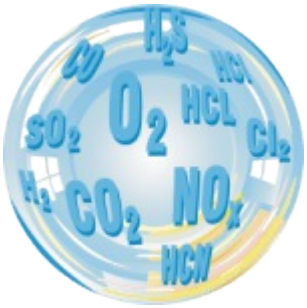


MadCom PC Software

Manual

Version: 2.9
06/2011

madur
ELECTRONICS

Index

1 INTRODUCTION

madCom PC software extends the functionality of madur gas analysers. Among other things, it allows to view the results stored in the analyser, process them (print, prepare charts, etc.) It allows to operate with the analyser remotely (from the PC computer), to view the currently measured results on the PC monitor and to store them directly on the computer to the csv file. **madCom** software replaces the **FGAplus** software which will no longer be supported. madCom allows to work with the following analysers:

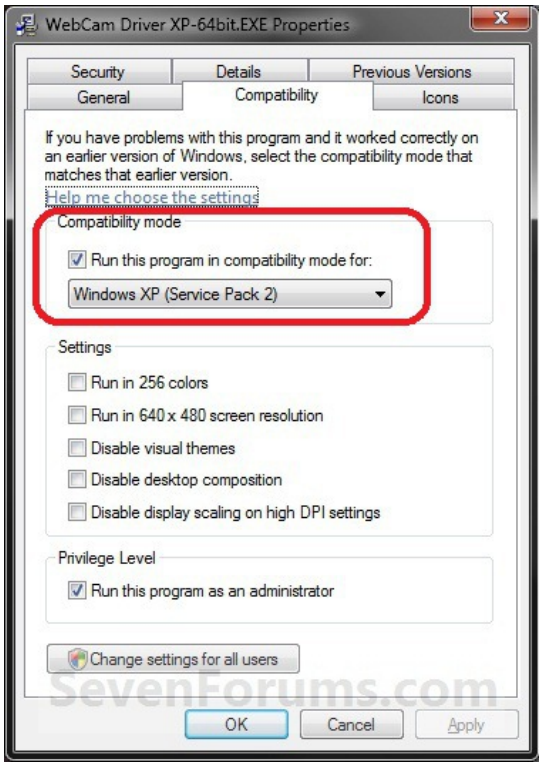
- GA-20
- GA-20plus
- GA-21
- GA-21plus
- GA-21bio
- GA-40plus
- GA-40Tplus
- GA-60
- CMS-6
- Photon (the first generation)
- CMS-7

2 MADCOM INSTALLATION

The newest version of madCom software is always available to download from madur web-page: **http://www.madur.pl/downloadcenter**. It is also provided on a CD attached to the analyser. To install the program run the *setup_madCom_v1.1.9.exe* program and follow the instructions on the screen.

3 WORKING WITH THE MADCOM PROGRAM

1. After installation, run the program by selecting it from Windows Start menu: Start → Programs → madur → madCom.
2. madCom software works on following operating systems: Windows 95/98/ME/2000/XP/Vista/7, 32 and 64 bit.
3. When having troubles running the program (especially in Windows Vista / 7 64bit), change the *Compatibility mode* of **madCom** program:
4. Go to the folder where the program is installed. As a default it is installed in the location: “C:\Program Files\madur\madCom”.
5. Right-click on the madCom.exe file
6. Select *Properties*, and *Compatibility* tab
7. From the drop-down-list select Windows XP – as it is shown in Drawing 1.



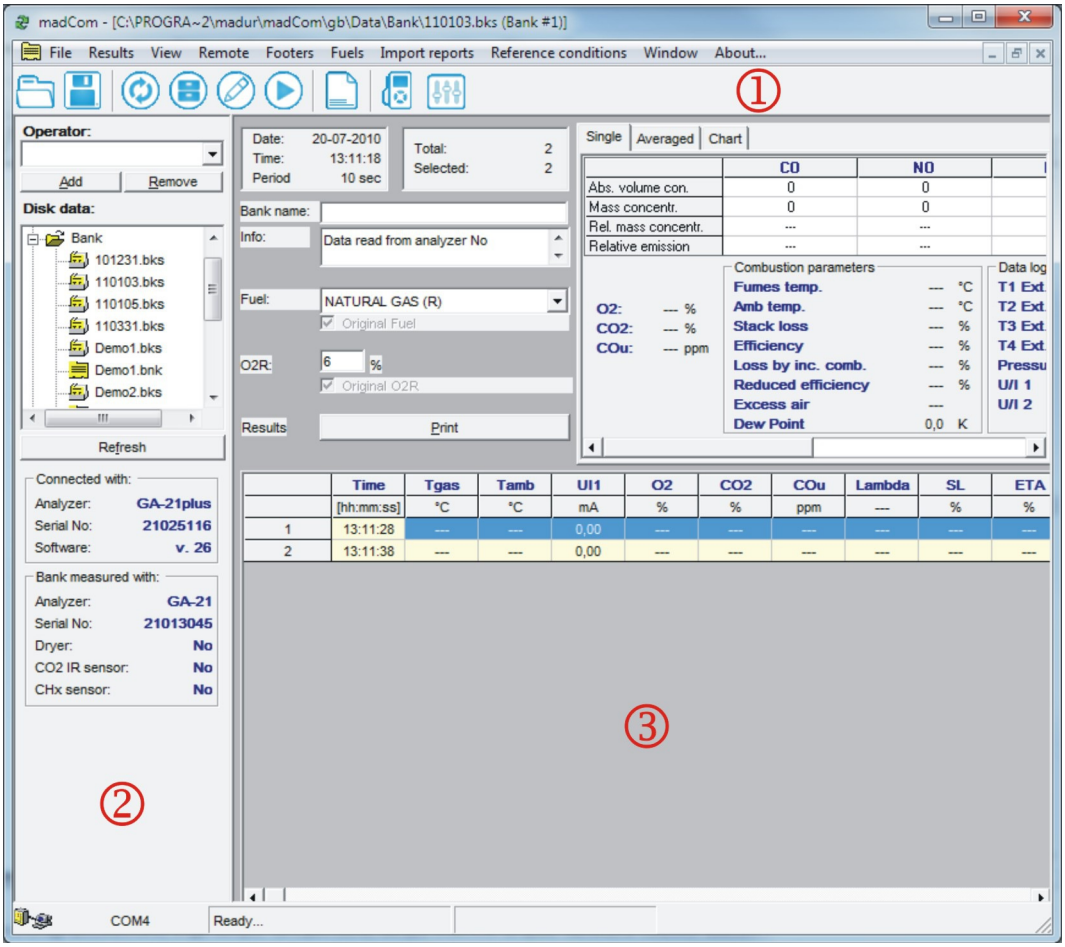
Drawing 1. Changing the Compatibility mode

After running the program the main window appears – it is divided into three parts (shown in Drawing 2.):

① - Quick access bar – chapter 3.2

② - Navigation bar (Side bar) – chapter 3.1

③ - Data area. This is where are shown: the online measurement results, bak and reports results, graphs, etc.



Drawing 2. Program main window

To start working with the program user must connect with the analyser – Press F8 function key or  icon from the function bar.

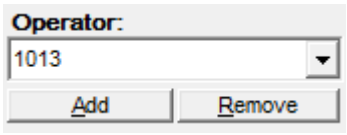
If the COM port is not selected program will open *Communication Settings* window – please see more details in chapter4.1.6

Program's functions and adjustment possibilities are described in the chapters below.

3.1 Side panel

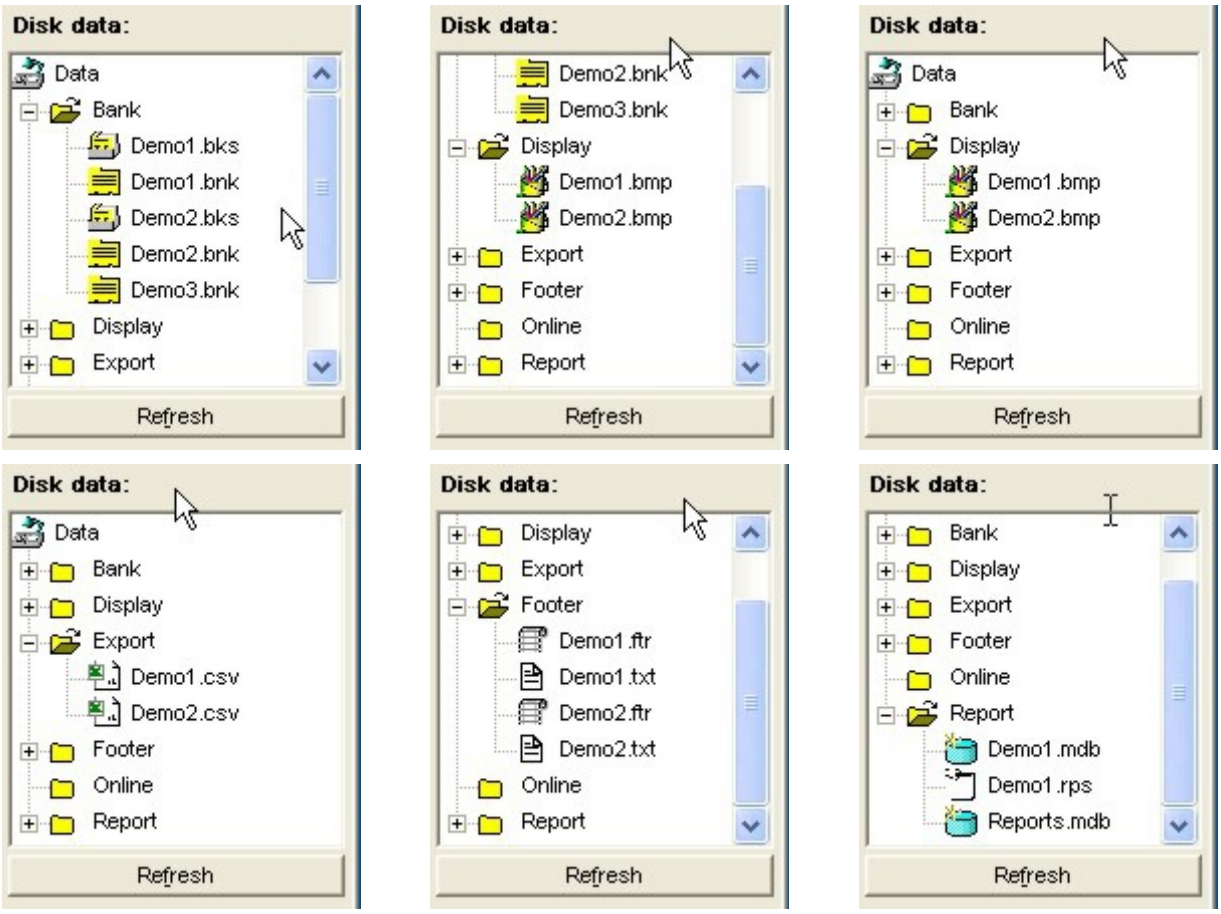
The Side panel is divided into four sections:

- **Operator** – it allows to select a user that currently is working with the device. It is possible to add another user, or delete one of the stored users: keys ***Add*** and ***Remove.***



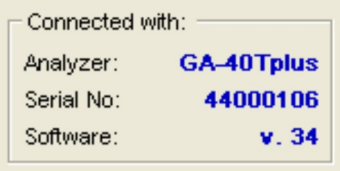
Drawing 3. Side panel - Operator

- **Disk data** – allows to view the contents of the ***Data*** folder. It gives direct access to the files stored during the measurements. Press ***Refresh*** button to update the data.



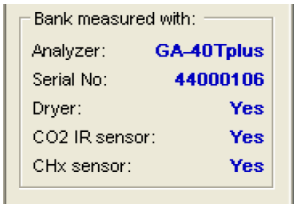
Drawing 4. Side panel – Disk data

- **Connected with** – this field contains basic info about the analyser that is connected to the PC.



Drawing 5. Side panel – Connected with

- **Bank measured with** – this field is visible only when online measurements are on, or if one of the stored data bank is viewed. It contains information about the analyser's equipment during the measurements.



Drawing 6. Side panel – Bank measured with

3.2 Quick access bar

Drawing 7. Quick access bar.

Quick access bar allows to access the most commonly used functions:

-  Read bank from disk (Ctrl + O)– opens a file stored on a hard disk with banks or reports.
-  Save active bank to disk – stores to a file on hard disk, previously opened or imported from the analyser, bank or report with measurement data.
-  Restart transmission (F8) – starts or refreshes the connection with the analyser.
-  Read banks from the analyser (F9) – more details in chapter4.2.1
-  Read reports from the analyser (F11) – more details in chapter4.2.2

- Read online (F12) – allows to view (and to store on a hard disk) the results currently measured by the analyser – more information can be found in chapter-4.2.3

- Footers – Enables to edit the printout footers – more information in chapter4.5

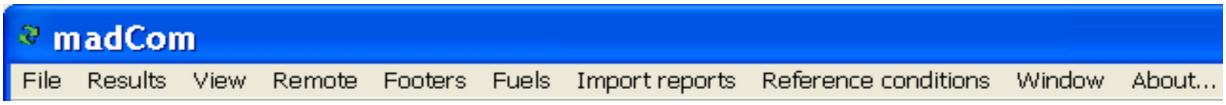
- Fuels – Enables to view and edit fuel parameters – more information in chapter4.6

- Reference conditions – enables to edit the coefficients used for recalculating results from mg to ppm – more information in chapter4.8

All the aforesaid functions are also available from the main menu bar.

3.3 Main menu bar

Above the quick access bar there is the main menu bar that contains all the available in this program options.



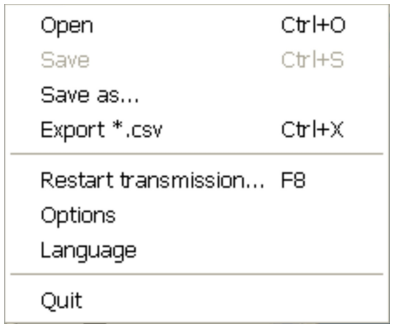
Drawing 8. Main menu bar

Each function available in the program is described in the chapter 4 of this manual

4 MADCOM FUNCTIONS

In this chapter all available functions in madCom program will be explained. They are described in an order they appear in the main menu bar.

4.1 File



Drawing 9. Functions available in the *File* sub-menu

4.1.1 Open

Function *File* → *Open* allows to open ***madCom*** data files. Available files extensions:

- ***.bnk** – bank file, i.e. storage of the continuous measurements. They are stored in the *\Data\Bank* folder. This folder also contains *Bank Set* file, which saves the analyser's memory contents. Depending on the device it may have different extension: ***.bks, *.bk6, *.bk5, *.bk2**. Those files are created on the hard drive while reading the data from the analyser.
- ***.rps** – data containers stored in the analyser as a report.
- ***.bmp** – Printscreens of the analyser's display taken during the *Remote Control* mode.
- ***.csv** – data exported to the CSV files. CSV files are readable by spreadsheet applications, like Microsoft Excel or OpenOffice Calc.
  ***.ftr** – these are the footers added to the printouts.

4.1.2 Save

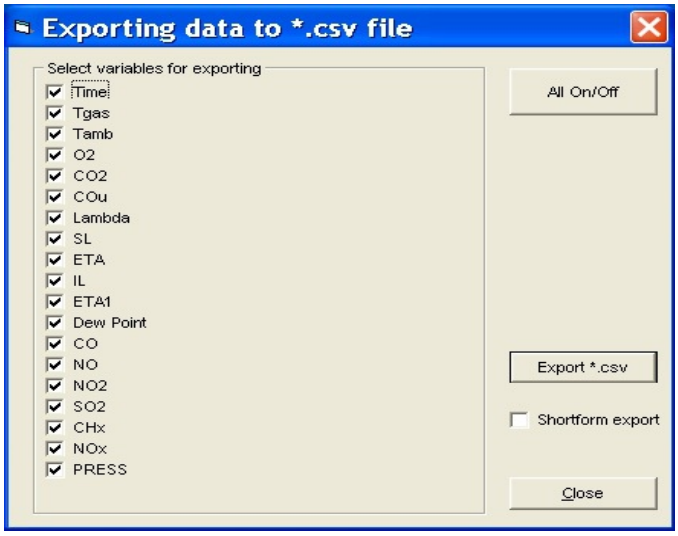
Allows to save changes in the edited bank file (***.bnk**). This option is applicable only to the previously saved files.

4.1.3 Save as...

Allows to save data read from the analyser or from the open Bank Set file to a new ***.bnk** file.

4.1.4 Export *csv

Allows to store data in a csv file, which is readable by spreadsheet applications (like Microsoft Excel or OpenOffice Calc). This option allows to export data from ***.bnk**, and ***.bks** files. When selected, it opens a window where one can chose which data to export. ***All On/Off*** selects or deselects all fields. Selecting ***Shortform export,*** exports only measurement data. Information about the operator, device, fuel and measurement parameters are ignored. *„**Export *.csv**”* opens a window where one can select a destination folder and the csv file name.



Drawing 10. CSV export options window.

4.1.5 Restart transmission

Starts the connection between the analyser and the PC via the selected RS-232 port. If the analyser is already connected, the connection is terminated and started again.

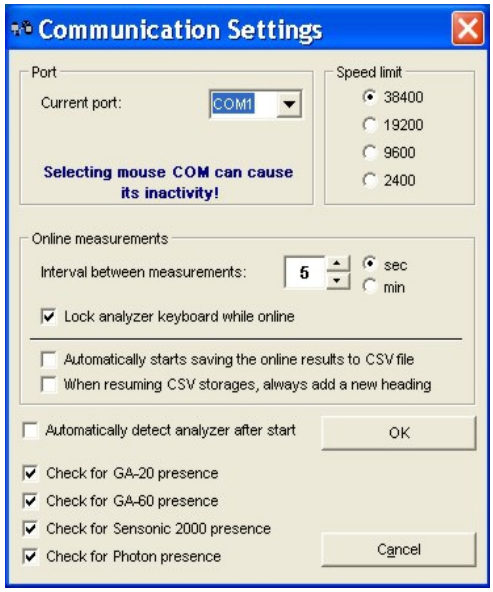
If, during the connection attempt, no analyser will be connected to the PC, an error message will appear.

Drawing 11. Error message – no connection with the analyser

If the error repeats, check the communication options – see if the selected COM port number corresponds to the port number where the cable is connected to.

4.1.6 Options – Communication Settings

Options available from *File* → *Options* allows to adjust the communication port settings.



Drawing 12. Options – communication settings.

In the ***Port*** section one must specify the serial COM port that will be used for communication with the analyser. In the ***Speed limit*** section one must select the baud rate. Maximal possible baud rate is depended on the device connected to the computer – see the table below:

Anaylser	9600	19200	38400
GA-20 plus		X	
GA-21 plus			X
GA-40 plus			X
GA-40T plus			X

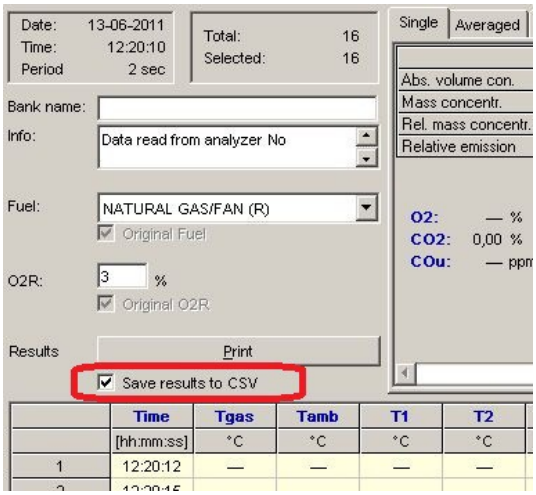
GA-60			X
CMS-6			X

Tabela 1. Baud rate for different analysers.

In ***Online measurements*** section one can adjust:

- **Interval between measurements** – how often the results are read from the analyser (and stored on the disk), expressed in seconds or minutes. The maximal interval is 30 minutes.
- **Lock the analyser's keyboard during the online** – if this option is selected the analyser will not react to the pressing of keyboard keys.
- **Automatically stars saving the online results to CSV file** – when this option is ON the program automatically starts storing the results to a CSV file on a hard disk (in the program's installation folder \Data\Online\).

  If this option is OFF it is still possible to save the results to a file by selecting an option *Save results to CSV* – as it is shown in the Drawing 13.



Drawing 13. Save results to CSV file

- **When resuming CSV storages, always add a new heading** – during the online storages it is possible to discontinue the storages results to a file (by unchecking the option shown in the Drawing 13.) If this option is on then the resume of storages will add a new heading in the csv file.

  Stopping the online measurements always ends the csv file. Starting the online measurement again creates a new csv file.

- **Automatically detect analyser after start** – when the program runs it starts to communicate with the analyser automatically.
- **Check for presence of GA-20 / GA-60 / Sensonic 2k / Photon** – program is designed to cooperate with different **madur** analysers. Its default communication protocol is set to communicate with GA-21plus / GA-40plus / GA-40Tplus analysers. If the program is to communicate with different analyser it must be selected from this list.

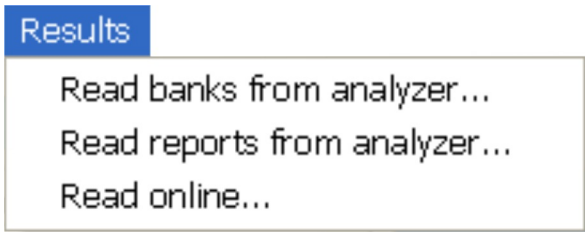
4.1.7 Language

Allows to change the program language. If your language is not listed, please contact **madur** to receive language file for translation. As soon as we have this file translated we prepare your language version of **madCom** program.

4.1.8 Quit

Ends the program and shuts it down.

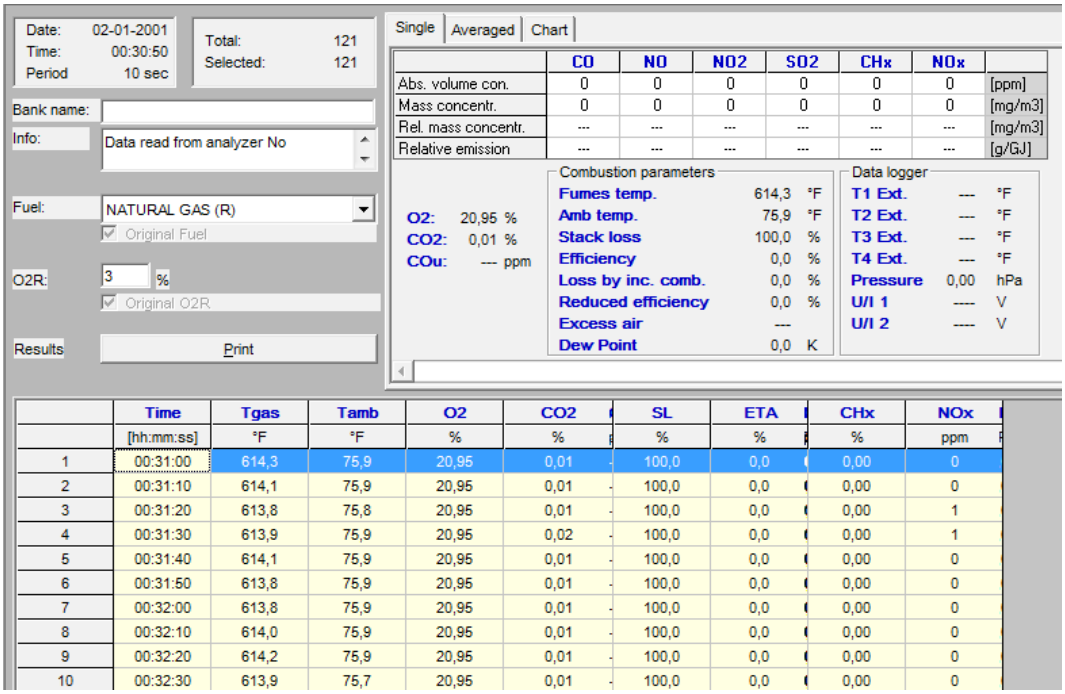
4.2 Results



Drawing 14. Functions available from Results sub-menu.

4.2.1 Read banks from the analyser

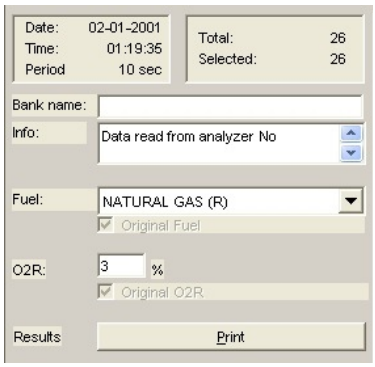
This option is available only when the analyser is connected to the PC. It reads data banks from the analyser and shows them on the screen. During the readout the Bank set file is also created (*.bks, *.bk6, *.bk5, *.bk2 depending on the device type). Each data bank opens in a separate window. Each can be saved to disk as a ***.bnk** file.



Drawing 15. Information about the bank read from the analyser

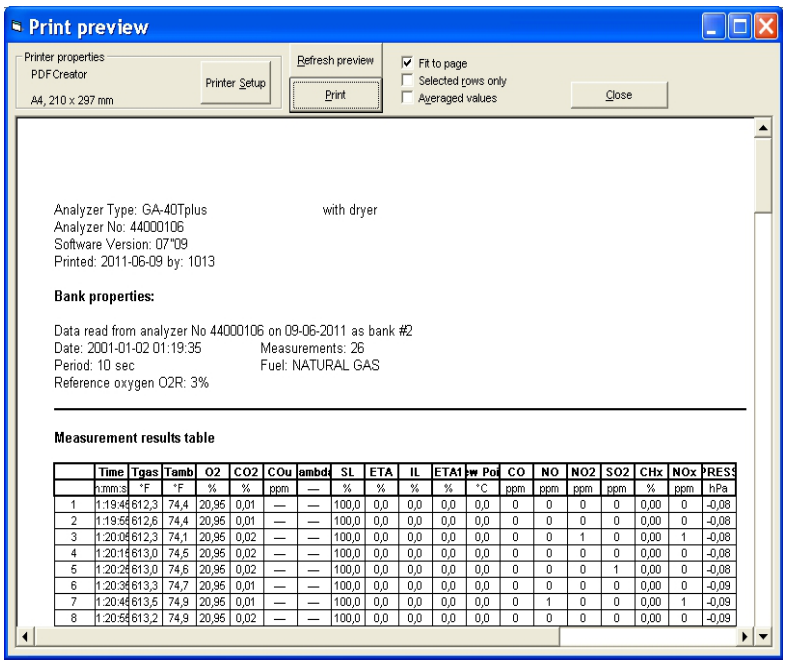
The upper left part of this window is an informative part, that contains:

- Date, time of the measurement and it's length
- Number of single measurements
- Bank name – e.g. customer's name
- Info – additional information, comment, etc.
- Fuel – fuel parameters, that will be considered during the results calculation.



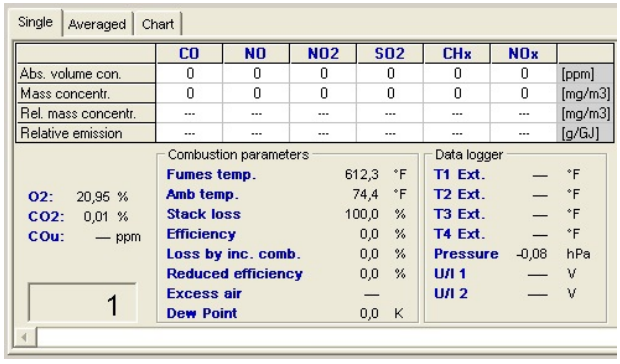
Drawing 16. Bank – Informative part

It is possible to print the bank contents. Print button opens the window with printout options (see Drawing 17.).



	Time	Tgas	Tamb	O2	CO2	COu	ambde	SL	ETA	IL	ETA1	w Poi	CO	NO	NO2	SO2	CHx	NOx	PRESS
	h:mm:s	°F	°F	%	%	ppm	—	%	%	%	%	°C	ppm	ppm	ppm	ppm	%	ppm	hPa
1	1:19:46	612,3	74,4	20,95	0,01	—	—	100,0	0,0	0,0	0,0	0,0	0	0	0	0	0,00	0	-0,08
2	1:19:56	612,6	74,4	20,95	0,01	—	—	100,0	0,0	0,0	0,0	0,0	0	0	0	0	0,00	0	-0,08
3	1:20:06	612,3	74,1	20,95	0,02	—	—	100,0	0,0	0,0	0,0	0,0	0	0	1	0	0,00	1	-0,08
4	1:20:16	613,0	74,5	20,95	0,02	—	—	100,0	0,0	0,0	0,0	0,0	0	0	0	0	0,00	0	-0,08
5	1:20:26	613,0	74,6	20,95	0,02	—	—	100,0	0,0	0,0	0,0	0,0	0	0	0	1	0,00	0	-0,08
6	1:20:36	613,3	74,7	20,95	0,01	—	—	100,0	0,0	0,0	0,0	0,0	0	0	0	0	0,00	0	-0,09
7	1:20:46	613,5	74,9	20,95	0,01	—	—	100,0	0,0	0,0	0,0	0,0	0	1	0	0	0,00	1	-0,09
8	1:20:56	613,2	74,9	20,95	0,02	—	—	100,0	0,0	0,0	0,0	0,0	0	0	0	0	0,00	0	-0,09

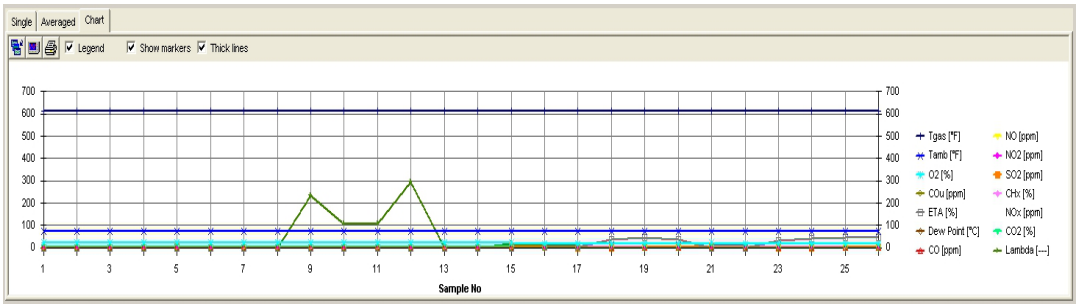
Drawing 17. Printout options window



Drawing 18. Windows with data, read from the analyser's bank.

Choice of view (upper right part of the window) allows to switch between different views of the data from the bank / online measurements. The following view types are available:

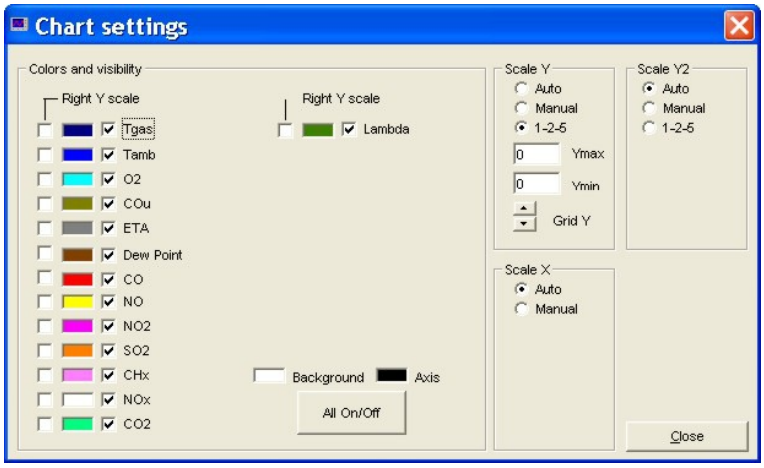
- **Single** – shows detailed information about selected measurement:
- **Averaged –** averages the result for the selected measurements
- **Chart** – results are presented in a graphical form.



Drawing 19. Results presented in a graphical form

Chart window contains additional options (small icons above the graph):

- Zoom chart to full screen (Ctrl + Z) – opens the chart in a larger window (as it is shown in Drawing 21.)
- Chart settings (F5) – Opens a window with charts options. This is where one can select which values are presented in the chart, change its colour, or change the chart's scale.



Drawing 20. Chart's settings

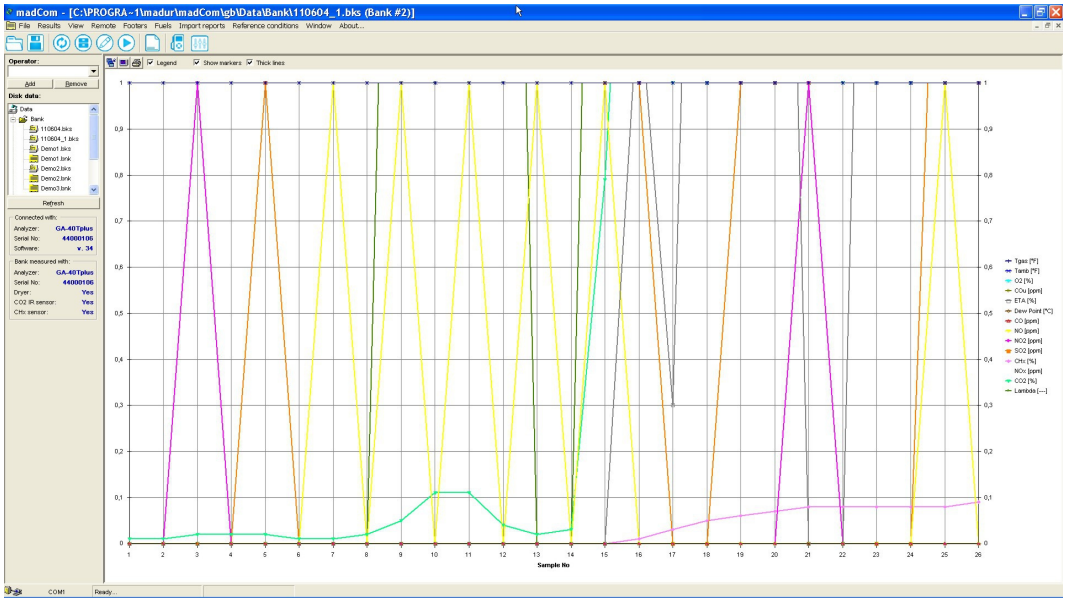
The right side part of chart settings window allows to change the chart's scale:

- **Auto** – the scale is adjusted automatically
- **Manual** – user can set the scale according to own needs.
- **1-2-5** – the borderline values of the scale are the multiplications of numbers 1, 2 5

On the left there are options that allow to show / hide variables in the chart and allow to adjust the colour of the variable

- Chart printing
- Show / hide legend

- Thick lines

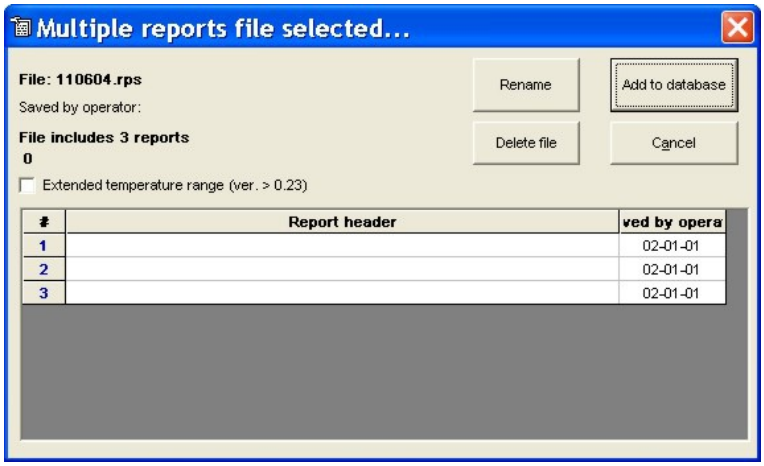


Drawing 21. Chart in a full screen mode

All the aforesaid charts options are also available from the *Main menu → View* sub-menu.

4.2.2 Read reports from the analyser

This option is active only when the analyser is connected. If the analyser contains reports a following window appears:

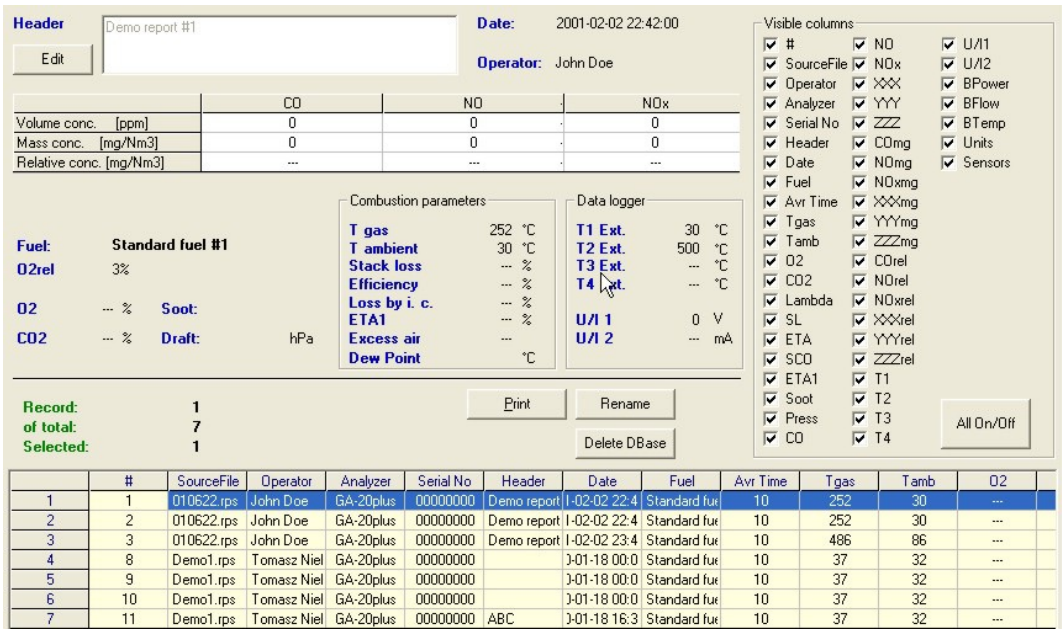


Drawing 22. The readout of the reports from the analyser's memory.

This window contains information about the report's heading and the date when the report was taken. To read the report's contents the report must be added to a data-base first – button ***Add to database***.

4.2.2.1 Opening database

To view the contents of a report one must open a database file where this report is assigned to (see the chapter4.2.2). From the side panel, from the ***Disk data*** section (see Drawing 4.) single-click a database to open it. The following window appears:



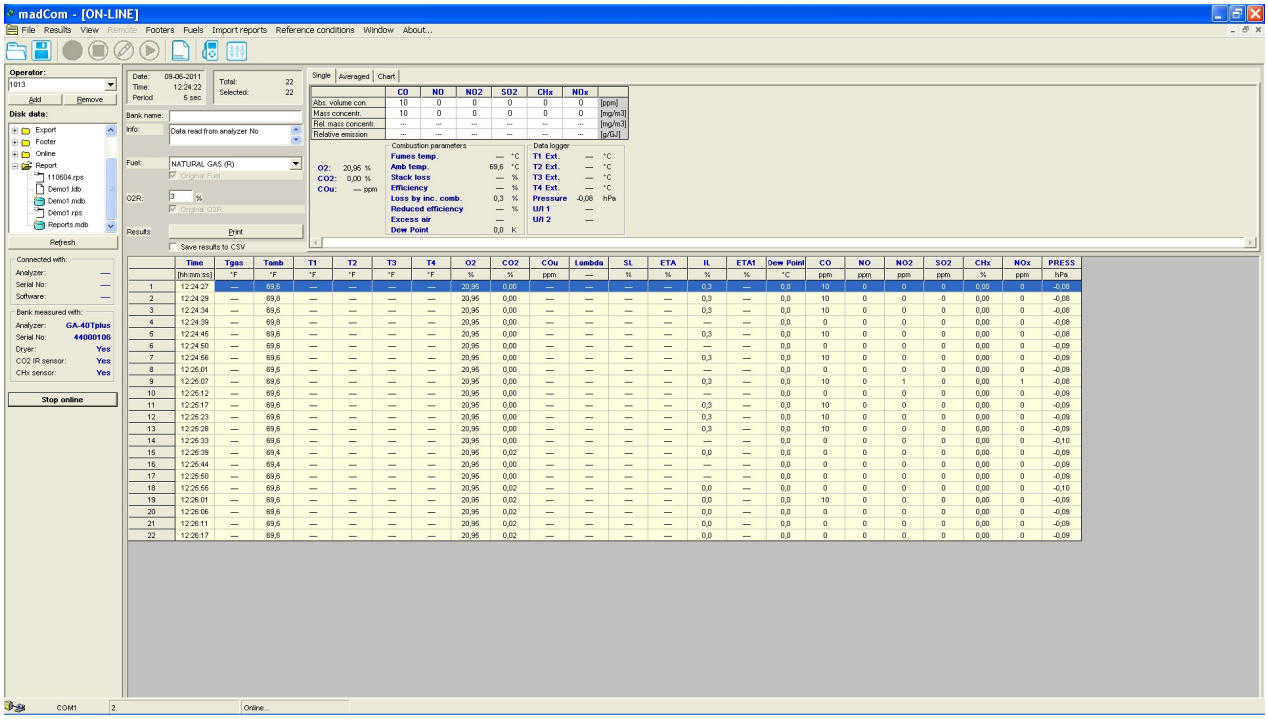
Drawing 23. Data read from the database.

The bottom part of the window contains a list of reports in the opened database. On the right in the ***Visible columns*** section, user can select which values are shown and can be printed.

From this window it is possible to modify the header, rename the database or to delete the database file from the hard disk.

4.2.3 Read online...

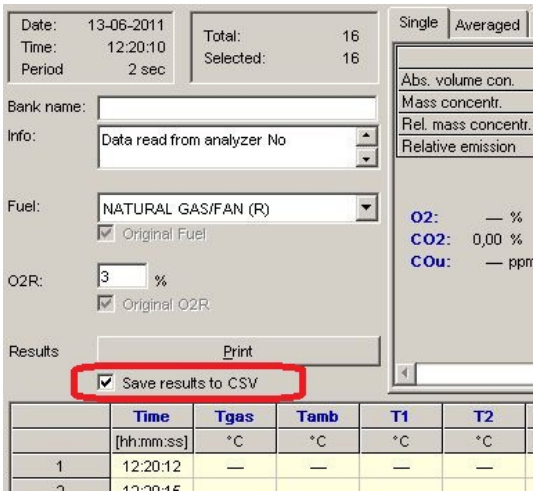
Online measurements are available from the **Main menu** bar: *Results →Read online...* or by pressing the  icon from the **Quick access** bar or by pressing the F12 function key. During the online reading, the results from the analyser are presented on the PC monitor, and if proper option is selected, they are stored into csv file on a hard disk. Options related to the online reading are available from *Options – Communication settings* window (see chapter4.1.5for more details).



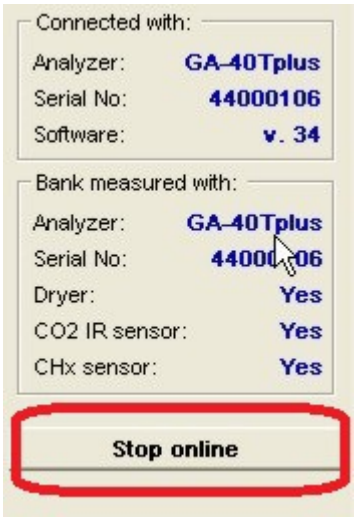
Drawing 24. Online measurements.

Online reading is similar in its functionality to bank readout from the analyser. User can view single result, averaged results (see chapter4.2.1) or to view them in a graph form (see Drawing 19.)

During the online reading it is possible to stop / resume the storage of the results into the csv file by selecting the option shown in the Drawing 25.. To stop the online measurements press ***Stop online*** button in the *Side bar* panel (see Drawing 26.)



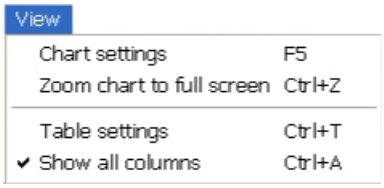
Drawing 25. Stop / resume online storage into csv file



Drawing 26. Stop online readings

Drawing 27. Warning announcement before stopping the online measurements

4.3 View

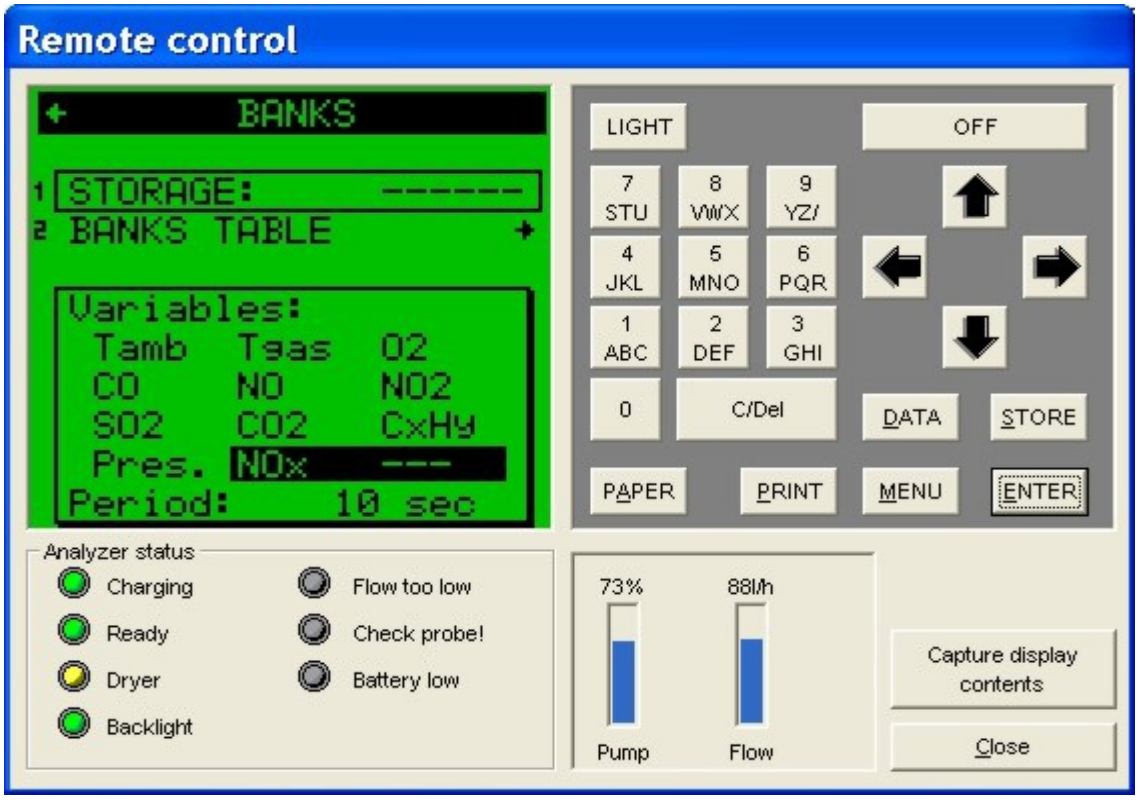


Drawing 28. Functions available from the View submenu

This options is available only when viewing the contents of reports and banks. It allows to adjust the data presentation in tables and on the graph. Available functions are described in chapter4.2.1.

4.4 Remote control

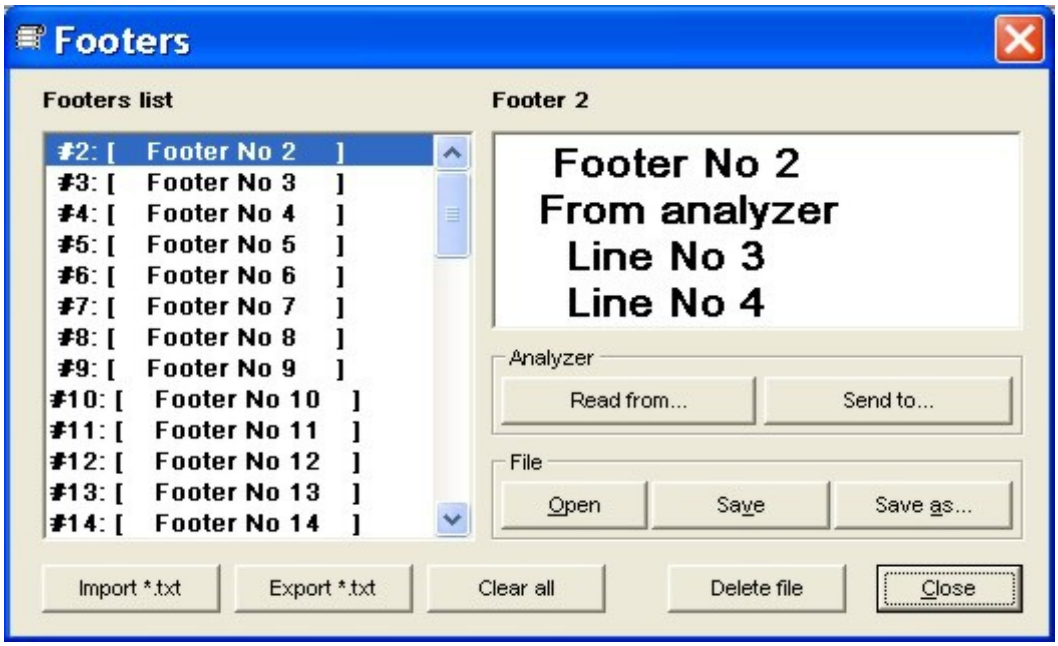
This option allows to remotely (on the PC monitor) view the contents of the analyser's display. It also allows to send the commands to the analyser as they were evoked from the analyser's keyboard. Button ***Capture display contents*** creates a bmp file on hard disk (in \Data\Display directory) with a copy of the display's image.



Drawing 29. Remote control panel

4.5 Footers

This function allows to create or edit the footers used in the printouts. It is possible to access this option be single-clicking a **ftr** file in the *Footer* folder from the side panel.

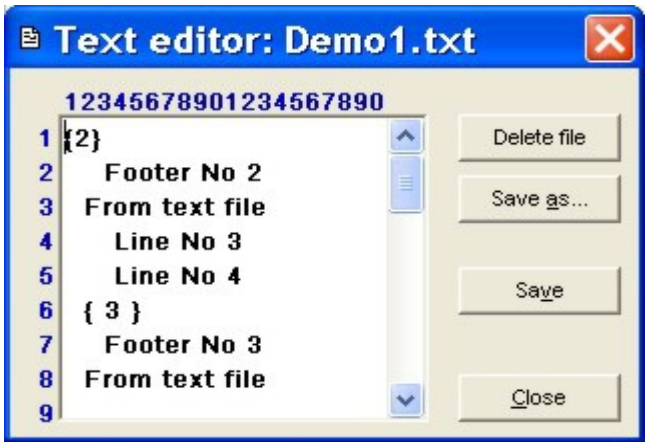


Drawing 30. Footer editor

The Footer editor's options:

- ***Open*** – opens ftr file with footer definition from the hard disk.
- ***Save*** – save changes in the edited footer.
- ***Save as*** – saves the footer definition in a different file.
- ***Read from...*** – read the footers from the analyser.
- ***Send to...*** – send the edited footer back to the analyser.
- ***Delete file*** – deletes the edited footer from the hard disk.
- ***Clear all*** – clears all the line in the edited footer.

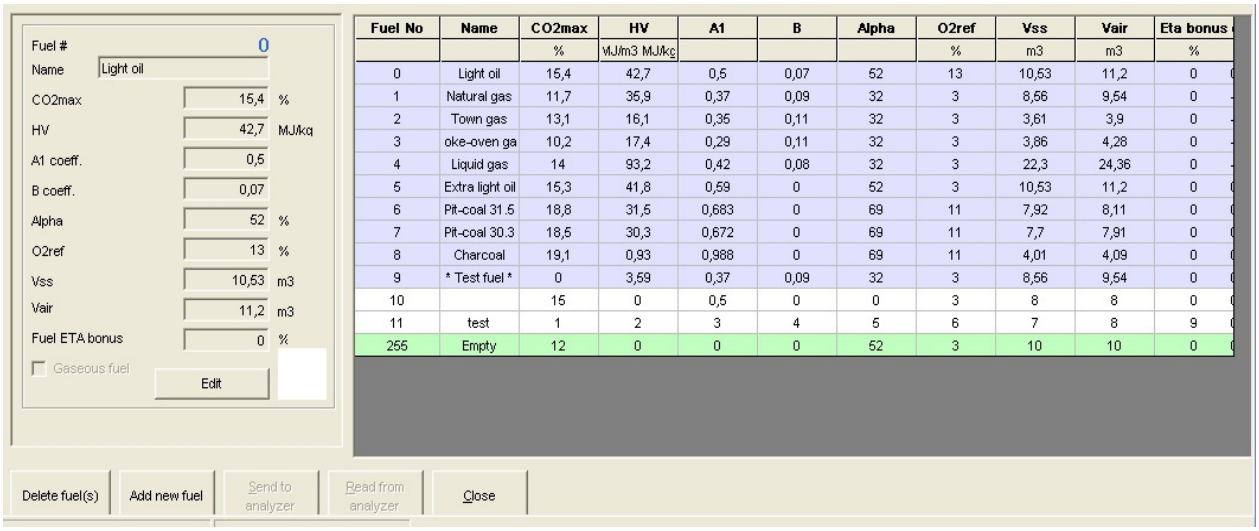
It is possible to import / export footer from / to txt file. Opening txt file from the side panel (form the Footer folder) opens footer editor:



Drawing 31. Editing footers from the txt file.

4.6 Fuels

This option allows to edit fuel parameters. It is important to use the correct fuel parameters as they are used for calculation made by analyser. Selecting Fuels, the following window is opened:

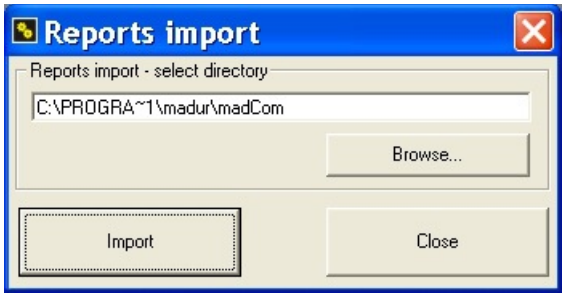


Drawing 32. Fuel parameters window

Fuels highlighted in blue are predefined by manufacturer and they cannot be modified. Fuels highlighted in white are user-defined and are freely editable. User can:

- delete a fuel (applicable only to user-defined fuels)
- add a new fuel
- send fuel to / read fuel from the analyser's memory (true only to the Photon gas analyser)

4.7 Import reports from Photon SD / MMC card

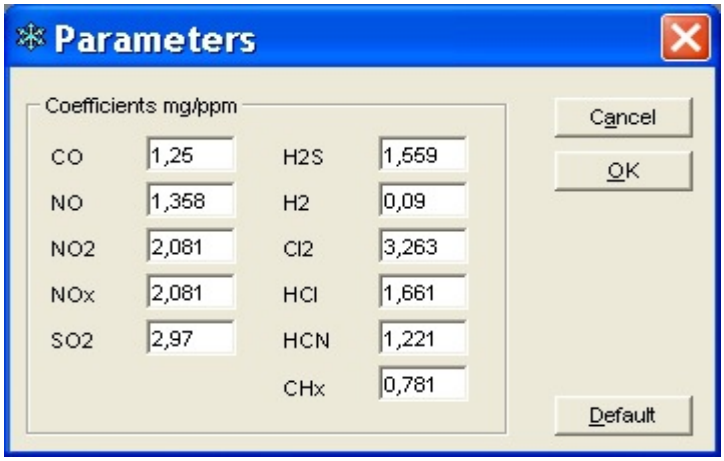


Drawing 33. Import reports from Photon SD / MMC card

Photon analyser is equipped with SD / MMC card reader where measurement reports are stored. This program's option allows to import reports stored on the SD / MMC card.

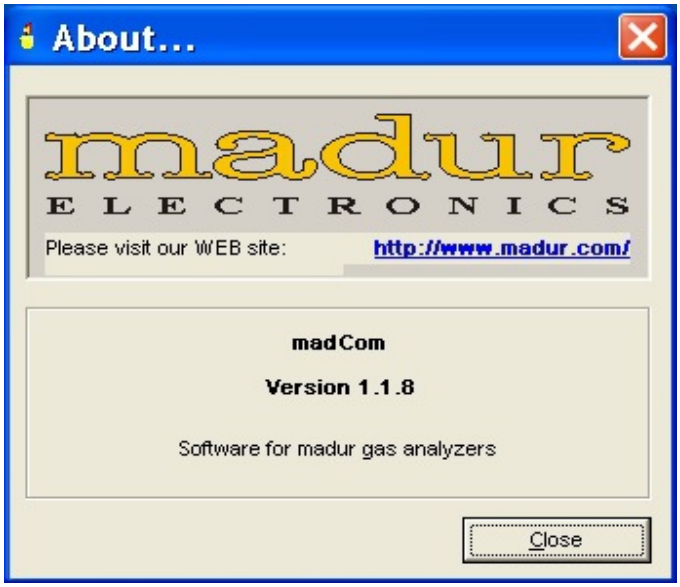
4.8 Reference conditions

Here is where it is possible to define coefficients used for recalculating the results from **ppm** to **mg**. Button ***Default*** restores the factory set values.



Drawing 34. Defining coefficients used for recalculating results from ppm to mg.

4.9 About



Drawing 35. Information about the program.

This option displays information about the program – version, manufacturer, etc.

5 USING MADUR USB-TO-RS232 CONVERTER

The standard cable for communication with the madur analysers is “true” RS-232 cable. RS-232 is an industrial standard that provides stable, resistant to errors communication for long distances (even up to few hundred meters).

Drawing 36. “True” RS-232 communication cable

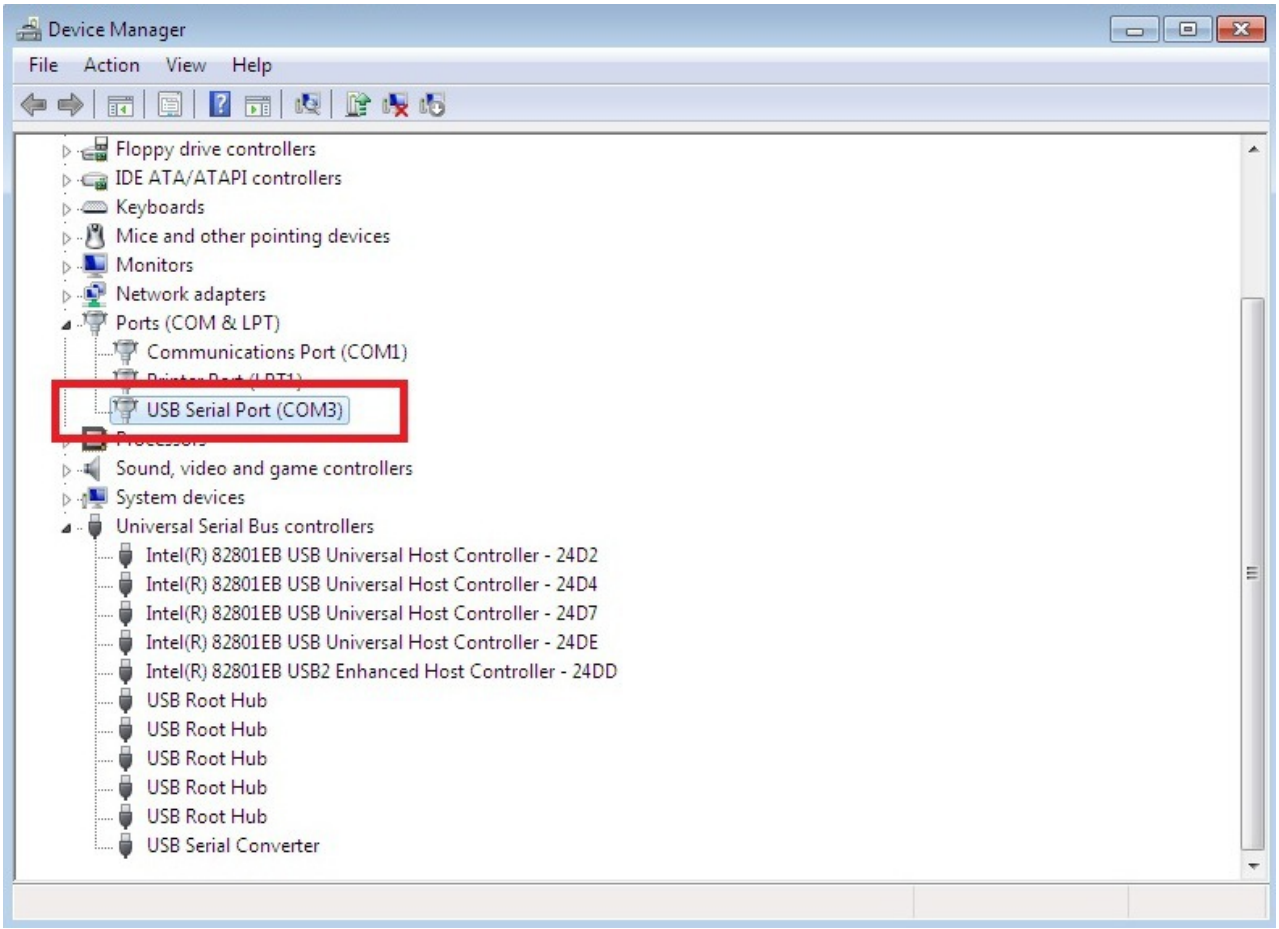
Because nowadays personal computers, especially laptops, are rarely equipped with RS-232 ports, **madur** offers its clients optional USB-TO-RS232 converter cable. This cable is build using the best quality parts, that provides the best communication stability.

Drawing 37. madur USB-TO-RS232 converter cable

As in case of most USB equipment, **madur** cable requires drivers for proper work. Suitable drivers are included in the madur software CD, in the *service_madur_USB* folder. They are also available from website: **http://www.ftdichip.com/Drivers/VCP.htm**.

Detailed manuals concerning installation of USB drivers in different Windows platforms can be found here: **http://www.ftdichip.com/Support/Documents/InstallGuides.htm**

To check if the installation of USB cable was successful, please go to *Control Panel → System → Device Manager* and see if there is a *USB Serial Port* entry in *Ports (COM & LPT)* nod. Number in brackets (in the picture below it is COM3) specifies the COM port assigned to the madur USB-TO-RS232 converter cable – this COM port should be selected in the ***madCom*** program in the *Communication Settings* window – for more details see chapter4.1.6.



Drawing 38. USB-TO-RS232 converter successfully installed.