

HBM-Toolbox for SciLab

This toolbox contains functionality to read HBM measurement files.

HBM provides data acquisition software, which can be used for HBM amplifiers, like MGCplus (multifunctional multichannel amplifier system), Spider8 etc. The software family catman is divided into three products: catman easy, catman professional and catman enterprise. All of these software packages store the data in a specific catman data format.

It is also possible to record the measurement values onto a PC card in the system. (MGCplus systems must be equipped with communication processors CP42 or CP32). The data is stored in a special binary format with the extension „*.me“ (e. g. *.mea, *.me1, *.me2).

This toolbox provides two functions „catman_read“ and „CP42mea“ to read these files.

READING CATMAN DATA

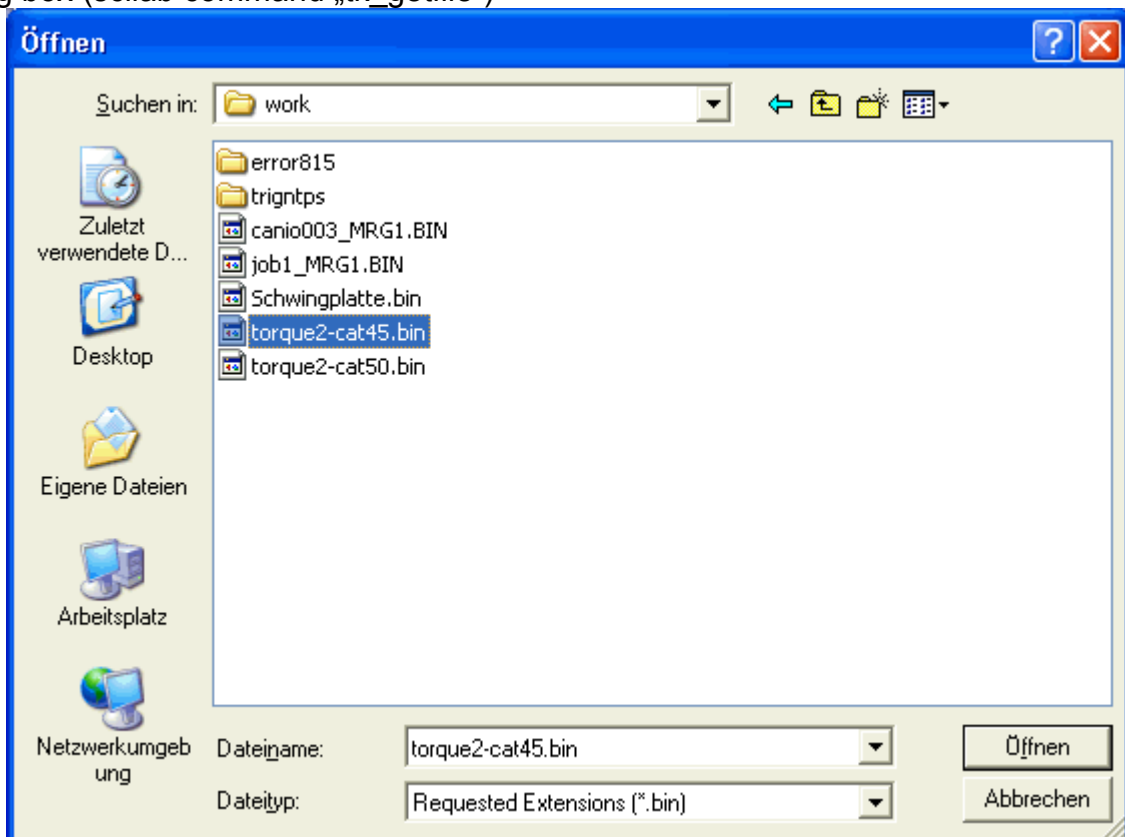
The SciLab function „catman_read“ can be used to read catman binary files.

Usage:

```
-->[a1, a2]=catman_read();           or
-->[a1, a2]=catman_read(filename);
```

Important for Windows-Users: When you specify the filename, the path separator is the letter „/“ (not „\“) !

When the function is used without input argument, then a file can be selected via a GUI dialog box (scilab command „tk_getfile“)



Picture 1): GUI to select catman binary files

The output arguments (here a1 and a2) are structured variables. Structure a1 contains information of the header section of the file, a2 contains channel information and measurement data.

```
-->a1
a1 =

    filename: "C:/MATLAB6p5/work/torque2-cat50.bin"
    fileid: 5012
    comment: "Torque measurement on HBM demo model"
    noofchan: 6
    mcl: 0
    reufact: 0

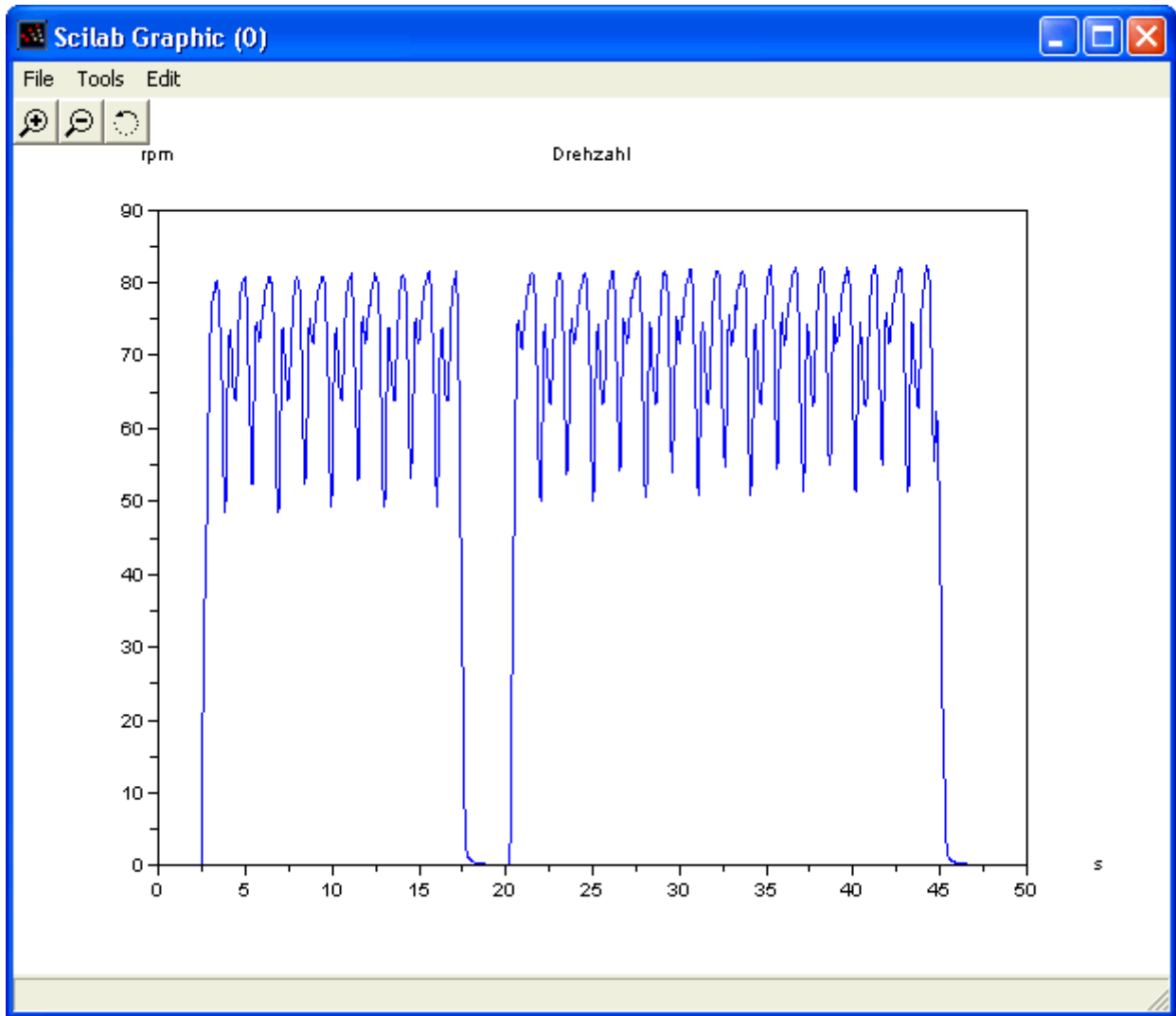
-->a2
a2 =

1x6 struct array with fields:
    Channelnumber
    ChannelLength
    ChannelName
    Unit
    comment
    format
    datawidth
    datumzeit
    header
    linmode
    userscale
    DBSensorInfo
    data
```

The channel information contains Channelnumber, channelname, unit, etc. The catman binary files contain even more information about the channels, but here not all is evaluated.

When you want to have a look at the data, try e. g.:

```
-->plot(a2(1).data,a2(4).data);
-->xtitle(a2(4).ChannelName,a2(1).Unit,a2(4).Unit);
```



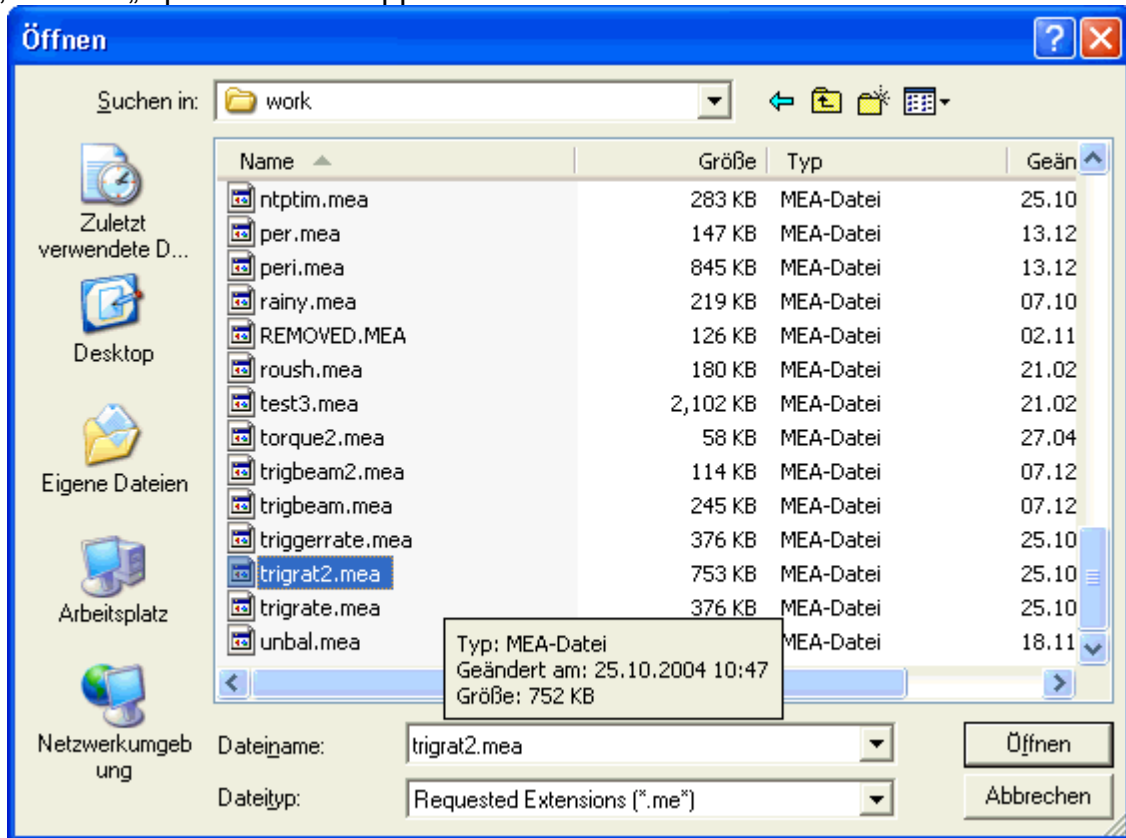
Picture 2): Scilab Graphic window with measurement data

In that example, the 1st contains time information, the 4th channel contains measured torque. Now you can use all the SciLab functionality to make post process evaluations.

READING MGCPLUS DATA FILES

Reading a PC card DAQ file works similar. Here the command „cp42mea“ must be used.
 -->[a1,a2]=cp42mea();

Here, also an „Open File“ GUI appears.



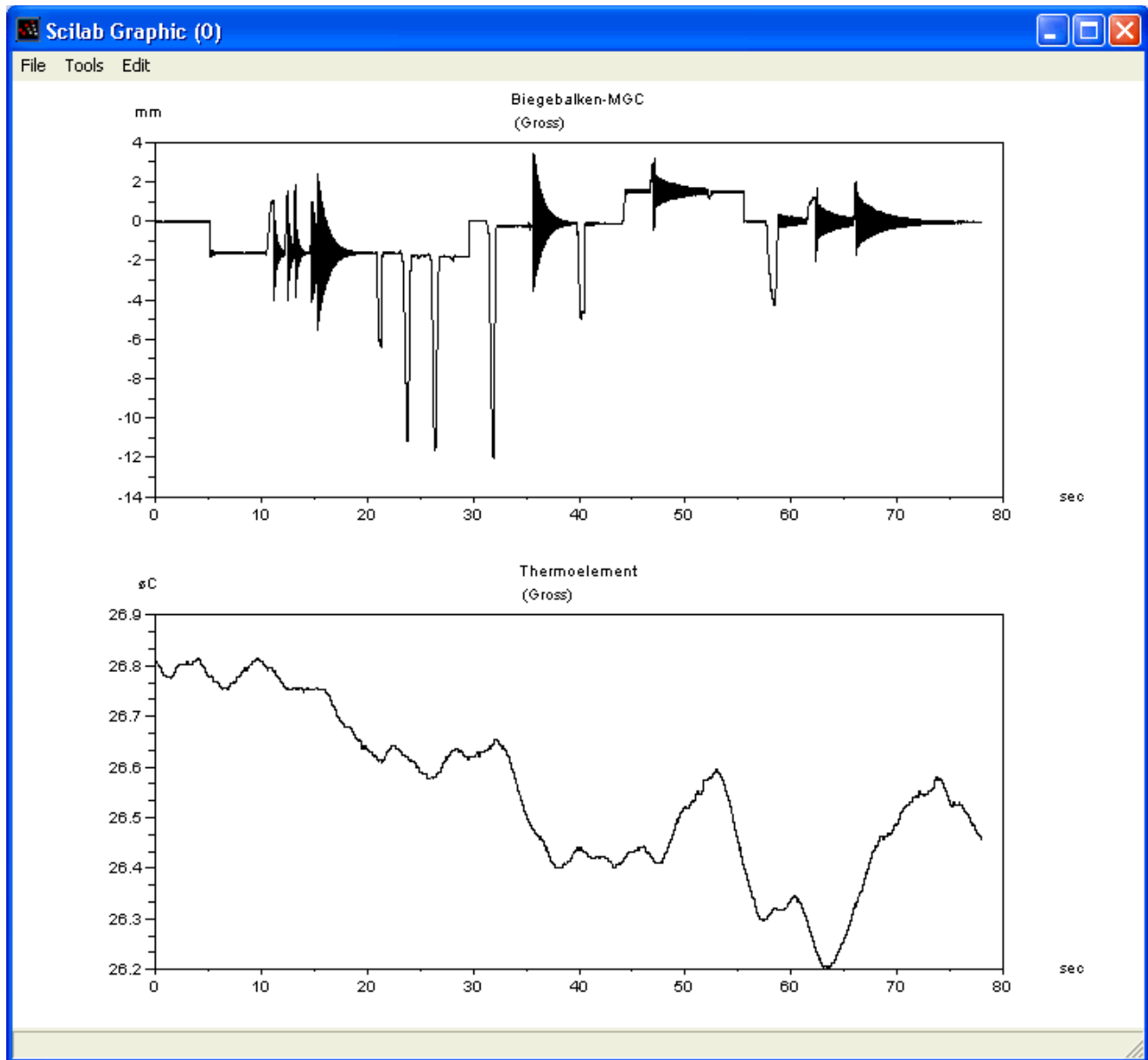
Picture 3): Selecting a PC card DAQ file (Extension is .me)

The output arguments (in our case a1 and a2) contain again file information in a1 and channel information in a2. The big difference of the PC card channel information regarding the catman channel information is, that every measurement channel has a timeaxis, contained in the field „timeax“.

That's important, because MGCplus can switch on special trigger events to another samplerate. The big advantage: When you work with structures of several measurement files, the time information of every measurement signal is uniquely assigned !

Example: If you want to plot two signals in a graphics window, use that:

```
-->subplot(211); plot(a2(1).timeax,a2(1).data,'k-'); xtitle(a2(1).
ChannelName,'sec',a2(1).Unit);
-->subplot(212); plot(a2(2).timeax,a2(2).data,'k-'); xtitle(a2(2).
ChannelName,'sec',a2(2).Unit);
```



Picture 4): Display of two signals of a PC card measurement.

There are also some other functions in the ZIP-File.

- CP42mea.doc:
An english description of the PC card DAQ format
- akfrader.sci / akfrader.bin:
A function to compute the autocorrelation by the method of Rader
- erfcomp.sci / erfcomp.bin:
A function to compute the error function with complex input arguments (can be used for calculation of Fresnel-functions)

Installation of the toolbox

Unzip the toolbox under your current SciLab directory

Edit the file „scilab.star“ (contained in your SciLab directory) and add a line like this:

```
load('SCI/hbm/lib');
```

Start Scilab, now you can execute the new functions.

Additional Information

This toolbox is free. You can download, modify and distribute it.

When you have suggestions, improvements and questions, please inform or contact me:

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