Advantech AE Technical Share Document

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Category	■FAQ □SOP	Related OS	N/A
Abstract	ADAM-6051, The response time in the frequency mode		
Keyword	DI, Frequency mode, Response time, gate time		
Related Product	ADAM-6051		

■ **Problem Description**:

Counter Input

- **Channels**   2
- **Mode**   Counter, Frequency
- **Keep/Discard Counter Value when Power-off**
- **Maximum Count**   4,294,967,295 (32-bit + 1-bit overflow)
- **Input Frequency**   Frequency Mode: 0.2 ~ 4500 Hz
                           Counter Mode: 0 ~ 4.5 kHz

The counter of ADAM-6051 can be set to the counter mode and the frequency mode.

When set in the frequency mode, ADAM-6051 can detect the pulse signal ranging from 0.2 to 4.5K Hz successfully.

However, it seems that there are some differences for the response time for low and high frequency detect.

What's the root cause for this phenomenon? Is it related to the gate time of the module?

■ **Brief Solution - Step by Step:**

The gate time of ADAM-6051 is 10ms, and there will be two different modes based on the counted number within 10ms.

For frequency <100 Hz

In this case, it means there will be not more than 1 count during each gate time period (10ms).
The frequency will be calculated based on the <u>1(count)/ cumulative period</u> to get the frequency, and the value will be updated right away.

For frequency >100 Hz

For this situation, there will be 2 counts or more than 2 counts in the 10ms gate time period. In order to prevent the wrong calculation caused by the noise or the interferences in the environment, the FW will continue to count the accumulation counter value for 1 second then update the frequency value.

If the user wants to set the gate time of the module on their own, we have another module **ADAM-4080** with 1 or 0.1 second built-in programmable gate time with 5 to 50K Hz frequency measurement range.