IRMA

OPERATING SENSOR VIA MADUR.EXE PROGRAM

## CONTENTS

1. OPERATING IRMA SENSOR VIA MADUR.EXE PROGRAM

The manual presents the basic operations and settings which can be introduced to IRma sensor via madur.exe program. The below screen-shots illustrate situation for a single CHF3 sensor connected with USB adapter. The adapter created COM5 serial port.
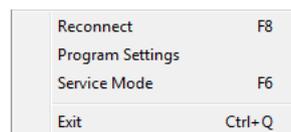
1.1. Sensor connection settings

From the main menu pick the „File" option and then "program settings" sub-option. It is necessary to choose the correct settings as shown in the window below.
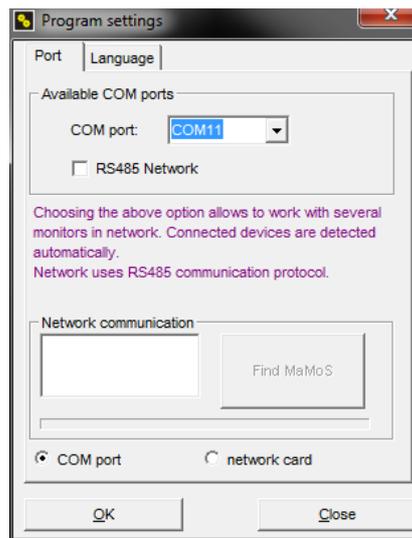
1.2. Establishing connection with sensor

To establish a connection with the sensor it is necessary to use the "Reconnect" sub-option in the "File" menu.

After the connection is established a Ready... note will appear on the status bar.

1.3. RTC setting

When establishing a connection the program checks if the computer clock and the sensor's RTC (real time clock) are set alike. If they differ by more than a minute the program suggests the user to re-set the sensor's RTC. The user only has to confirm by clicking the OK button.

1.4. Valves and pump behaviour setting

Select the "Main settings" option from the menu, then the "Gas pump and valves" sub-option and define the behaviour of the valves and the pump for each of the sensor's work phases:

A marked check-box means that for the particular phase the pump / pump is turned on.

1.5. Display behaviour setting

Choose the option "Main settings" from the menu and then select "Displays" sub-option. Now indicate the displayed measured value and the behaviour of the display during the "Ventilation" phase.

1.6. SD card storage setting

Choose the option "Main settings" from the menu and then pick the "Enable data storage on SD card" sub-option. You can now turn the storage on / off, set the storage interval starting number for the files on the cards.

1.7. Analogue outputs setting

Choose the "Analogue outputs" option from the menu. A window with a set of options will appear.

For the U1 voltage output the following can be set:
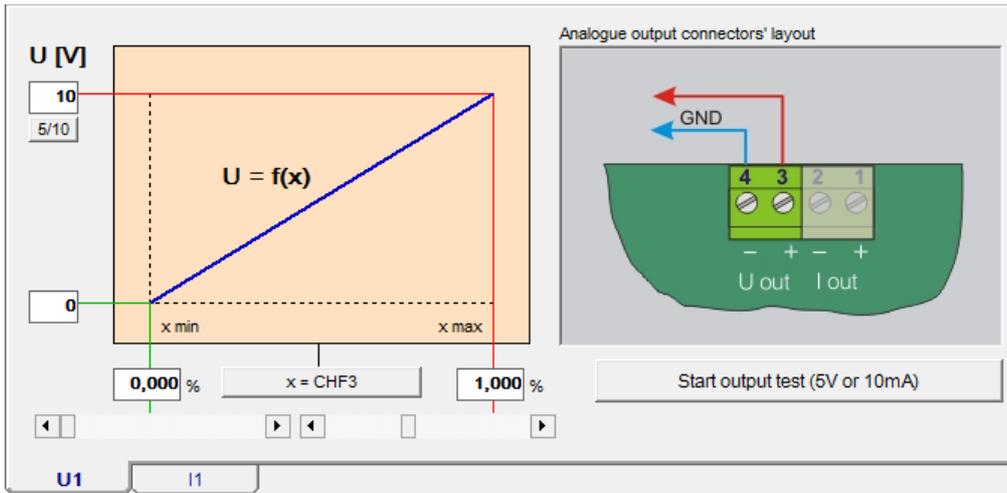
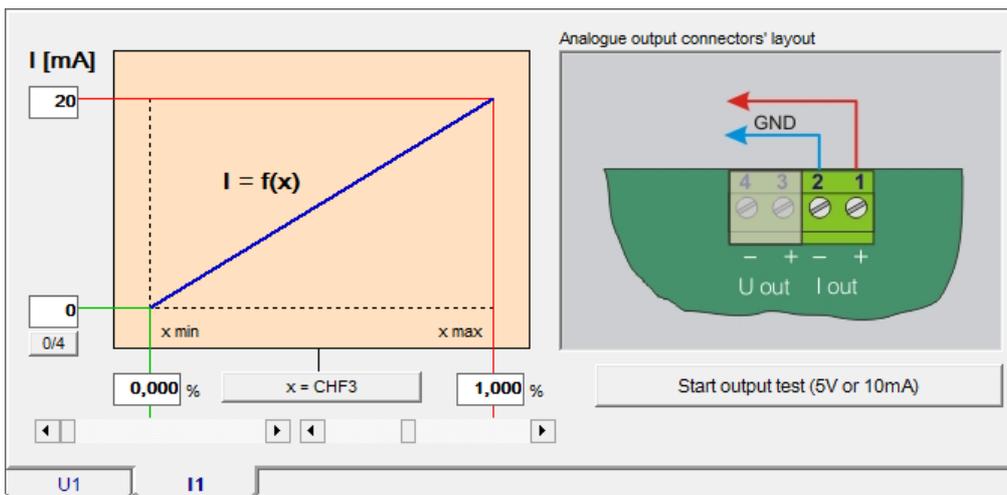| 5/10 | voltage output range (0..5 or 0..10V) |
x = CHF3	choice of the measurement value presented on the analogue output
0,000	the measured value corresponding to the minimal voltage on the U1 output
1,000	the measured value corresponding to the maximal voltage on the U1 output

For the I1 current output the following can be set:

0/4	current output range (0..20mA or 4..20mA)
x = CHF3	choice of the measurement value presented on the analogue output
0,000	the measured value corresponding to the minimal current on the I1 output
1,000	the measured value corresponding to the maximal current on the I1 output

What is more, it is necessary to set the outputs behaviour in each of the sensors work phases using the „Analogue outputs behaviour" section.

1.8. Sensor's work cycle setting

It is necessary to select "Work cycles" option from the main menu. The window appearance differs depending on the chosen work mode.

1.8.1. Cyclic measurements

The following parameters can be defined in the cyclic measurements work mode:

1. Full cycle time
2. Length of the „Ventilation" phase
3. Length of the „Measurement" phase
4. First zeroing moment (in 24 hours)

1.8.2. Measurements according to scheduler work mode

The following parameters can be defined in this work mode:

1. Length of „Ventilation" phase
2. Length of „Measurement" phase
3. 24 points (in 24 hours) when the device starts a new measurement cycle – drawing above presents example settings for the scheduler work mode.

1.8.3. Measurements triggered by digital input

The below times can be defined in the triggered work mode:

1. Length of „Ventilation" phase
2. Length of „Measurement" phase

In this work mode a measurement cycle does not start automatically. It has to be triggered by one of the digital inputs In1..I4.

Hence it is additionally necessary to define each of the measurement inputs' behaviour. This settings can be performed via the tab shown below:
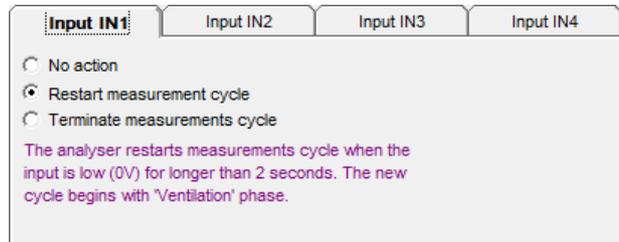
Choosing the „Restart measurement cycle" option will cause the particular input to start a new cycle (starting with „Ventilation")

Choosing „Terminate measurement cycle" will make the particular input interrupt the current sensor's cycle (proceeding to „StandBy" phase)

1.8.4. Monthly work mode
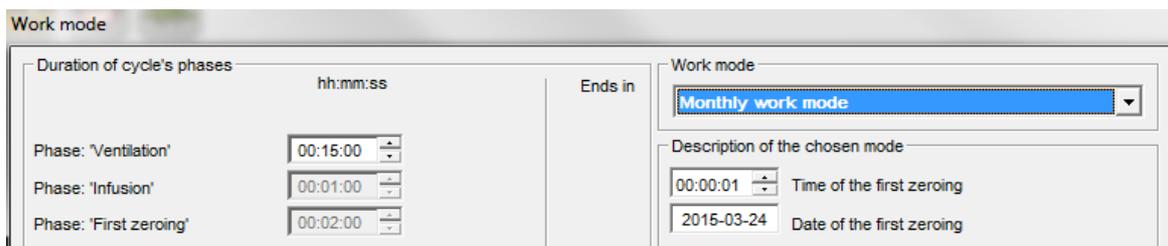
The following can be set in the monthly work mode:

1. Length of „Ventilation" phase
2. The date and the hour of the first zeroing (the date sets the day of the month when the zeroing is going to be performed). The zeroing is interval is one calendar month.

1.8.5. Monthly work mode with adjustable lengths (1...30 days)

This work mode is much alike the monthly work mode. However, the zeroing interval is not fixed and can be adjusted from 1 to 30 days.
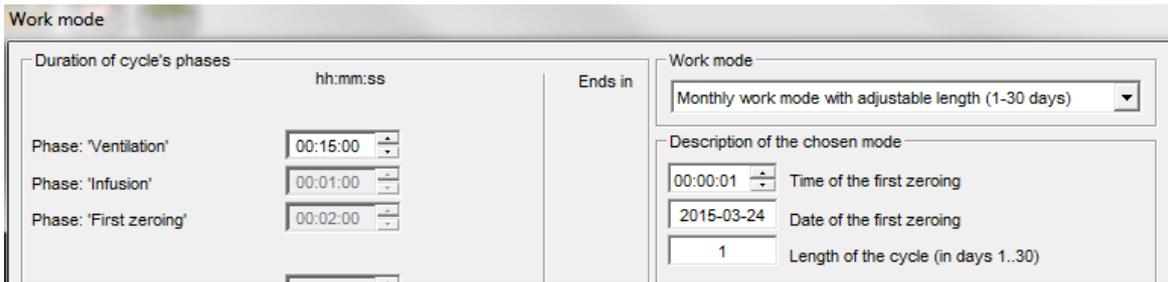
## 1.9. Handling the results stored on the SD card

The files' names on the SD card are the following numbers with the ".mrp" extension. To convert those binary files to csv files (editable in spreadsheet applications like Microsoft Office), it is necessary to use the "SD card" option from the main menu and then select the "Report preview" sub-option. An example of the sub-option window is shown below.
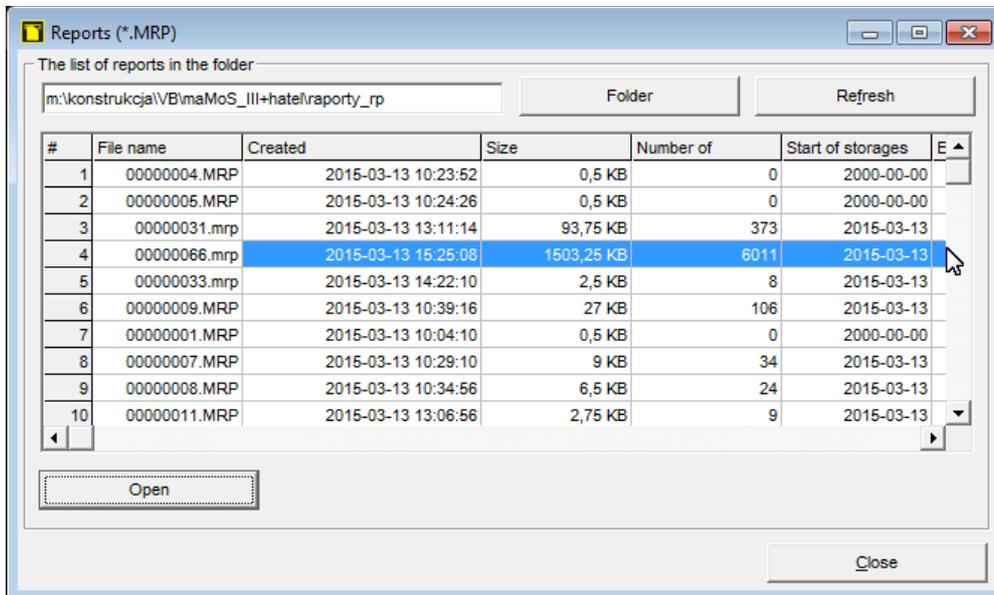
After the particular report has been chosen its content can be seen.
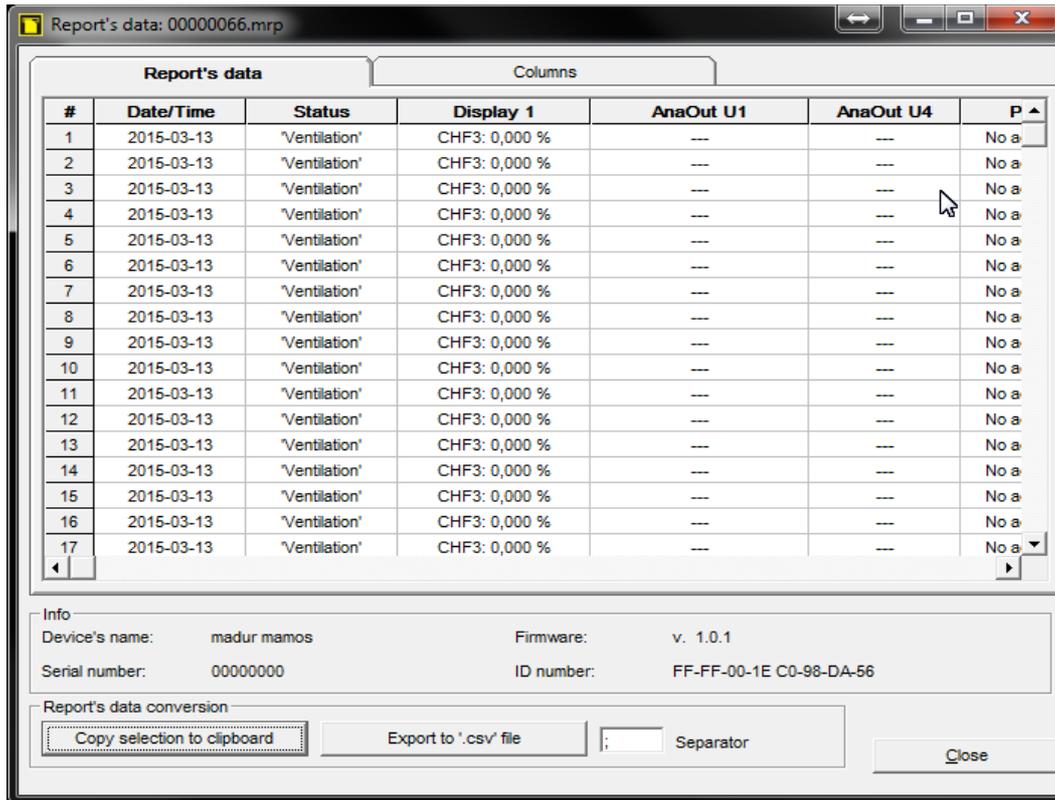
A part or all the measurements can now be chosen to be exported into *.csv file. The data can also be copied to another program via the system clipboard. The csv is a simple text format compatible with all spreadsheet applications. What is more, the user is able to define the csv file content with the help of the "Column" tab:
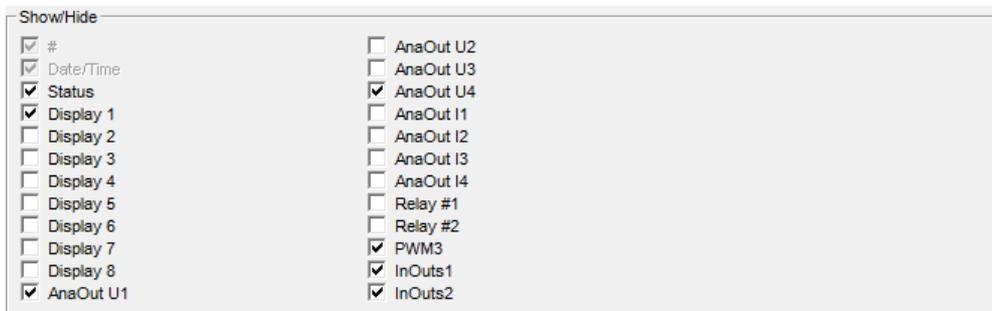
REMARK: The „Separator" box needs explanation. The default separator in csv file is comma ','. (csv abbreviation comes from „comma separated values"). In the countries where comma is used as decimal separator semicolon ';' can be used in csv files.