

Calculation of MAGE

(Mean Amplitude of Glycaemic Excursion)

- Use this software to calculate mean, SD, and MAGE from CGMS data of up to 72 hours
- If the program opens in German, click the second menu tab '**Ansicht**' and select '**Sprache**' from the drop down options. Select '**Englische**'
- You can determine how data is imported or displayed (mg/dl or mol/L) by selecting **File > Preferences**. The conversion factor is 1 mmol/L = 18 mg/L

Importing data

Calculating MAGE requires CGMS data in a very specific format. Data must be in a txt file, divided by tabs.

First Line of Txt file: ICode_P-00000000_22-Oct-06

The number and date are variable. Other formatting may result in the error message 'Wrong Sensor File'.

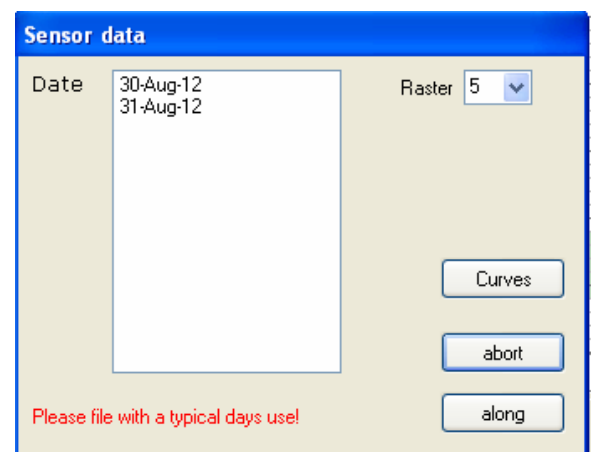
Second Line of txt file:

These are the defined variables. Between each column is one tab space. Between 'Sensor' and 'Value' is a space.

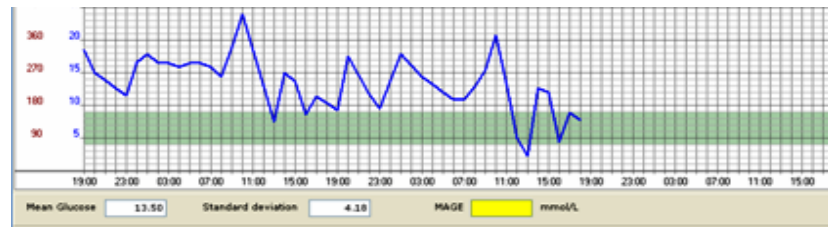
For the CGMS data: Date must be in dd-Mmm-yy format. Time must be in hh:mm format. All columns must be separated by a tab. For example,

```
Sample    Date Time Sensor Value
1        29-Aug-12 15:59 5.8
```

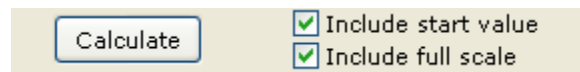
It is possible to prepare the dataset in Excel, then copy to a text file. Import by selecting **File > Import Sensor Data**. Once loaded, the screen on the right appears. Click '**Curves**' to preview your data, otherwise select the starting date of your data and click '**along**'.



Inability to view dates on this screen may be due to no Midas.DLL file. This should have been identified by an error box at program launch.



- Data is assessed from the first reading
- Where "sensor value" is blank or 0, the curve proceeds linearly between the adjacent values
- After importing your data, mean and SD are calculated automatically
- Ticking box 'include start value' will change the direction of the calculation, from peak-nadir, or nadir-peak
- Ticking box 'include full scale' will include the final data reading as a peak or nadir value
- To calculate the MAGE, press the calculate button



MAGE algorithm

- The calculation is based on the principle of Gradual approximation (successive approximation)
- In the first step, all the local maximum / minimum values are determined. All other values are discarded and not used going forward
- The next step is an assessment of maxima / minima pairs against the SD. If the difference from minimum to maximum is greater than the SD, this variation from mean measure is retained
- If the local maxima/ minima is less than 1SD it is excluded from further calculations
- These peaks and troughs are retained and summed to achieve the MAGE.