

WHITEPAPER

Logging CAN messages

WITH THE AVISARO CAN LOGGER



Version 1.0

CHANGE HISTORY

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INTRODUCTION

This paper describes how to use the Avisaro CAN Data Logger to automatically log all messages transmitted on a CAN bus. In this example, a PEAK parallel port dongle was used to generate CAN messages. Revision of the Avisaro Firmware is 5-6.

FIRST STEPS / CONFIGURATION

The Avisaro module needs to be configured to match the particular CAN bus settings. An easy way is to use the “Batch Mode” configuration: Use an empty Compact Flash card and create a text file named “avi_conf.txt” on it. Insert the following lines in that file:

```
at+canbaudrate 125
at+canbandfilter on
at+canfilterid FFF
at+canfiltermask FFF
at+canfiltermode standard
at+canmode message
```

Explanation:

at+canbaudrate sets the Avisaro modules to the baudrate to the CAN bus. Use the appropriate value entered in “kbit/s”. In this case, the bus is set to 125 kbit/s.

at+canbanfilter switches on the filter mode.

at+canfilterid, at+canfiltermode and at+canfiltermode configures the filter for the CAN message ID. In this case, all CAN messages with standard message ID are received.

at+canmode message defines whether the full message is logged or only the 8 Byte payload of a CAN message. In this case, the complete CAN message is logged.

Don't forget to have a “new line” after the last “at+” command.

Now, switch of the Avisaro Logger, insert the CF Card with the avi_conf.txt file on it and switch on power. Wait for 15 seconds. If you have LEDs attached to the IO0 port, you will see it flashing when configuration is done. Otherwise, just wait for 15 seconds to pass.

Turn off the module, pull the CF card and delete or rename the avi_conf.txt file.

Configuration is done.

START LOGGING

Add an empty file on the Compact Flash card named “indata.log”.

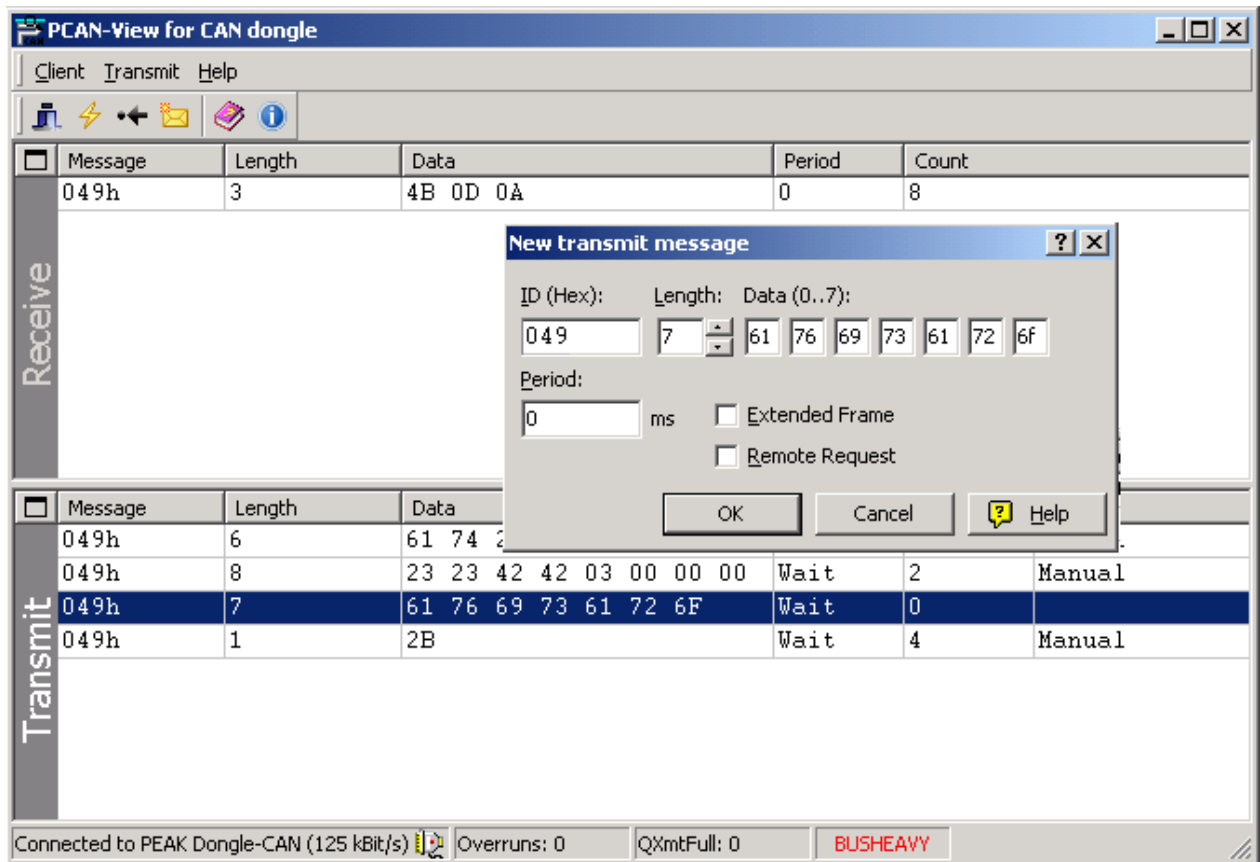
Insert the Compact Flash card into the Avisaro logger.

If you have the “Box” product: Press the blue start/stop button. The red “file open” LED will light up.

If you have the “Module” product: Tie IO-Port 5 to ground and release it again. The IO-Port 4 will go to VCC (3.3V).

All data from the CAN Bus is now captured and stored in the file “indata.log”.

In this example, a CAN message with the message ID 049 (hex) and the content “avisaro” (7 Bytes) was send.



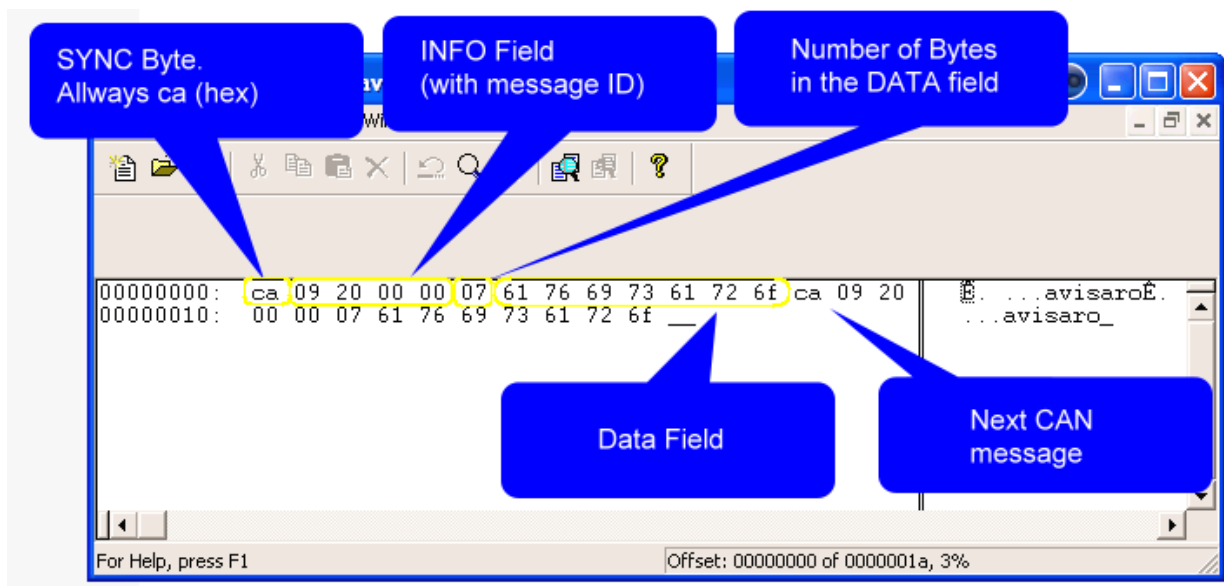
The logging was stopped by pressing the blue start/stop button again.

DATA ANALYSIS

The CAN messages are stored as CAN frames on the card. Opening the “indata.log” file is best done with an Hex Editor, because there is non-ascii data in the file.

In short:

- Each CAN Message starts with “0xca”.
- 32 Bits of Information follow: the first 11 bits show the standard message ID. Here: 0x049 (to calculate: type 0x092 into a hex calculator – like Windows has build in – and do a right shift (division by 2)).
- The number of bytes follow (here: 7 Bytes)
- The data itself follow (here: Avisaro)



See the “Programming Manual” for the full message format.

ADDITIONAL OPTIONS

The following options might be useful for tailoring the system to your needs:

AUTOMATIC START

Add the command “at+autolog on” to your avi_conf.txt file in order to start recording without the need to press a button.

You should add the command “at+flushtimer 5” if there is a chance somebody pulls the card without pressing the stop button.

LOGGING LARGE AMOUNT OF DATA

If you want to log large amount of data, you can choose an alternative way to using the file “indata.log”.

Instead of “indata.log” create a directory called “logs”. Add the command “at+minlogfile 5” in the “avi_conf.txt” file. This details, that a log file will be 5 Mbyte maximum.

Start the logging procedure.

The data will be stored in the directory logs. As soon as 5 Mbyte are full, a new file is automatically generated.

REPLAYING INFORMATION

To replay stored frames do the following:

Rename the file “indata.log” into “outdata.log”. Insert the card an press the start button. All frames stored in the file will be played back onto the CAN bus.