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LCIC-WIM-FILTERS-SIMULATOR

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Introduction

Using the LCIC-WIM-FILTERS-SIMULATOR application will facilitate the process of adjusting your filtering parameters – that is, both doing it easier and faster, and reaching better results.

The idea is simple – run physically your object on the scale just **once**, transfer board's readings to your PC and **simulate** on your PC various sets of the three filtering parameters (Filter1, Filter2 & Decimator) according to your manual selection. Finally, when you found a set of these three filtering parameters that gives you a satisfactory result, you may instruct the application to save these filtering parameters in the board.

The LCIC-WIM-FILTERS-SIMULATOR application is supported only by these board versions:

Wim mode: V3.121 and up.

CatchWeigher: V4.274 and up.

CheckWeigher: V5.22 and up.

Installation note

In the "Select Installation Folder" (2nd step of the Setup Wizard) the wizard suggests a folder such as

"C:**Program Files (x86)**\IMS\LCIC-WIM-FILTERS-SIMULATOR-V1.00\".

For Windows versions later than XP (e.g., Vista, 7, 8, 10) specify a **non-system** folder. For example, just omit the **bold text** above ("**Program Files (x86)**\").

That way, the Installation Folder will be:

"C:\IMS\LCIC-WIM-FILTERS-SIMULATOR-V1.00\".

Activation

*Please note: The screenshots below were produced under Windows 7.
They may look different under another operating system.*

Usually¹ upon application activation you'll get the following box:

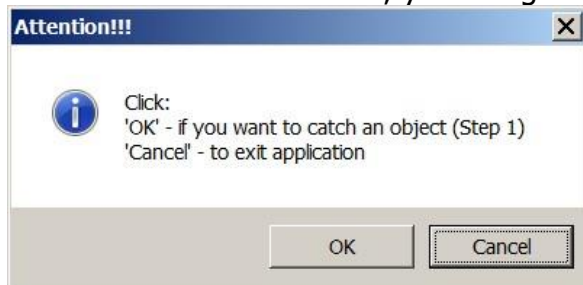


Normally you'll need to catch (capture) an object (Step 1), afterwards the application will take you automatically to inquiring into it (Step 2), so answer 'Yes'. However, if you:

- * already caught an object in the past (5 minutes or a day ago) and have not completed its inquiry, or
- * want to inquire into a data file passed to you from another PC (maybe you don't have at all an LCIC-WIM board on your PC) – then you have the option to inquire into the data easily. That is, just answer 'No' and use your data, going directly to Step 2.

¹ Indeed, this box is only 'usually':

In case you never captured an object in the past (typical in the first activation), or the data file was erased, you will get this box:



Step 1

The display looks similar to that of LCIC-WIM-Monitor.

1.1 Set the 'Auto Stop After' parameter to some integral value between 1 to 10 second. This will limit the capturing time (in step 1.4) even if you do not click 'Stop'.

1.2 Specify the 'Threshold' parameter: Set 'Threshold' to such a value that a higher weight means for sure that an object starts passing on the scale – that is, the scale is certainly not empty.

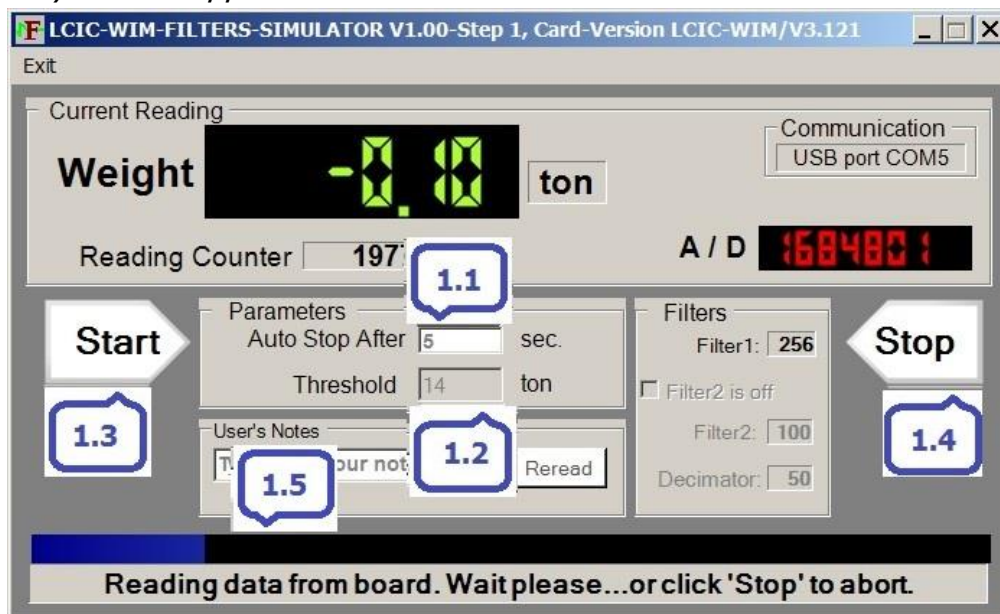
Note: This 'Threshold' is just for the LCIC-WIM-FILTERS-SIMULATOR application, it is **independent** of board's 'Threshold' parameter set by the LCIC-WIM-SETTINGS application. (Indeed, finally you may set **board's** 'Threshold' by the LCIC-WIM-SETTINGS application, according to your conclusions.)

1.3 Before the object reaches the scale, click 'Start'.

1.4 After the object crossed the scale, wait until the 'Auto Stop' works, or stop the sampling manually by clicking 'Stop'.

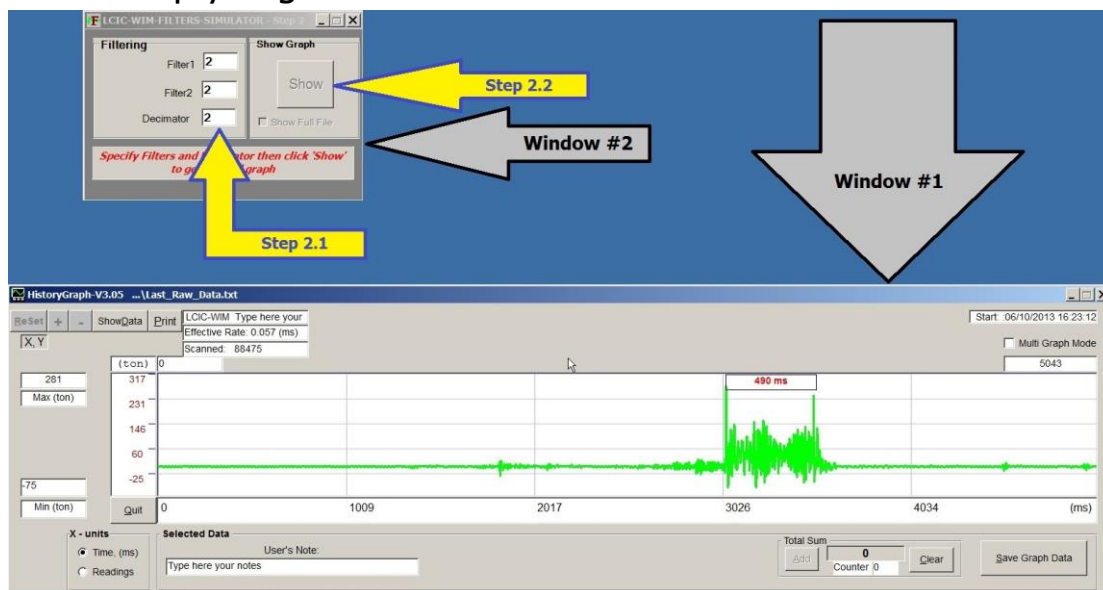
1.5 Wait while the application reads the data from the board.
This process may take one or two minutes, after which you reach automatically Step 2.

*The numbers 1.1 → 1.5 in the screenshot below are just references for the steps above, they **do not** appear in the screen itself.*



Step 2

In this step you get two windows:



Window #1: A graph of the 'raw' (not filtered) data received from the board.

Window #2: A dialog window in which you specify the filtering values you like to examine.

2.1 In Window #2:

Specify the 'triplet' filtering values (Filter1, Filter2 & Decimator) you would like to examine, for example:

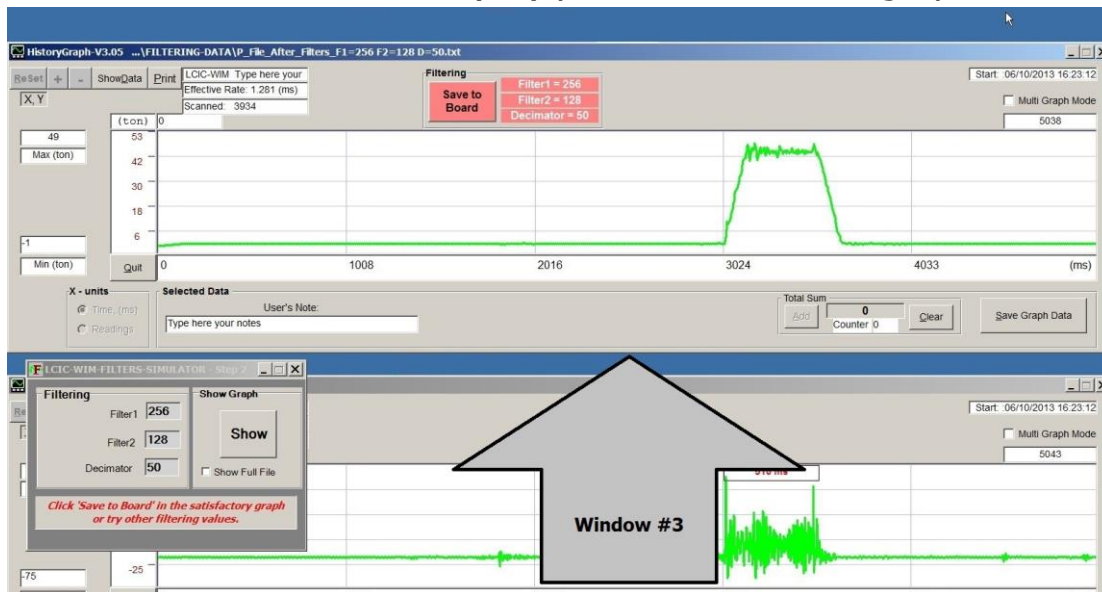


Note the value of the 'Effective Time on Scale' (~362 ms in the example) reported on the bottom of the window. This value depends on your selection of Filter2 & Decimator. Actually, the 'Effective Time on Scale' is the width of trapeze's roof in the graph at step 2.3. Obviously, with larger 'Effective Time on Scale' the result might be better. It's important that you learn your system and find out what is the minimum 'Effective Time on Scale' that gives you a satisfactory result.

Refer also to FAQ #8.

2.2 Click the 'Show' button.

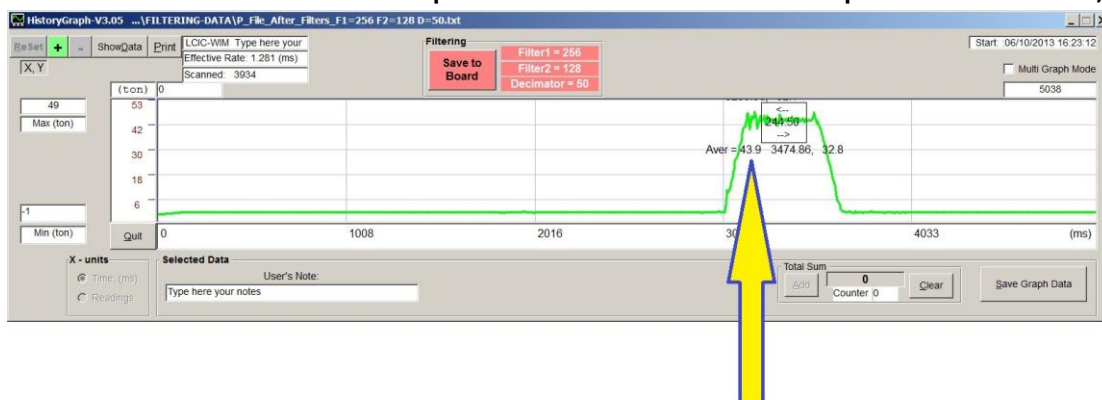
2.3 Watch the new window (#3) produced – filtered graph:



2.4 Repeat steps 2.1-2.3 until you are satisfied with the graph.

In order to examine result's quality:

- * Run an object whose weight is known (44 ton in the example below).
- * In the filtered graph (Window #3), double-click on trapeze's roof and adjust the size of the accepted frame to the stable part of the roof, like this:



The filtered weight is specified under the new frame:
"Aver = xxx" (43.9 ton in the example shown above,
pointed out by the yellow arrow).

- * Compare xxx with the known weight of the object. In our example, the deviation of the **calculated** weight (43.9 ton) from the **known** weight (44 ton) is -0.23%. If it satisfies your needs, proceed to step 2.5. Otherwise, repeat steps 2.1-2.3 reducing Filter2 and/or Decimator.

- 2.5 Click 'Save to Board' in the satisfactory graph. The application will automatically save the proper filtering values into the board.
- 2.6 Click 'OK' to finish and exit application.

FAQ (Frequently Asked Questions)

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1. Inquiring into a previous sampling

Q. Yesterday I sampled a truck, selected my preferred filtering values and saved them into the board. However, I would like to try finding better values. Should I sample a truck again? Maybe there is a shortcut to continue without having to physically run a truck again?

A. Yes. Not only that you *may* use a shortcut – it is also the *correct* way, as you use exactly the same data as you did yesterday. Run the LCIC-WIM-FILTERS-SIMULATOR application and select 'No', going directly to Step 2, as if you just sampled yesterday's truck.

2. Issues about reading data from the board

2.1 Reading board's data is very slow

Q. Although my 'Auto Stop After' parameter is only 5 seconds, reading the data from the board takes 4 **minutes**! Is there a way to make it faster?

A. Yes. This is involved in an adjustment which is PC-dependent, hence can't be preset ahead at factory. In Step 1 key Ctrl+B and try to increase the 'Block Size' parameter. Its default value is 100, but if your PC can stand higher 'Block Size' values (it usually does), it will significantly reduce the reading time. By 'trial and error' find a higher value that your PC can stand. (For example, with 'Block Size' = 1000 the reading time for 5 seconds may take less than one minute.) After changing 'Block Size', click 'OK' to validate the new value, and then click 'Reread'. In case of read error (as in FAQ #2.3), try a higher value for the 'Delay After Line' parameter instead of its 0 default value (say, 1 or 2). If it does not help, reduce the 'Block Size' parameter. Note that this adjustment is needed only once – the application 'remembers' your setting for the next activations.

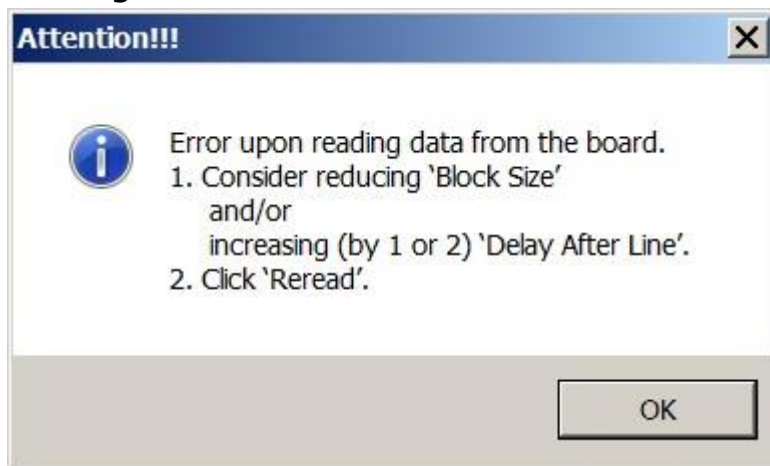
2.2 Are the data lost after closing application?

Q. By mistake, I closed the application. Are the data read from the board still available, or should I run the object again?

A. As long as the LCIC-WIM board was not restarted, the data are still available. Just run the application again, select 'Yes' as if you want to catch an object (so that the application will 'talk' with the board) and click 'Reread'.

2.3 Message: "Error upon reading data from the board"

Q. While the application was reading data from the board, suddenly appeared this message:



When I should change 'Block Size' and/or 'Delay After Line', and when I should just click 'Reread' without changing any parameter?

A. If the problem was a temporary electronic noise, then just 'Reread' will solve it. But, if the problem persists, change the parameter(s) as recommended in the message box, then click 'Reread'.

2.4 Unreasonable spikes on the graph of the raw data

Q. The graph of the raw data shows unreasonable spikes which make me suspect that there was error while reading data, although the application did not report any problem. Is it possible?

A. Yes. Indeed, the application tries to detect whether there were problems while reading board's data, but the detection has no 100% success. In your case, respond as in FAQ #2.3.

2.5 How to verify the data read from the board?

Q. In the past I had communication problems while reading the data from the board. Indeed, after reducing the 'Block Size' parameter, the application stopped reporting errors, and the graph of the raw data looks fine. However, I'll feel better if I read it again and get an identical result. Is it possible?

A. Yes. Follow these steps:

1. Refer to the file "Last_Raw_Data.txt", located on your PC in the same folder where the application was installed. For example:
C:\IMS\LCIC-WIM-FILTERS-SIMULATOR-V1.00.
2. Rename this file to, say, ttt.txt.
3. If you are in Step 2, type Ctrl+W, returning to Step 1.
4. Click 'Reread'.
5. After the graph is displayed, use a compare utility to compare ttt.txt with the new "Last_Raw_Data.txt" file just produced. The files should be identical.
(In V1.00 the head and the tail of the files might be different, but the data in between should be identical.)

3. Crossing the scale takes more than 10 seconds

Q. The maximum valid value for the 'Auto Stop After' parameter is 10 seconds. But due to our truck's length and speed limitations, crossing the scale takes 15 seconds. What should I do?

A. It's not a problem. The application does not require a **full** truck passing on the scale. All that the application needs is at least **one axle** that crosses the scale, so a 10 seconds interval is absolutely enough.

4. Remote analysis of a sampling

4.1 Emailing field's findings

Q. My workers in the field sampled a truck and ask for my help to optimize their filtering parameters. However, my office is 200 miles away from the field. Can I inquire into their sampling if they send me its data by email?

A. Yes. The data gathered during the sampling exists in the file "Last_Raw_Data.txt" located on your field's PC in the same folder where the application was installed, for example:

C:\IMS\LCIC-WIM-FILTERS-SIMULATOR-V1.00.

Ask your workers to email you this file.

4.2 Integrating field's file in my PC

Q. That's fine. They did. But what should I do with this file?

A. First, you should make sure that the LCIC-WIM-FILTERS-SIMULATOR application is installed on your PC. Test proper installation by running the application. If you get one of the two message boxes shown on page 2, it's OK - click 'Cancel' to exit the application. Second, put field's file on your PC in the same folder as described in '**A.**' of FAQ 4.1. Finally, run the LCIC-WIM-FILTERS-SIMULATOR application again and select 'No'. This will take you directly to Step 2, as if you just sampled your field's truck. Now continue according to the usual instructions.

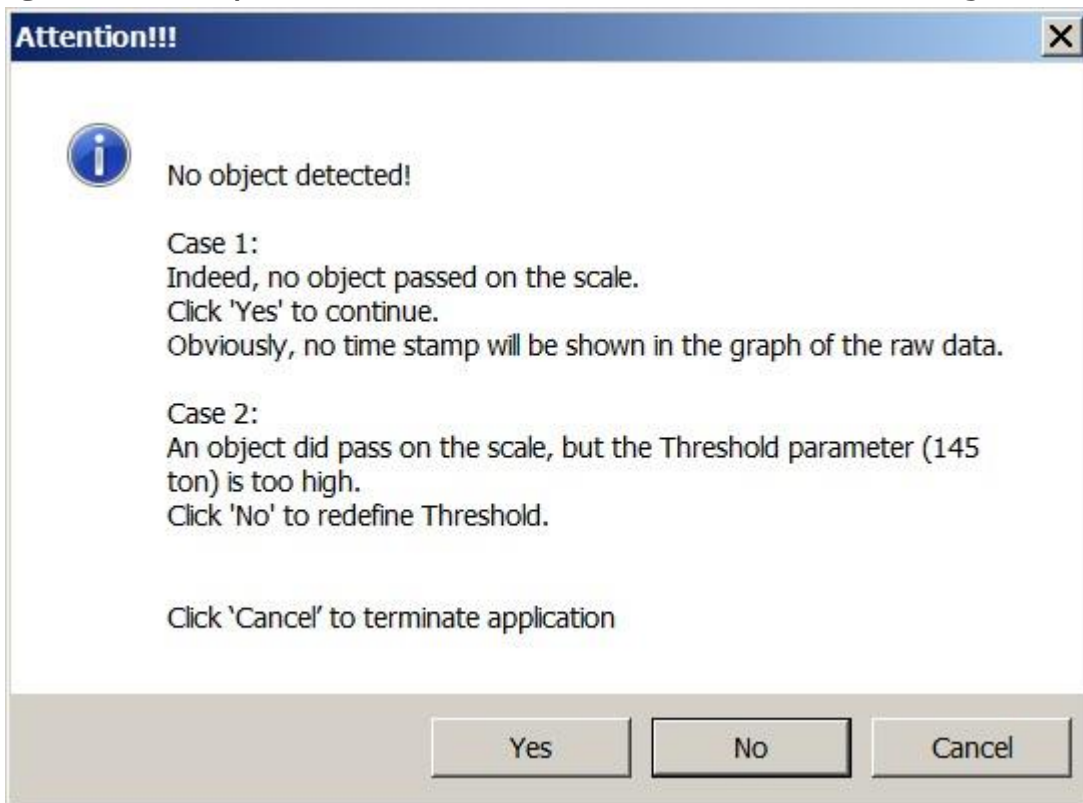
4.3 Work with no board?!

Q. But no LCIC-WIM board is connected to my PC! Don't forget that I am in the office, not in the field...

A. The application does support the case of working without a board! However, the application does not 'know' that there is no LCIC-WIM board, as there might be other reasons why the user selected going directly to Step 2 by answering 'No' to the box at application's start – for example, see FAQ #1. So, the application won't protect you from clicking 'Save to Board' although there is no board... It's your responsibility as you know that there is no board, while the application does not.

4.4 How to redefine Threshold with no board?

Q. I followed your instructions, then I received this message:



Indeed, the 145 ton threshold that my workers in field specified was wrong, so I answered 'No' in order to redefine it. But then the application asked me to make sure that my board is connected to the PC... This sounds as a bad joke, as there is no board in my office! Does that mean that I can't correct the Threshold parameter?!

A. This problem is only in LCIC-WIM-FILTERS-SIMULATOR-**V1.00**. Later versions won't ask you in this case to make sure that your board is connected to the PC. However, you still may redefine Threshold even in your V1.00 without a board, but in another way than during the 'board exists' operation:

1. In the above message box select 'Cancel' to terminate program.
2. Edit (by the usual Notepad) the "PC-Parameters.txt" file (in the same folder as described in '**A.**' of FAQ 4.1). At file's end you'll see the Threshold parameter. Change it manually, save & exit Notepad. (Note that in this way the application does not protect you from specifying wrong data, so, **it's your own responsibility to key proper Threshold value.**)
3. Run the application again (of course, answer 'No' to the question in the first message box).

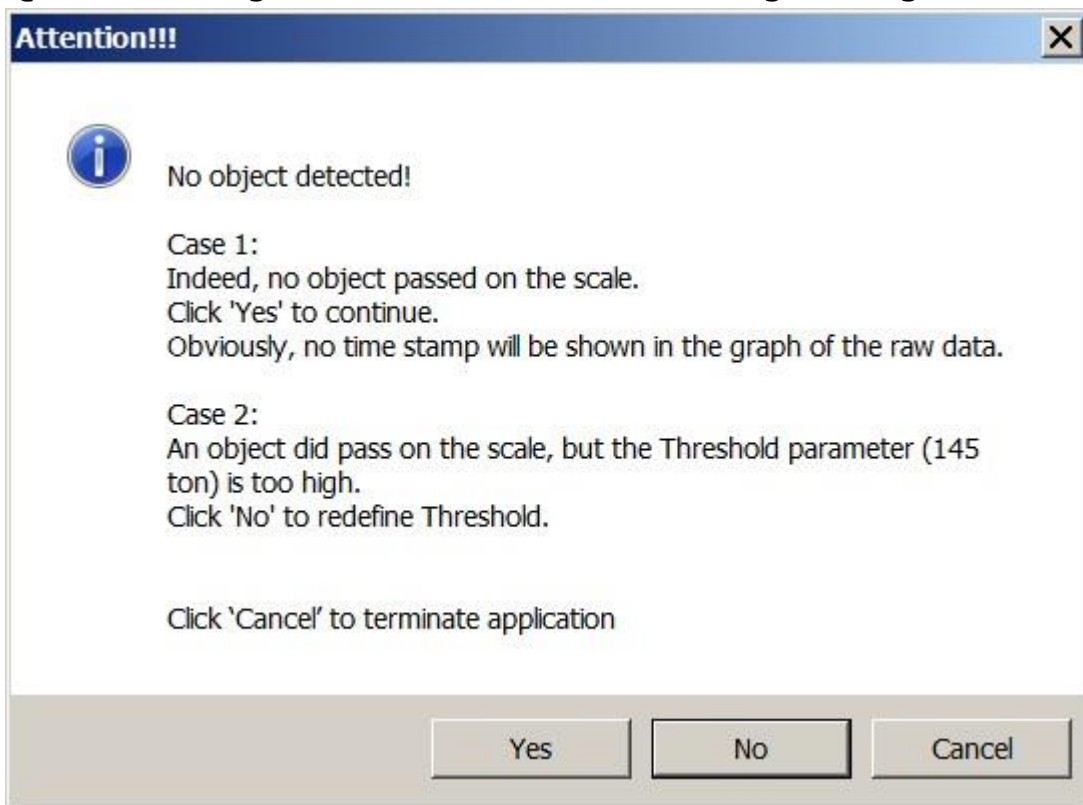
4.5 Skipping Threshold Redefinition

Q. That's sounds too complicated. Actually, I don't mind not having the time stamp on the graph. What if I select 'Yes'?

A. That *might* be risky – see FAQ #5. By the way, once you do it, you'll realize that it is rather simple – just try!

5. What will happen if I do not redefine Threshold?

Q. After clicking 'Show' I received the following message:



I don't care not having the time stamp. What will happen if I select 'Yes'? Is it a risky selection?

A. The 'Yes' selection is not necessarily risky, but it *might* be. That is:

- * If, indeed, no object passed on the scale, 'Yes' is the correct selection and it is not risky.
- * But if an object **did** pass on the scale and the Threshold specified (145 ton in the example) really was too high, selecting 'Yes' would lock out your protection against specifying absurd parameters. (When Threshold is correct, besides the time stamp you also get the benefit of such protection.) That is, you may be pleased to see a 'perfect' trapezoidal graph, but its roof is **lower** than object's real weight! (You should decrease Filter2 and/or Decimator in this case.)

In other words, selecting 'Yes' passes the responsibility of checking weight's authenticity from the application to **you**! As long as you are aware about it, it is legitimate.

6. Switching from Step 1 to Step 2 and vice versa

6.1 Skipping Step 1

Q. I expected a truck to come, so I ran the application and selected 'Yes', going to Step 1. Finally, the truck did not come, so I want to skip Step 1 and go again to Step 2 of the previous truck. Of course, I may close the application, run it again and answer 'No'. But this is clumsy. Is there a shorter way?

A. Yes. In Step 1 key Ctrl+F. This will take you to Step 2 as if you answered 'No' at application's start.

6.2 Switch Back to Step 1

Q. Of course, Murphy doesn't sleep... As I keyed Ctrl+F going to Step 2, suddenly the truck appeared... Can I quickly switch back to Step 1?

A. Yes. Just key Ctrl+W. Actually, once you reach Step 2, you may key Ctrl+W for switching in both directions – that is from Step 2 to Step 1, or vice versa.

7. 'Step 2' dialog window disappeared

Q. I tried some combinations of the 3 filtering value. But, suddenly, when I wanted to try a new combination, I could not find the 'Step 2' dialog window, where I was defining the filtering values. What should I do?

A. The 'Step 2' window does exist, but it has been 'covered' by your graphs. Just click its icon in the taskbar (brown 'F') and The 'Step 2' window will reappear.

8. Controlling the "Less than 20 ms!" message in Step 2

8.1 Bothersome "Less than 20 ms!" message

Q. In Step 2, I frequently get the "Less than 20 ms!" message. Indeed, the "Effective Time on Scale" is only ~13 ms, but my system is so good that the results are satisfactory when the "Effective Time on Scale" is 10 ms or more. Actually, the "Less than 20 ms!" message does not make me stuck, but it is bothersome and I prefer to get rid of it.

A. The minimum of the "Effective Time on Scale" value is programmable. Edit (by the usual Notepad) the file "PC-Parameters.txt" (in the same folder as described in '**A.**' of FAQ 4.1) and change the "Minimum Effective Time on Scale" value to 10.

8.2 Too liberal "Less than 20 ms!" message

Q. In Step 2, if the "Effective Time on Scale" is less than 20 ms, I get the "Less than 20 ms!" message. But my system is noisy, so the results are satisfactory only when the "Effective Time on Scale" is 150 ms or more. Can I "teach" the application to give me a warning message in case the "Effective Time on Scale" is less than **150** ms?

A. Yes. The minimum of the "Effective Time on Scale" value is programmable. Edit (by the usual Notepad) the file "PC-Parameters.txt" (in the same folder as described in '**A.**' of FAQ 4.1) and change the "Minimum Effective Time on Scale" value to 150.