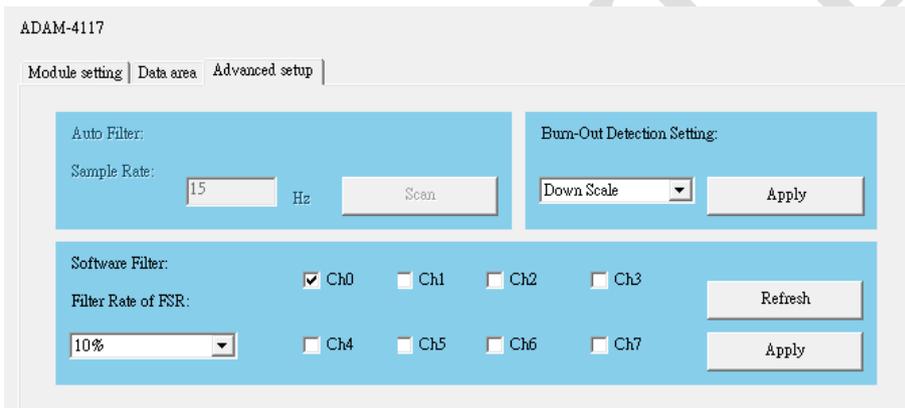


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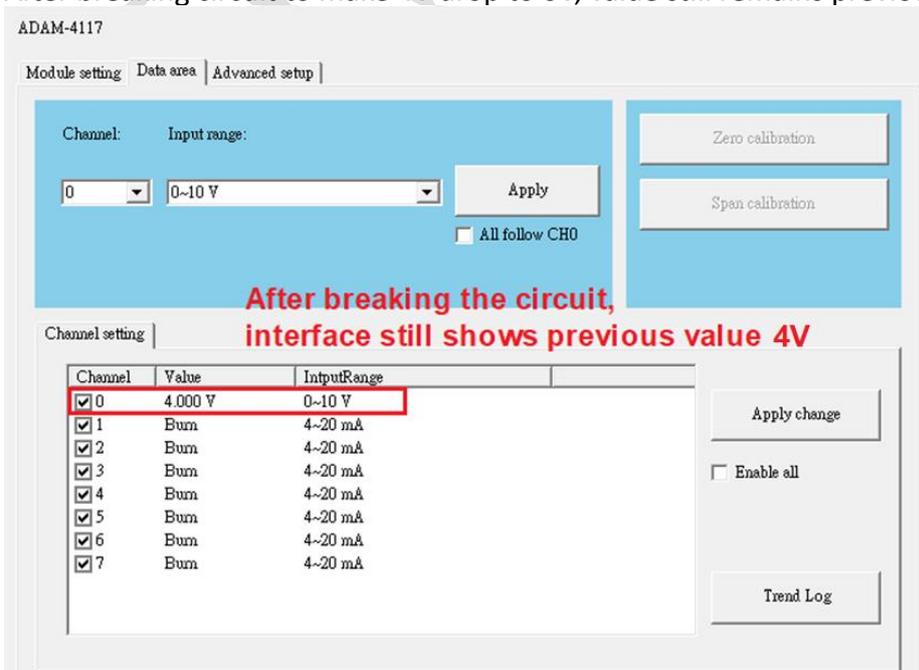
Date	2020/04/10	SR#	1-4164666603
Category	<input checked="" type="checkbox"/> FAQ <input type="checkbox"/> SOP	Related OS	N/A
Abstract	ADAM-41XX _How does Software Filter work?		
Keyword	ADAM-41XX, Software filter, AI, Input range		
Related Product	ADAM-4117-AE、ADAM-4117-B、ADAM-4118-AE、ADAM-4118-B、ADAM-4115-B		

■ **Problem Description:**

One of our customers from Russia said the AI value of ADAM-4117 wouldn't change when they set input range of one AI channel to 0~10V and connect it to a signal source which serves 4V. Yet, when they break the circuit which means they made the voltage abruptly drop to 0V, they found ADAM-4117 still showing 4V on .NET Utility. As pictures below,



After breaking circuit to make 4V drop to 0V, value still remains previous one (4V).

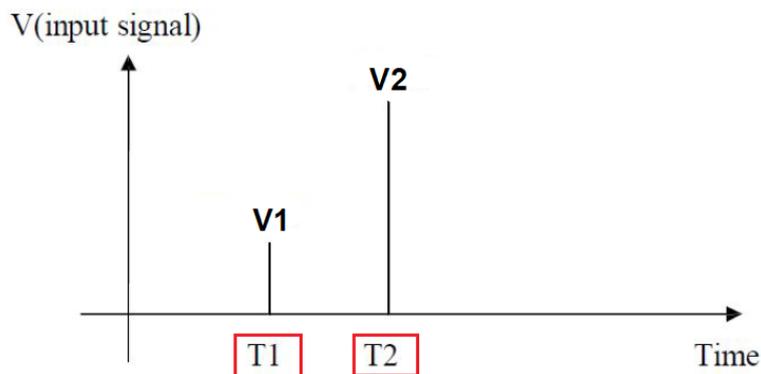


Therefore, this document will demonstrate how Software Filter works.

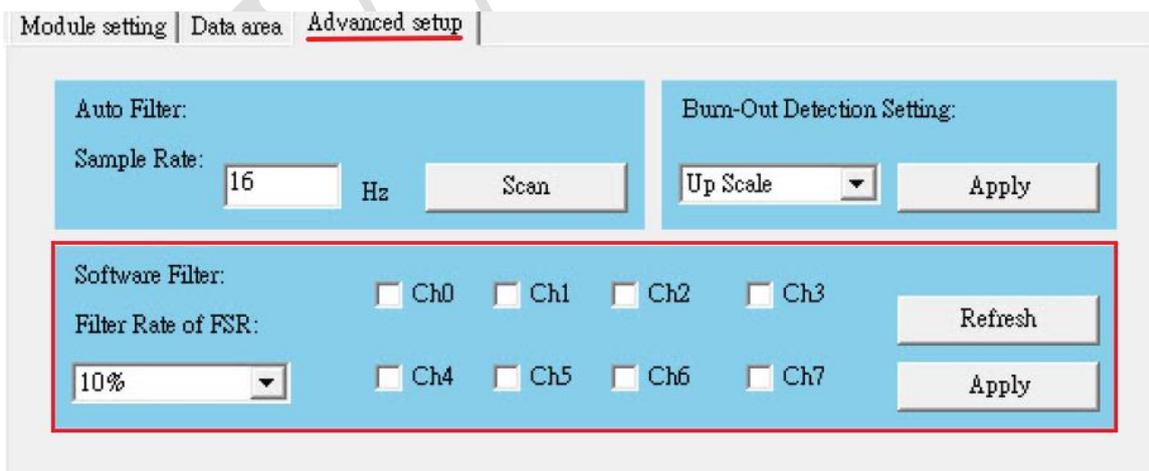
■ **Brief Solution - Step by Step:**

First, let's kick start with the reason why we aim to add up this function. While doing voltage/ current sensing, there are probabilities that noise or interference might pass through AI channels, so in case of getting interfered by these factors, we add up this function to prevent abrupt analog signal change from sensor side to make sure ADAM won't read wrong signal.

Basically, software filter compares two analog values on two adjacent timings (T1, T2), if the difference between these two values on adjacent timings (V2-V1) is bigger than how much users set, software filter will filter out the latest analog value (V2) and remain the original value (V1).



Second, let us take a look at the user interface on .NET Utility.



When users come to this function, there are two factors they have to set up in advance, one is the channel they wish to apply Software filter on, and another one is the Filter rate of FSR. Basically, Filter rate of FSR decides the sensing analog value this function will filter out and it depends on the input range users set.

An instance to manifest this function, if users set the input range of AI channel 1 into +/-10V and , then enable ch1 on Software filter and set Filter rate of FSR to 10%, then it means if the

signal coming from sensor have an abrupt change more than $\{+10-(-10V)\} * 10\% = 2V$, ADAM will ignore this abrupt signal.

So, this customer from Russia, they set the input range as 0~10V but didn't notice the Filter rate of FSR had been set to 10%, and when they broke the circuit which was serving 4V, the voltage abruptly changed from 4V to 0V, and Software filter reacted to it. So, customer kept reading 4V even when they broke the circuit.

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