

Kvaser Memorator Professional Setup Tool - Trigger Guide

This guide will help you to get started using the triggers in your Kvaser Memorator Professional setup tool.



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2 Log Everything – The Most Basic Way of Logging

The easiest way to log traffic on the CAN bus with the Kvaser Memorator Professional is to simply *Log everything*.

To get started and *Log everything* open Kvaser Memorator Professional setup tool and click on *Log Configuration* in the main tree view (see Figure 1).

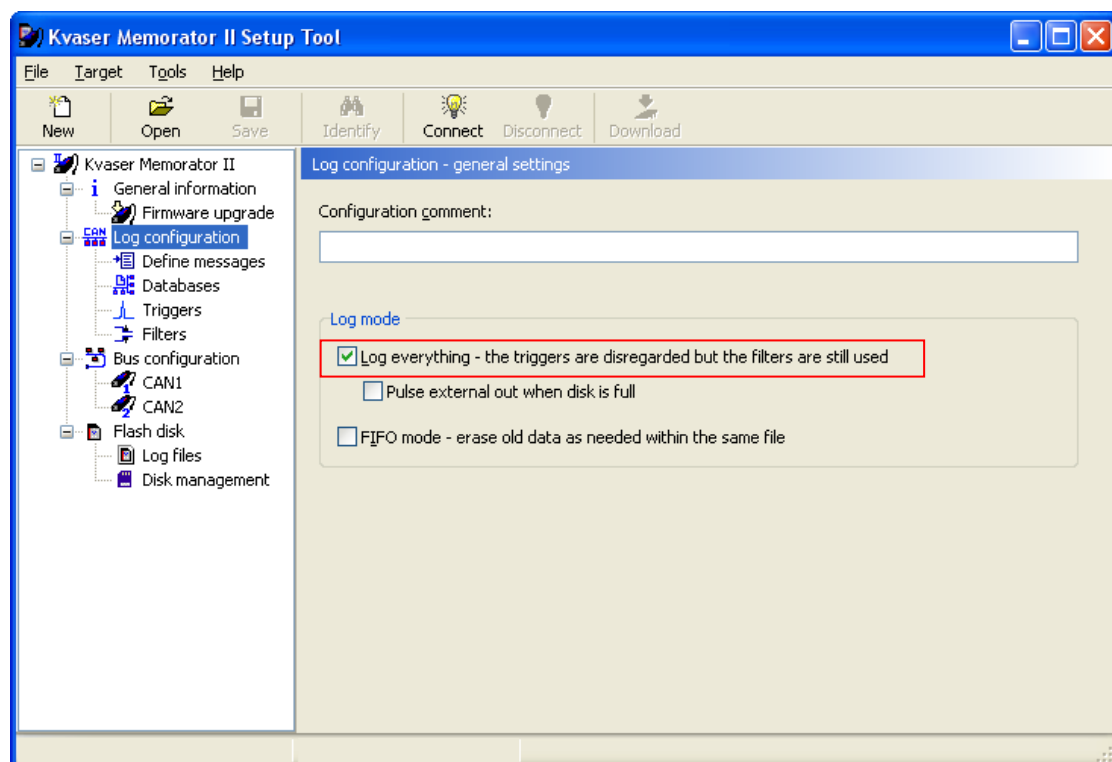


Figure 1. Log everything.

Make sure the *Log Everything* checkbox is checked. The *Log Everything* checkbox is always checked by default when starting up a new clean configuration. That's all.

3 Creating a Simple Trigger

Start logging when receiving a specific CAN identifier.

1. Click on Log configuration in the main tree view and uncheck the *Log everything* checkbox to be able to trig on a specific event such as the reception of a specific CAN identifier.
2. Click on Define messages in the main tree view and then click on *Add message* to define the message we want to trig on (see **Figure 2**). Enter the message properties and click *OK*. Note that the default is to enter the identifier as a hex number. A hexadecimal number can always be entered with '0x' before the number to make sure it is entered as hexadecimal.

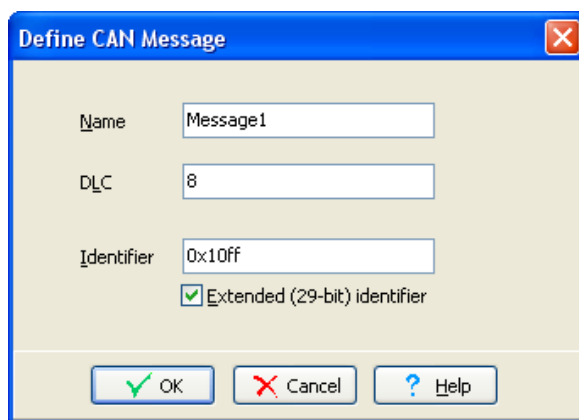


Figure 2. Defining a CAN message.

3. Click on *Triggers* in the main tree view. Then click *Add* to create a new trigger. The trigger wizard will show up. On the first page, the channel that the trigger should trig on can be chosen. Click next. On the second page click on the *select* button next to the *Trigger on a CAN message* text (see **Figure 3**).

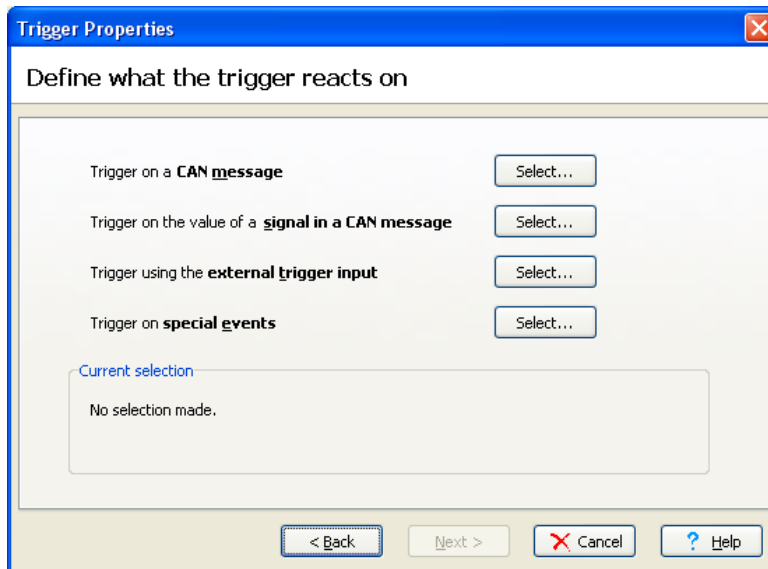


Figure 3. Selecting trigger types.

4. Then select the message just created and click *OK* (see **Figure 4**). Then click next; let trigger timeout keep its default value (0). Click next; the trigger properties should now be visible (see **Figure 5**).

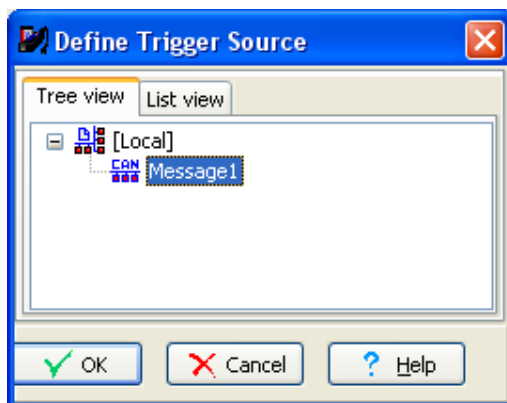


Figure 4. Selecting a CAN message.

5. If the trigger properties look ok, click *Finish*. The trigger can now be seen in the trigger list.

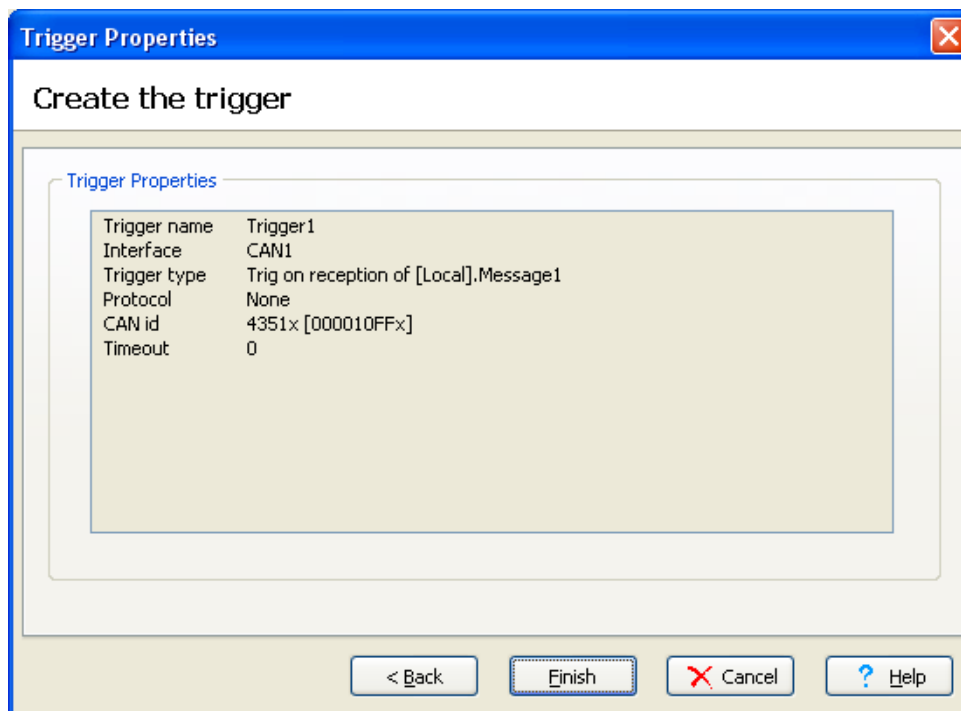


Figure 5. Trigger properties.

6. Enter the name of the trigger in the *1:st expression* field (see **Figure 6**). Choose Start logging in the combo box beside the 1:st expression field. This will activate the logging for the Kvaser Memorator Professional when an extended message with 0x10ff as the identifier.

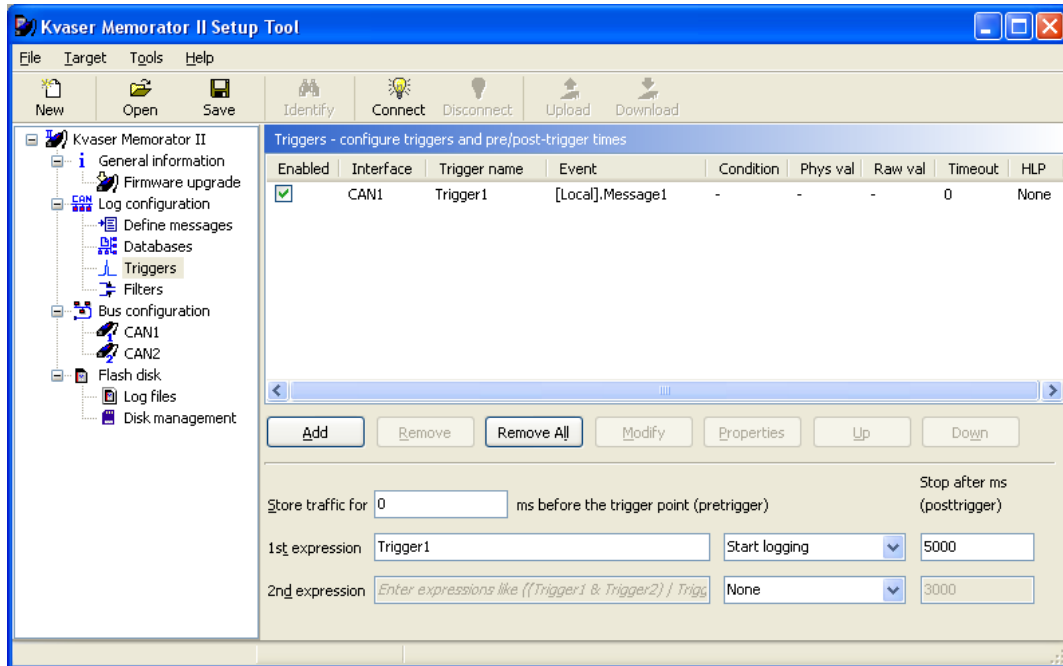


Figure 6. Entering trigger expression.

7. The trigger part of the configuration is now ready to be downloaded to the Kvaser Memorator Professional.

4 More Advanced Trigger

This example involves four different triggers that will make Kvaser Memorator Professional start and stop triggering when the data of a message becomes certain values. The aim is to log all messages (with a specified identifier) that contain a signal with a value between 10 and 17 (a and 11 hexadecimal).

1. Define a CAN message with a signal. Then create the triggers as seen in **Figure 7**.

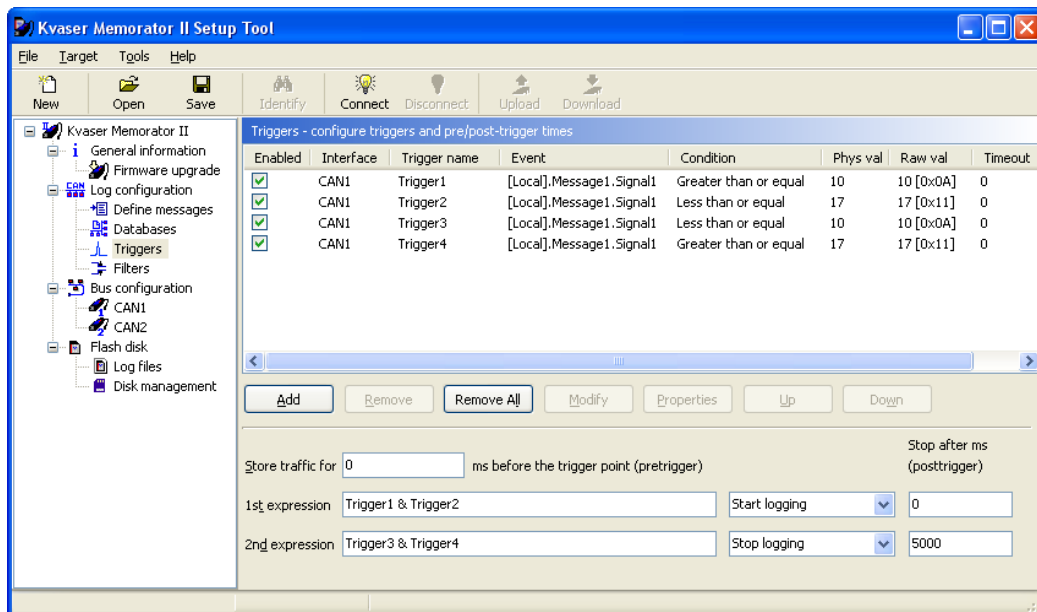


Figure 7. More advanced triggers.

2. When the *1:st expression* evaluates to true the Kvaser Memorator Professional should start logging. Since we want it to start logging when the signal is between 10 and 17 we should enter: 'Trigger1 & Trigger2' (see **Figure 1**). Set also the combo box beside the expression to start logging so when the signal is received and the value is ≥ 10 and ≤ 17 the *1:st expression* will evaluate to true and the Kvaser Memorator Professional will start logging.
3. Since we also want the logging to stop if the signal value is < 10 and > 17 we have to enter also the *2:nd expression*: 'Trigger3 & Trigger4' (See **Figure 7**). Set the combo box beside the expression to stop logging.

NOTE: By pressing F6 you can check the trigger expressions.

With the trigger configuration above the Kvaser Memorator Professional will start logging when a signal with a value between 10 and 17 is received. It will also stop logging when a signal with a value smaller than 10 or larger than 17 is received.

The trigger part of the configuration is now ready to be downloaded to the Kvaser Memorator Professional.

5 Trigger with timeout

Use timeout for the triggers when you want Kvaser Memorator Professional to start logging if two or more events happen within a specified time. This example involves two triggers that together will make Kvaser Memorator Professional start logging if they become true within the specified timeout time. A third trigger will make Kvaser Memorator Professional stop logging.

1. Define three CAN messages that contain one signal each. In this example we have chosen to set the identifier to 100 for Message1, 200 for Message2 and 300 for Message3. Then create the triggers as seen in **Figure 8**. Set timeout for Trigger1 and Trigger2 to 5000 ms. Let timeout be 0 for Trigger3. Set condition for Trigger1 and Trigger2 to *Equal to*. Condition for Trigger3 should be set to *Greater than*. Set also the value of the triggers to 10 for Trigger1, 45 for Trigger2 and 100 for Trigger3.

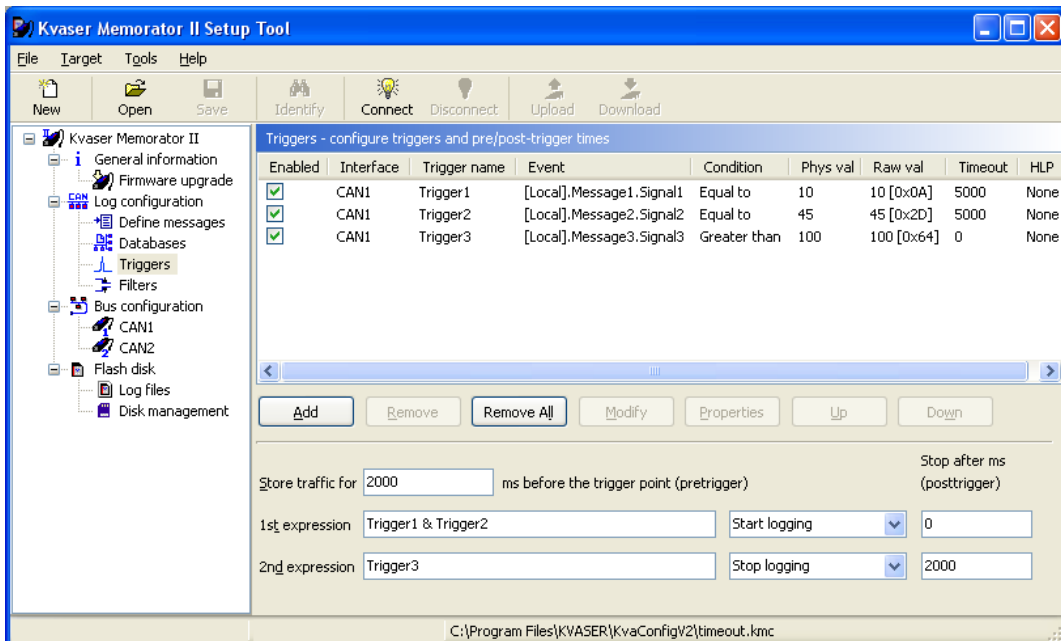


Figure 8. Trigger with timeout.

2. When the 1:st expression evaluates to true Kvaser Memorator Professional should start logging. Since we want it to start logging when the value of the signal in Message1 is equal to 10 and the value of the signal in Message2 is equal to 45, the 1:st expression should be *Trigger1 & Trigger2* (see **Figure 8**). Set also the combo box beside the expression to start logging.
3. We want the logging to stop when the value of the signal in Message3 becomes greater than 100. Write just Trigger3 in the 2:nd expression (see **Figure 7**). Set the combo box beside the expression to stop logging.

NOTE: By pressing F6 you can check the trigger expressions.

For Kvaser Memorator Professional to be able to start logging, both of the messages 1 and 2 with the correct signal values needs to be sent on the CAN bus within the specified timeout time set for the triggers. **For example:** Message1 is sent on the bus with the signal value 10. Trigger1 becomes active and the timeout time for Trigger1 that was set to 5000 ms starts to count down. To make the whole expression become true and Kvaser Memorator Professional start logging, Trigger2 needs to be activated before the timeout time expires. Message2 with the signal value 45 should therefore be sent on the bus not more than 5000 ms after Message1 was sent.

The trigger part of the configuration is now ready to be downloaded to the Kvaser Memorator Professional.

6 Trig on an Error Frame

Set up the Kvaser Memorator Professional to log traffic before and after the detection of Error Frames.

1. Click on Log configuration in the main tree view and uncheck the *Log everything* checkbox. Go to Triggers in the main tree view and add a trigger for a special event (red in **Figure 9**). Select *Error Frame*.

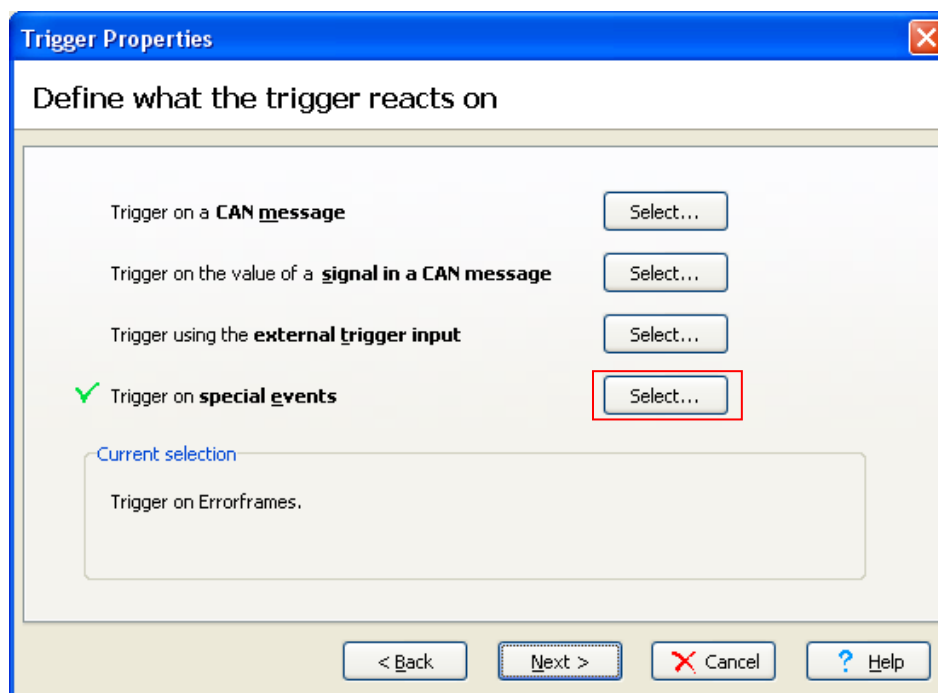


Figure 9. Selecting Error Frame trigger.

2. Enter the name of the trigger in the *1:st expression* field.
3. Since we want to record the traffic both before and after the Error Frame we have to set up both a pretrigger and a posttrigger. If we want to capture everything for 500ms before the Error Frame and 500ms after the Error Frame we should set the *Store traffic for* (pretrigger) and *Stop after ms* (posttrigger) fields to 500 (see **Figure 10**).

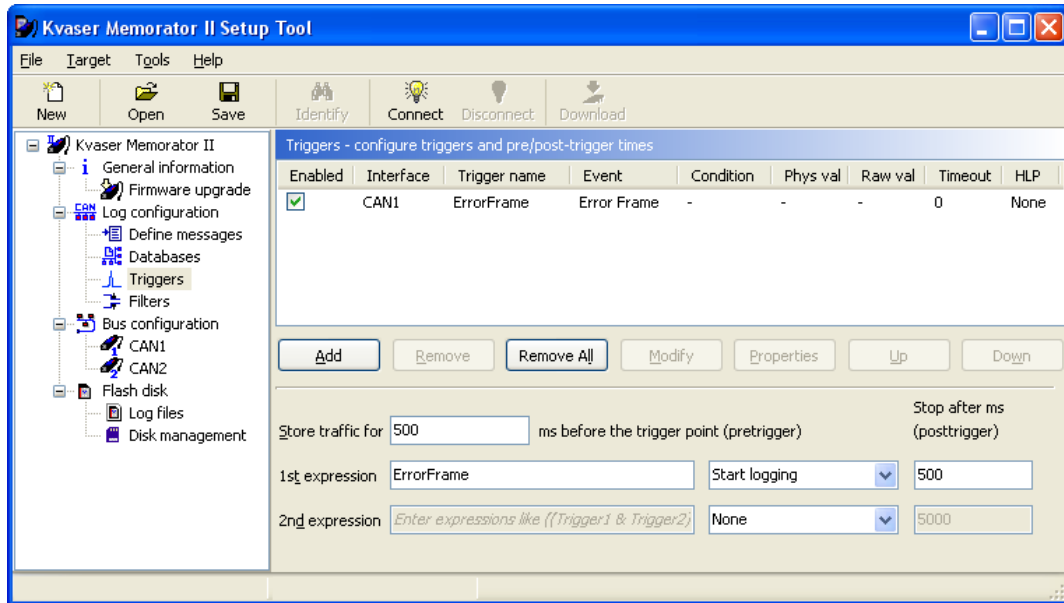


Figure 10. Pre- and Post-triggers.

7 Trig Using an External Trigger

It is possible to configure Kvaser Memorator Professional to trig on a trig pulse using an external button.

1. Click on Log configuration in the main tree view and uncheck the *Log everything* checkbox. Then go to Triggers in the main tree view and click at the add button. Choose channel 1 on the first page in the wizard (red in **Figure 11**). In the trigger properties select external trigger input.

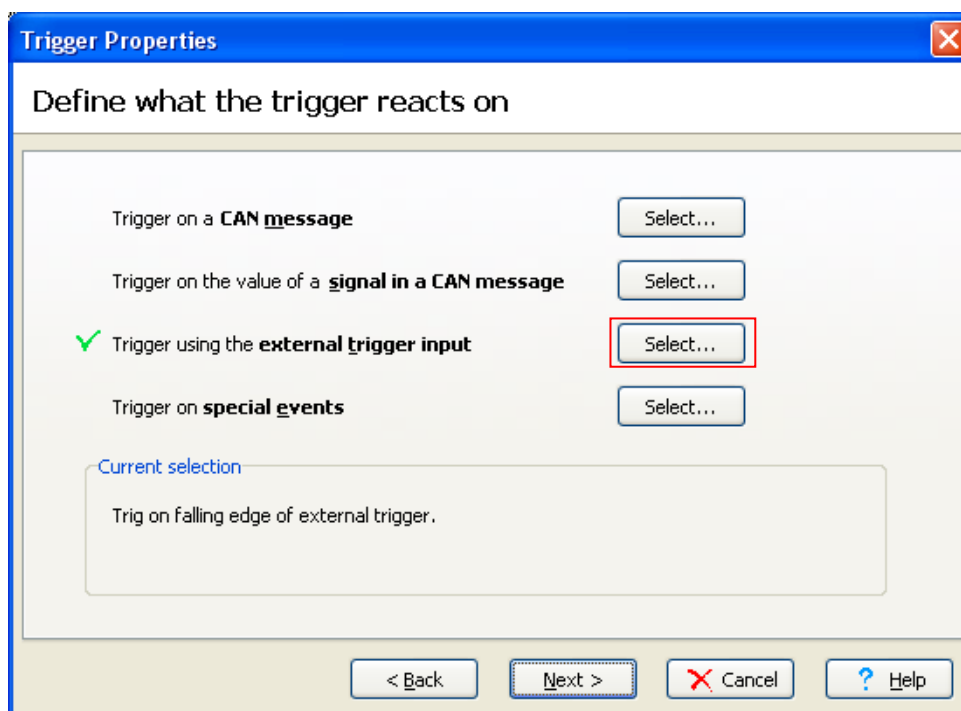


Figure 11. Selecting external trigger.

2. There are two ways to create an external event for the trigger to activate on.
 - * Connect pin 4 to ground (for example pin 3) or
 - * Connect 5V to pin 4.

If Kvaser Memorator Professional is set to trig on *Falling edge* the trigger is activated when pin 4 is connected and if it is set to trig on *Rising edge* the trigger is activated when pin 4 is disconnected (see **Figure 12**).

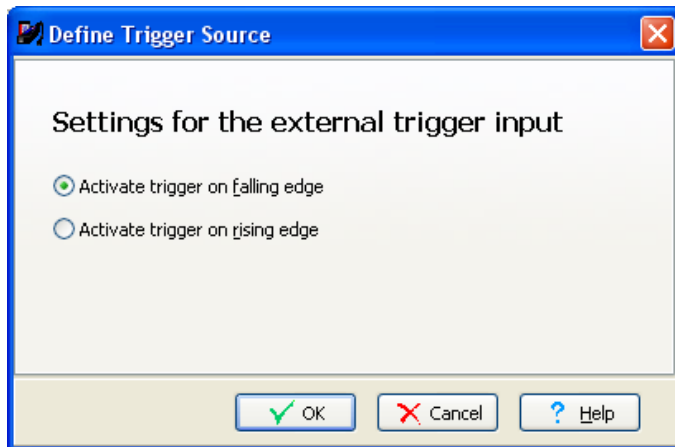


Figure 12. Selecting external trigger properties.

3. Type the name of the trigger in the 1:st expression field and change the *Store Traffic for* and *Stop after ms* fields to something suitable if pre and post trigger logging is desired.

8 Document revision history

Revision	Date	Changes
1	2006-09	Original revision
2	2006-11-09	Reviewed – no major changes