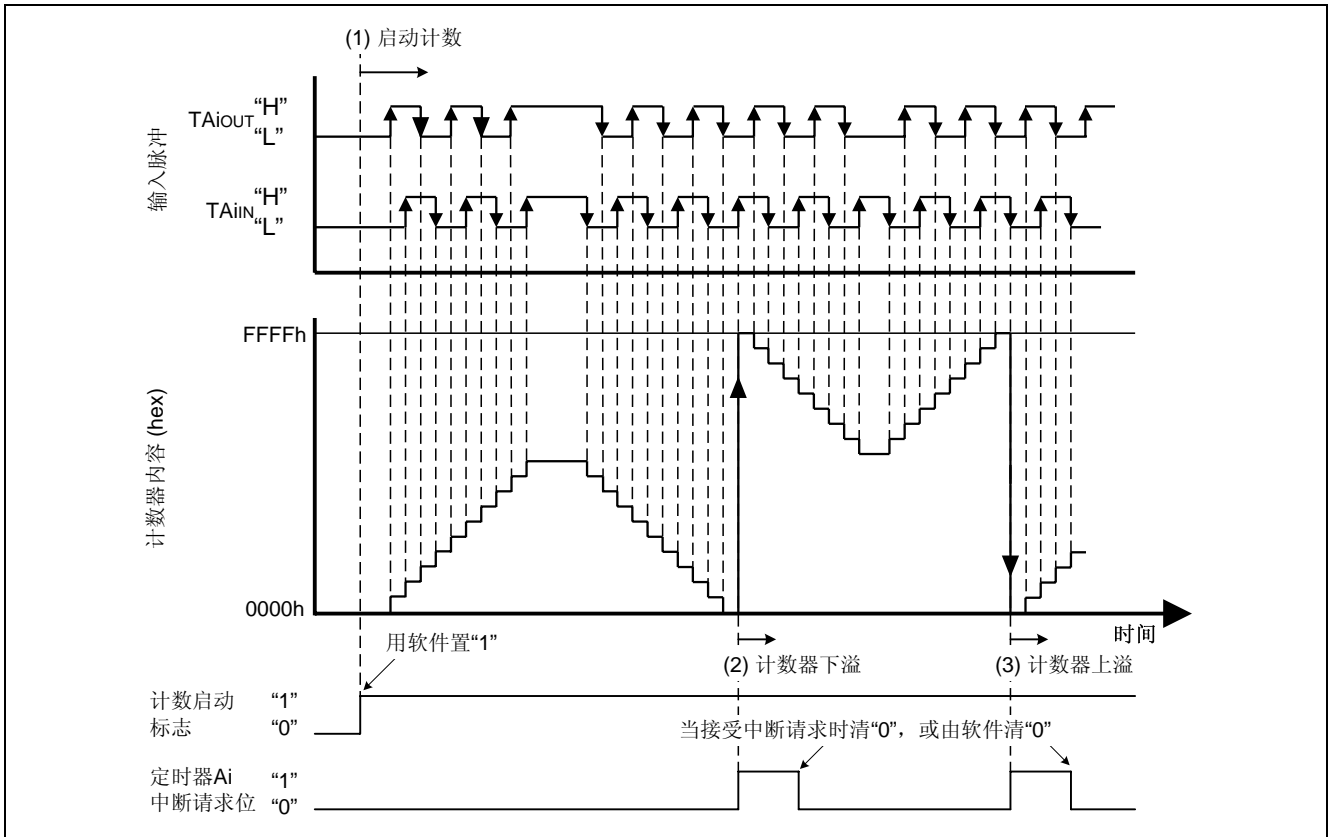
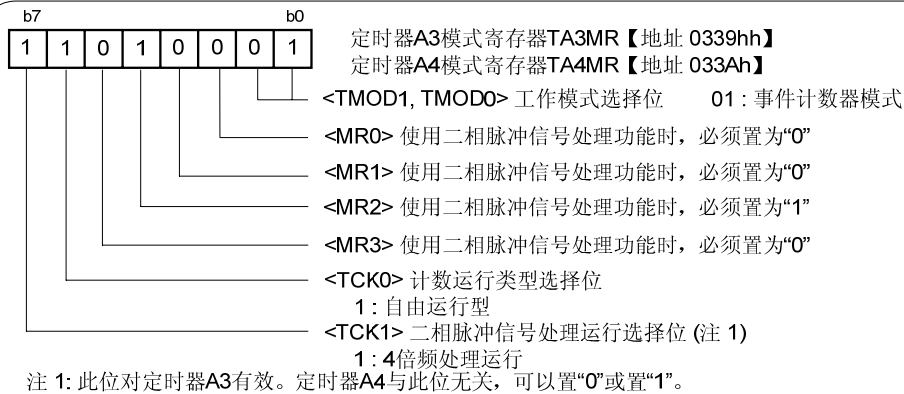


图 1. 选择事件计数模式中二相脉冲信号处理、4 倍频处理运行方式时的工作时序图

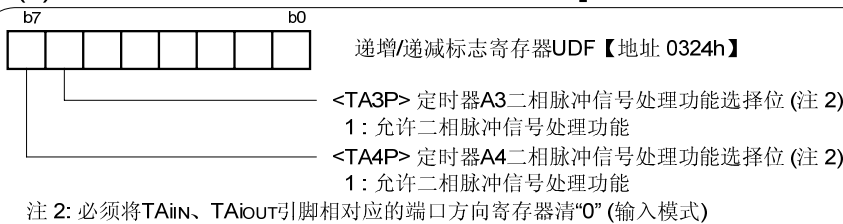
5. 寄存器设置

为了能够实现定义在“4. 定时器 A 的操作”的功能，下列寄存器必须按步骤顺序进行设置。对于每个寄存器的具体结构，请参考 M16C/64 群的硬件手册。

(1) 选择事件计数器模式和功能



(2) 二相脉冲信号处理功能选择



(3) 触发选择寄存器



(4) 设置定时器Ai寄存器 (i=3~4)



(5) 设置定时器计数开始标志位



开始计数



6. 参考文献

数据手册

M16C/64 群硬件手册

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