Kvaser Memorator Setup Tool -Trigger Guide

This guide will help you to get started using the triggers in your Kvaser Memorator 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 is to simply *Log everything*.

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

🖉 Kvaser Memorator setup tool				
<u>File Target Tools H</u> elp				
Image: Constraint of the second sec	Identify Connect Disconnect Upload Download			
 Kvaser Memorator General information Firmware upgrade File Log configuration Define messages Databases Triggers Filters Bus configuration CAN1 CAN2 Flash disk Do files Disk management 	Log configuration - general settings Configuration comment: ✓ Log everything - the triggers are disregarded but the filters are still used ☐ FIFO mode - erase old data as needed within the same file			

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 treeview 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 treeview 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.

Define CAN	Message 🛛 🕅
Name	Message1
DLC	8
Identifier	0×10ff
	Extended (29-bit) identifier
	K Cancel ? Help

Figure 2. Defining a CAN message.

3. Click on *Triggers* in the main treeview. 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 (red in **Figure 3**).

Trigger on a CAN message	Select
Trigger on the value of a signal in a CAN messag	e Select
Trigger using the external <u>trigger</u> input	Select
Trigger on special <u>e</u>vents like error frames	Select
Current selection]
No selection made.	

Figure 3. Selecting trigger types.



Then select the message just created and click *OK* (see **Figure 4**). Then click next; the trigger properties should then be visible (see **Figure 5**).

🖉 Define Trigger Source	*
Tree view List view	
🖃 🏭 [Local]	
Message1	
✓ ОК Cancel ? Help	

Figure 4. Selecting a CAN message.

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

Trigger Properties 🛛 🛛			
Your	trigger so	etup	
	55		_
- Trigg	er Properties –		- I
I T F C	rigger name nterface 'rigger type 'rotocol CAN id Activate	Trigger1 CAN1 Trig on reception of [Local].Message1 None 4351x [000010FFx] on reception	
		< <u>Back</u> Einish X Cancel ? Help	





5. Enter the name of the trigger in the *Start log if* field (see **Figure 6**). This will activate the logging in the Kvaser Memorator if the trigger expression is satisfied.

🖉 Kvaser Memorator setup tool 🛛 💷 🛛				
<u>File T</u> arget T <u>o</u> ols <u>H</u> elp				
New Open Save	Identify Connect Disconnect Upload Download			
🖃 🏉 Kvaser Memorator	Triggers - configure triggers and pre/post-trigger times			
i General information	Active Interface Trigger name Variable Condition Physical	Raw val 🛛 Activate		
Firmware upgrade Generation Sector Define messages	CAN1 Trigger1 [Local].Message1	- on reception		
Databases				
<u>}</u> Triggers } Filters	K			
Bus configuration GAN1 GAN2	Add Remove All Modify Properties	Up Do <u>w</u> n		
Elash disk	Store traffic for 0 ms before the trigger point (pretrigger)			
🔤 🗒 Disk management	Start log if Trigger1 ((Right-click to see menu)		
	Don't stop until Enter expressions like ((Trigger1 & Trigger2) / Trigger3) ((Right-click to see menu)		
	Wait for 5000 ms before stop logging (posttrigger)			

Figure 6. Entering trigger expression.

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



4 More Advanced Trigger

This example involves four different triggers that will make Kvaser Memorator 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.

🕽 Kvaser Memorator setup tool - Connected 📃 🗉 🔯				
<u>File T</u> arget T <u>o</u> ols <u>H</u> elp				
1 🖆 📮 🛃 New Open Save	Main Image: Connect Image: Connect <td></td>			
🖃 🏉 Kvaser Memorator	Triggers - configure triggers and pre/post-trigger times			
 i General information i General information 	Active Interface Trigger name Variable Condition Phys val	Raw val 🔋 Activate		
Finiware upgrade	CAN1 Trigger1 [Local].Message1.Signal1 >= 0	10 [0x0A] on reception		
→≣ Define messages	CAN1 Trigger2 [Local].Message1.Signal1 <= 0	17 [0x11] on reception		
Databases	Image: CAN1 Trigger3 [Local].Message1.Signal1 <= 0 Image: CAN1 Trigger4 [Local].Message1.Signal1 >= 0	10 [0x0A] on reception 17 [0x11] on reception		
Triggers □ Filters		I/[OXII] ONTECEPCION		
Bus configuration				
- 🎝 CAN1				
GAN2				
Log files	Add Remove Remove All Modify Properties	p Do <u>w</u> n		
📒 Disk management				
	Store traffic for 0 ms before the trigger point (pretrigger)			
	Start log if Trigger1 & Trigger2	(Right-click to see menu)		
	Trigger3 & Trigger4			
	Don't stop u <u>n</u> til Trigger3 & Trigger4	(Right-click to see menu)		
	Wajt for 5000 ms before stop logging (posttrigger)			
	Connected	.::		

Figure 7. More advanced triggers.

- 2. The Start log if expression is an expression that should evaluate to true when the Kvaser Memorator 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). So when the signal is received and the value is >= 10 and <= 17 the Start log if expression will evaluate to true and the Kvaser Memorator will start logging.</p>
- 3. Since we also want the logging to stop if the signal value is < 10 and > 17 we have to enter the *Don't stop until* expression: 'Trigger3 & Trigger4' (See **Figure 7**).

NOTE: The trigger expressions can be checked by pressing F6.



With the trigger configuration above the Kvaser Memorator 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.



5 Trig on an Error Frame

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

1. Click on Log configuration in the main treeview and uncheck the *Log everything* checkbox. Go to Triggers in the main treeview and add a trigger for a special event (red in **Figure 8**). Select *Error Frame*.

Trigger Properties 🛛 🛛		
Define what the trigger reacts on		
Trigger on a CAN <u>m</u> essage	Select	
Trigger on the value of a signal in a CAN message	Select	
Trigger using the external <u>trigger</u> input	Select	
Trigger on special events like error frames	Select	
Current selection		
No selection made.		
< <u>B</u> ack Next	Cancel ? Help	

Figure 8. Selecting Error Frame trigger.

- 2. Enter the name of the trigger in the *Start log if* field.
- 3. Since we want to record what 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 *Wait for* (posttrigger) fields to 500 (see **Figure 9**).

Store traffic for	500 ms before the trigger point (pretrigger)	
Start log if	ErrorFrameTrigger	(Right-click to see menu)
🗌 Don't stop u <u>n</u> til	Enter expressions like ((Trigger1 & Trigger2) Trigger3)	(Right-click to see menu)
Wa <u>i</u> t for	500 ms before stop logging (posttrigger)	
Connected		





6 Trig Using an External Trigger

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

1. Click on Log configuration in the main treeview 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 10**). In the trigger properties select external trigger input.

Trigger Properties 🛛 🕅		
Define what the trigger reacts on		
Trigger on a CAN message	Select	
Trigger on the value of a signal in a CAN message	Select	
Trigger using the external <u>t</u>rigger input	Select	
Trigger on special <u>e</u>vents like error frames	Select	
Current selection		
No selection made.		
< <u>B</u> ack <u>N</u> ext	> X Cancel ? Help	

Figure 10. 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 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 11**).





Figure 11. Selecting external trigger properties.

3. Type the name of the trigger in the *Start Log if* field and change the *Store Traffic for* and *Wait for* fields to something suitable if pre and post trigger logging is desired.



7 Document revision history

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

