

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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MAEC TECHNICAL NEWS

No. M16C-86-0205

M16C/80, M32C/82 and M32C/83 Groups

Usage Precaution on Three-phase Motor Control Timers' Function

Classification

Corrections and supplementary
explanation of document

✓Notes

Knowhow

Others

Products Effected

M16C/80 Group

M32C/82 Group

M32C/83 Group

1. Usage precaution

While using the timers in Three-Phase Mode 1 for Three-Phase Motor Controls and near Timer B2's overflow, if a count value is written to Timer Ai-1 register ($i=1, 2, 4$), a different count value may be written to Timer Ai instead of the value you want to set it to. This will then cause a different output waveform.

This note only applies to the case wherein the timer, used in Three-Phase Motor Control function, is in Three-Phase Mode 1.

Figure 1 shows an example of output waveform when writing count value to Timer Ai-1 register near Timer B2' overflow and Figure 2 shows the write timing to Timer Ai-1 register when the output waveform is unusual.

2. Countermeasures

Do not write data to Timer Ai-1 register in the timing shown in Figure 2.

If there is a possibility that you may write data to Timer Ai-1 register as shown in Figure 2, read the value of Timer B2 register, verify that there is sufficient time until Timer B2 overflows, before doing an immediate write to Timer Ai-1 register.

In order to shorten the period from reading Timer B2 register to writing data to Timer Ai-1 register, ensure that no interrupt will be processed during this period.

If there is not enough time till Timer B2 overflows, only write to Timer Ai-1 register after Timer B2 overflowed.

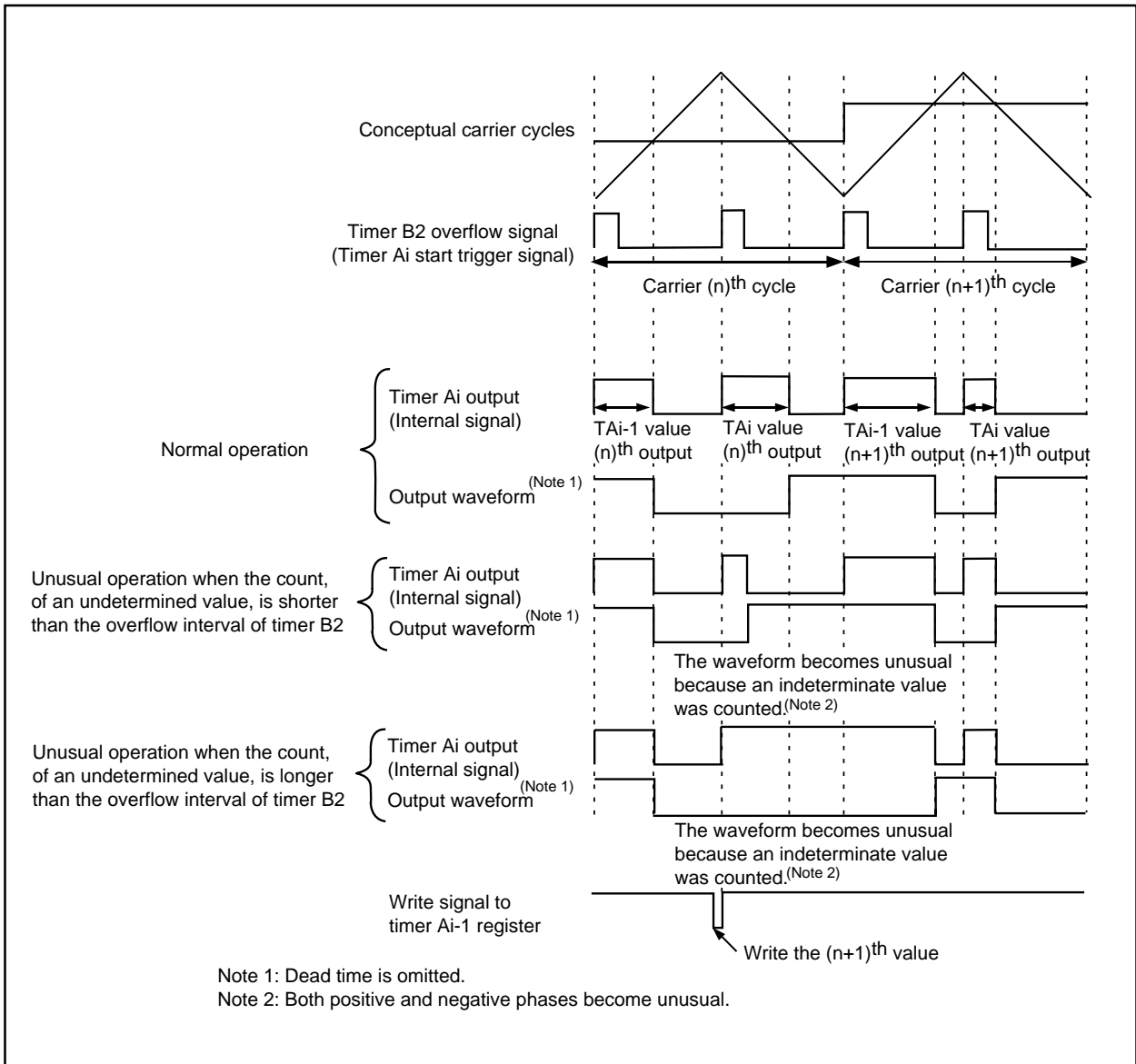


Figure 1. An example of output waveform when writing to Timer Ai-1 register near Timer B2's overflow

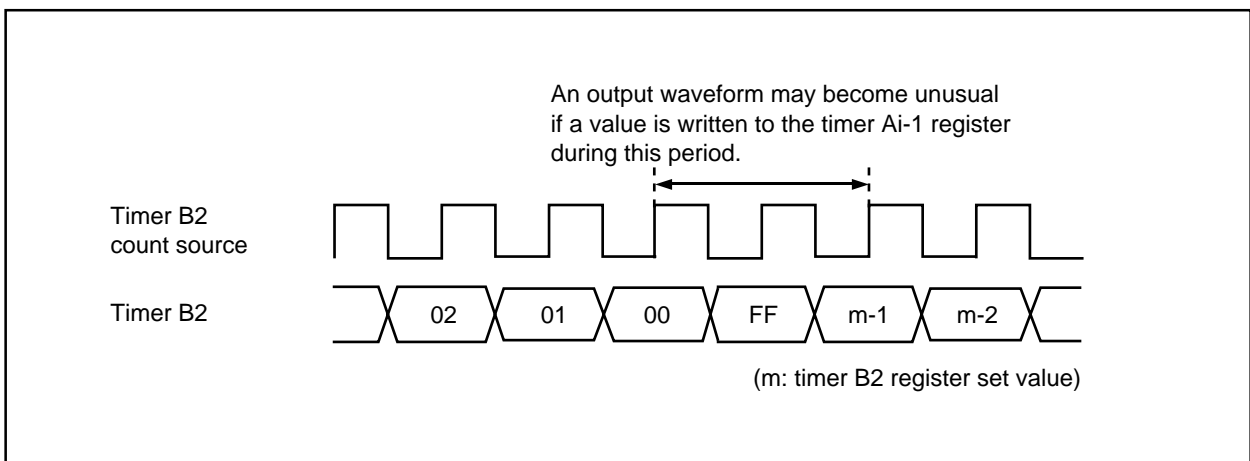


Figure 2. Write timing to Timer Ai-1 register that will cause an unusual output waveform