



RIEILE

Operating Instructions

Serial Monitor *5010*

ROBERT RIELE GmbH & Co KG

Software Version 5.4
Documentation Version 02.2009

1 Introduction to Serial Monitor 5010

The software Serial Monitor *5010 V5+* was developed for the RIELE product:

Photometer 5010 V5+

The operator controls the photometer via a PC which employs menu-driven software. Several tasks can be performed:

- Like the method editor of Photometer *5010 V5+* the software Serial Monitor *5010* supports the adapting of methods to the photometer. With special functions the user can upload and download pre-programmed methods. Additionally, methods can be created and edited on the PC. Customer-defined methods can be stored in an external file.
- The operating of Photometer *5010 V5+* by the remote control can be demonstrated. The user can easily recognize the meaning and performance of the defined instruction set.
- General operating software contained in FLASH MEMORY of Photometer *5010 V5+* can be updated. Data file can be downloaded from Internet, floppy disk or CD ROM.
- The EDP can be demonstrated in a special terminal window. The contents of the window can easily be transferred to other applications.

2 INSTALLING

This chapter describes requirements and procedures for starting **Serial Monitor 5010**.

2.1 System requirements

The minimum and recommended system requirements needed to install and run the program are as follows:

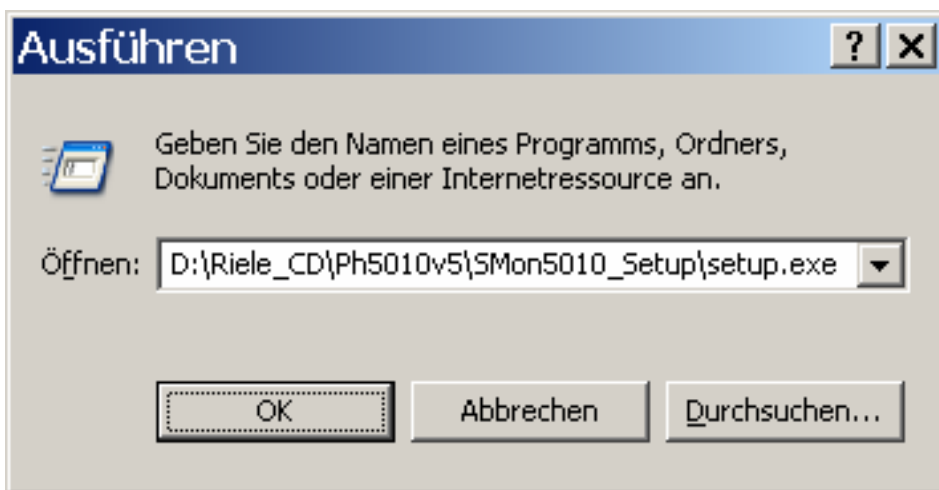
Photometer Version 5.10 or higher

Windows 98
Windows 2000
Windows XP

2.2 Installation of software

- Unzip the installation program in a discrete directory.
- In the run dialog box enter e.g.:

D:\Riele_CD\Ph5010v5\Smon5010_Setup\setup.exe



- Say <OK> to select the **Serial Monitor 5010 Installer**.
- The **Serial Monitor 5010** installation program starts.



- Confirm or enter new path of **Serial Monitor 5010**:
C:\Cavo25RR\Smon5010v5
- Select the button <Continue> to run the installer and follow the instructions.

2.3 Organization of software

Serial Monitor 5010 software is completely installed in a directory, e.g.:

```
C:
    \Cavo25RR
        \Smon5010v5
            \DI_5010
            \Files
```

Other directories like \Windows\System are not changed or affected.

The registry of Windows is not affected.

The directory C:\Ca_appsw is empty and may be deleted.

2.4 Uninstallation of software

This version of software does not affect the registry of Windows. The application **Serial Monitor 5010** can easily be removed from the PC by deleting the complete directory (see 2.3 – Organization of software).

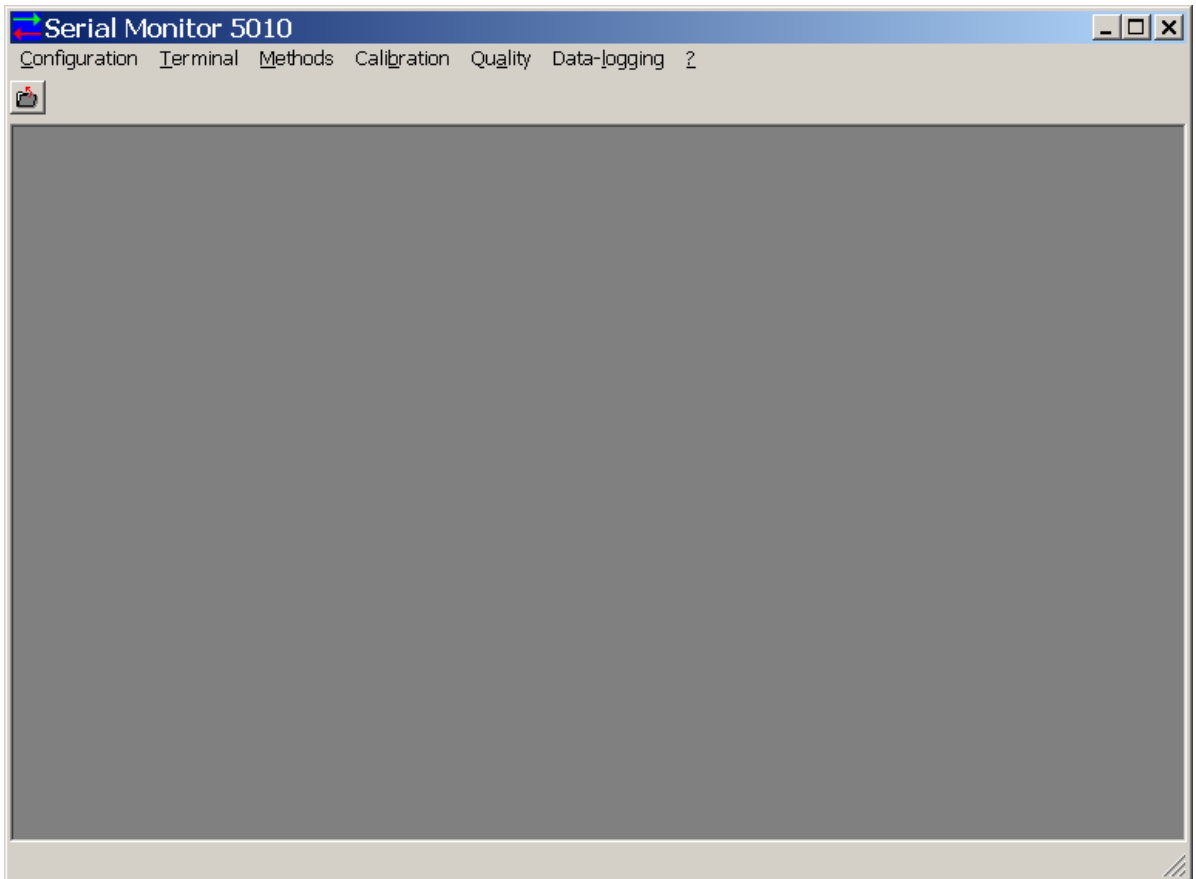
In any case files like Methods.dbf containing application data should be saved before deleting the directory.

By default the location of this file is the directory: \Files.

3 STARTING

Before starting the software connect PC and photometer in following manner:

- Switch off PC and Photometer *5010 V5+*.
- Connect PC and Photometer *5010 V5+* with a data interface cable.
For further information see:
Service manual of Photometer *5010 V5+*, chapter 6.1 – Communication protocol
- Switch on PC and Photometer *5010 V5+*.
- Start the program "**SMon5010v5.exe**"
- The program shows the following window.
- At the first time control and correct the language and COM port with the menu CONFIGURATION.



4 Menu CONFIGURATION

The menu CONFIGURATION makes the setting of different parameters possible. The settings are saved by the program and therefore correctly adjusted at the next program call.

4.1 Deutsche Sprache

... selects German language

4.2 English language

... selects English language

4.3 read from photometer

... fills a database called "M_<Serial number>.dbf" with configuration data of the photometer.

4.4 write to photometer

... restores configuration data of the database "M_<Serial number>.dbf" to the photometer.

4.5 Configure Interface

... selects COM port, baud rate, parity, data bits, stop bits.

The default settings of the serial interface are as follows:

Baud rate:..... 9600 bit/s
 Data format:..... 7 data bits, 1 stop bit
 Parity: even

For further information see:

Service manual of Photometer 5010 V5+, chapter 6.1 – Communication protocol

4.6 Set device

... selects different models of Photometer 5010

4.7 Download operating system

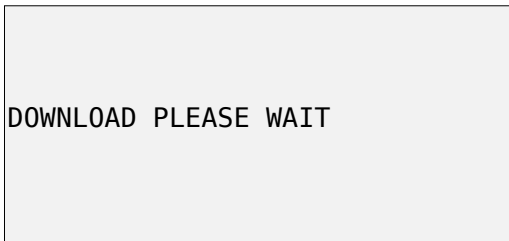
... updates general operating software contained in FLASH MEMORY of Photometer 5010 V5+.

The general operating software is supplied as a set of three files. The actual files have the names e.g. "V5_10aD.b0", "V5_10aD.b1" and D_Load.hex. They can be downloaded by internet (see <http://www.riele.de> / Products / Photometer 5010 V5+ / Operating system) as a packed zip file.

Before proceeding with uploading, the complete set of files should be copied to the directory "\DI_5010" (chapter 2.3 – Organization of software). Select the model Photometer 5010 V5+ with the function "Set device" (chapter 4.4 – Set device).

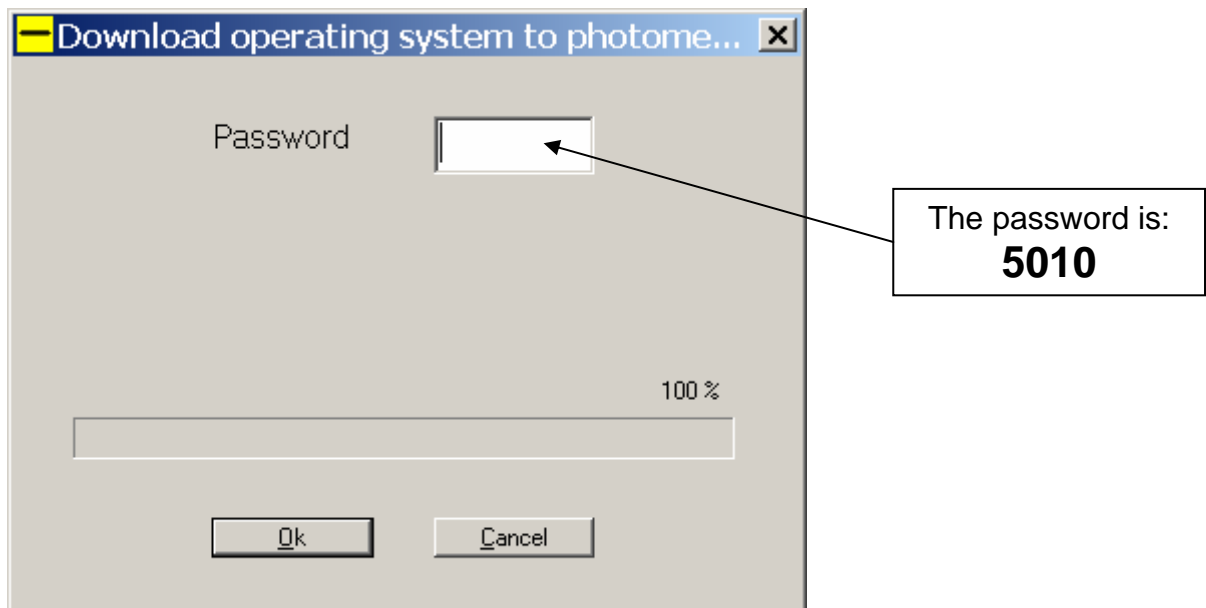
The Photometer 5010 V5+ has to be set to DOWNLOAD by [UTILITIES], [MENU SERIAL COM] and [DOWNLOAD].

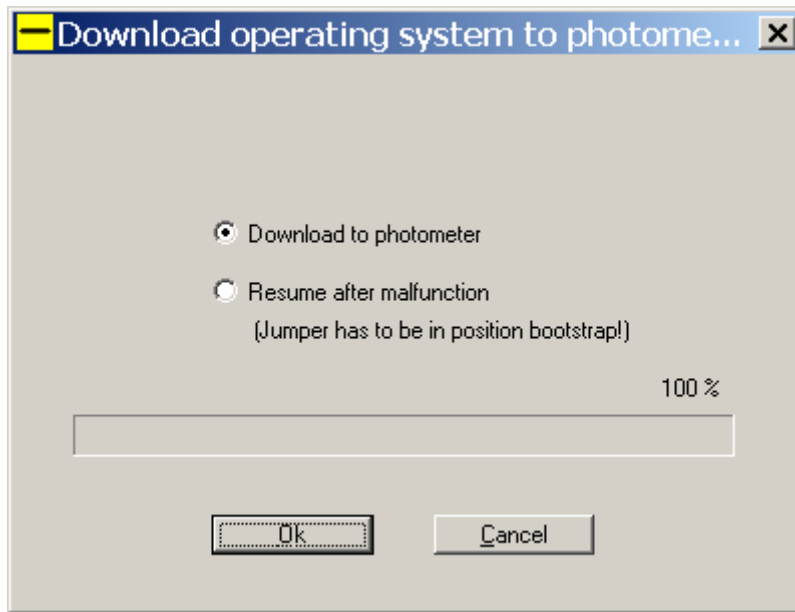
The Photometer 5010 V5+ displays:



Attention: During the following procedure the FLASH MEMORY of Photometer 5010 V5+ will be erased and programmed electrically. The complete procedure needs up to 10 minutes. During this operation be careful that there is no power fail out. Do not interrupt the connection between PC and Photometer 5010 V5+.

Start the function "Download operating system".

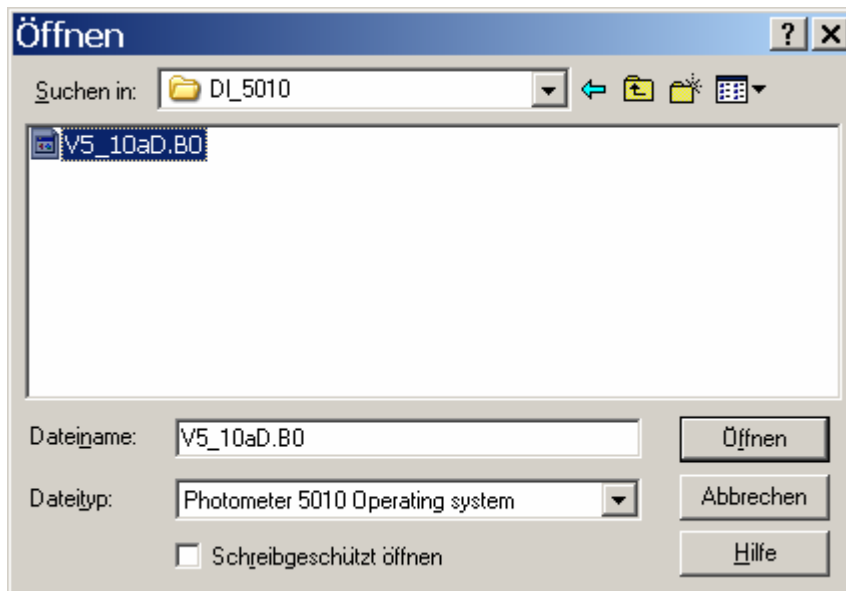




Select the first option – Download to photometer – and confirm with [Ok].

Attention: Do not select the second option – Resume after malfunction - without having a malfunction. In case of a malfunction the Photometer 5010 V5+ screen is empty after starting.

Contact your dealer for getting help.



An open dialog is shown. Open the file e.g. **V5_10aD.B0**. The download begins... The window is closed and a progress bar shows the proceeding of operation. After several minutes the Photometer 5010 V5+ stops the transferring of data with a reset operation. The new operating system is working.

After updating the general operating software of Photometer 5010 V5+ several initialization procedures have to be done by using service tools and utilities.

A detailed description of the service tools is contained in the service manual of Photometer 5010 V5+ (chapter 3.3 – Service tools).

A detailed description of the utilities is contained in the operating manual of Photometer 5010 V5+ (chapter 7 – Utility programs).

- When errors appear during operation, first of all they have to be confirmed with [E] before remedying (OM chapter 9 - ERROR MESSAGE / CORRECTION).
- Optional function: Apply the service tool **S2.1** - "Delete free methods".
Attention! With this function all methods edited by the user are deleted without a call-back. In the case of doubt these methods should be checked before: Scroll through all methods with the method editor and note them down for an optional later new programming.
- Optional function: Apply the service tool **S2.2** - "Multi-standard memory".
Attention! With this function the memory assigned to nonlinear methods is deleted without a call-back. The contents of the memory can be exported and imported by special remote commands.
- Optional function: Apply the service tool **S2.3** - "Delete logger memory".
Attention! With this function the memory assigned to stored results is deleted without a call-back.
- Optional function: Apply the service tool **S2.4** - "Del. QC memory".
Attention! With this function the memory assigned to QC data is deleted without a call-back.
- Make a setting of "PCB layout" by applying the tool **S6**:
Software applications may be dependent on this attribute.
- Define the laboratory name by applying the utility **U11**:
The name of the laboratory can be stored permanently.
- Define the user names by applying the utility **U12**:
The names of maximum five users can be stored permanently.
- Do a dark level adjustment by applying utility **U1** in combination with both cuvette adaptors.
- Make a printout of the settings by applying utility **U7**.

4.8 Backup of memory

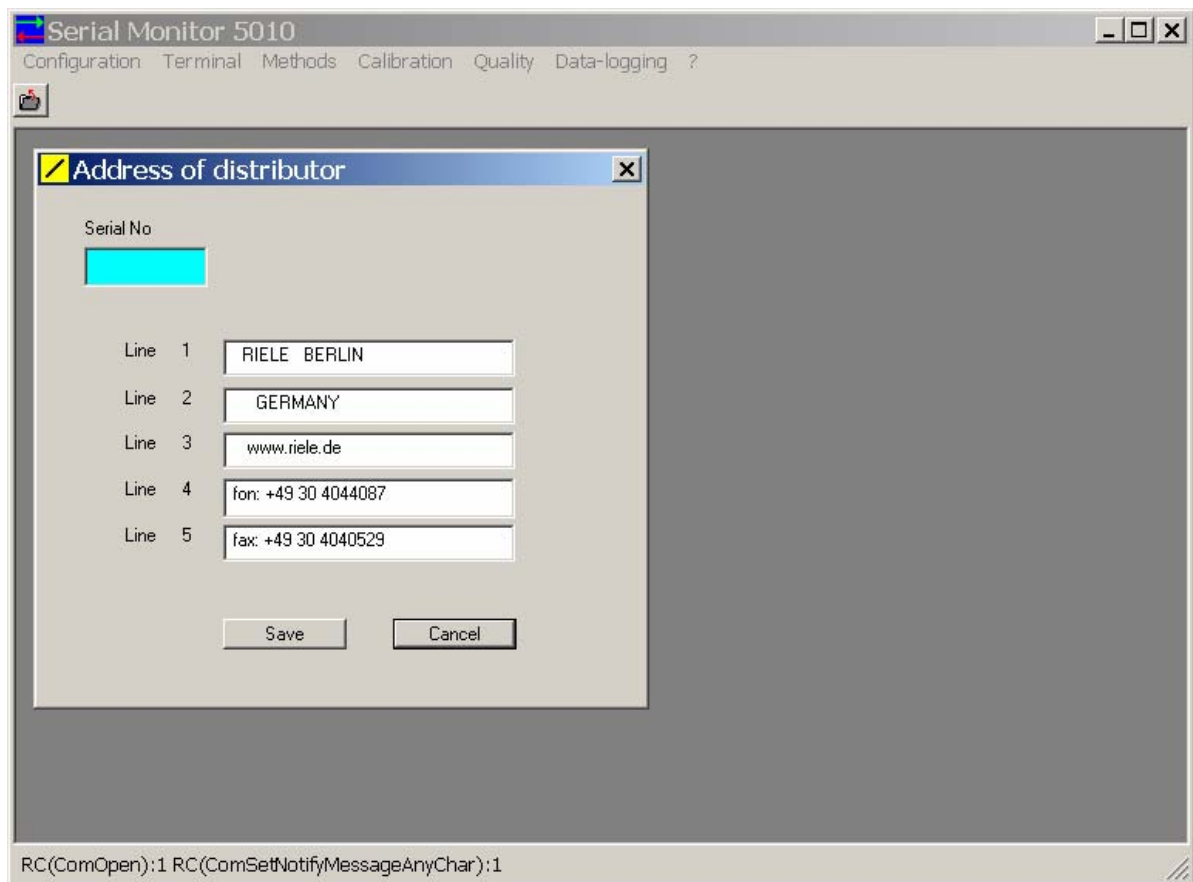
... fills a database called "M_<Serial number>.dbf" with configuration data, calibration data, quality data and data-logging of the photometer.

4.9 Address of distributor

... edits and sets the address of the distributor. This information can be shown on the touchscreen after each switching on of the photometer.

The function operates only in the MAIN MENU.

If the address data are transferred to the photometer, the single line edit "Serial No" shows the serial number of the device on a white background.



4.10 Exit

... quits the application

5 Menu TERMINAL

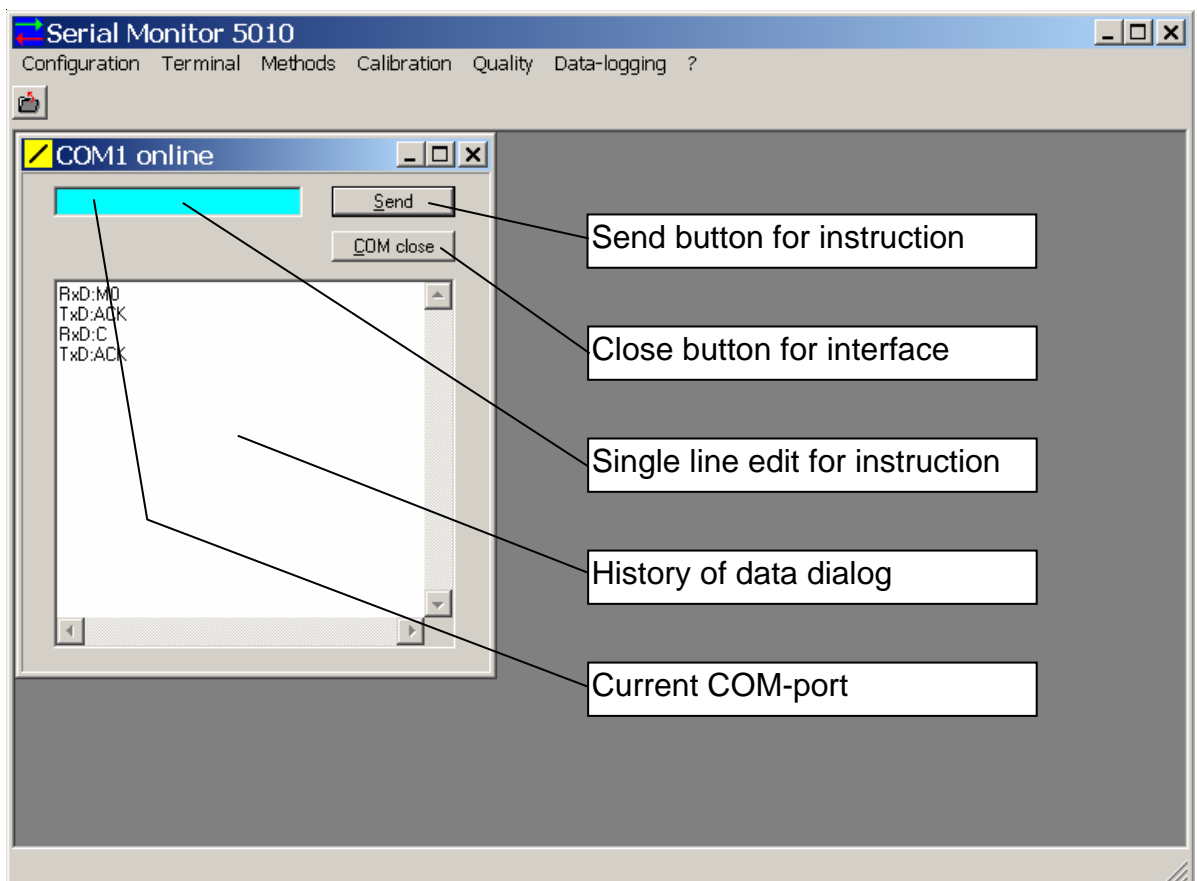
The items of menu TERMINAL demonstrate the operating of Photometer 5010 V5+ by the remote control and EDP.

5.1 Remote control

The item REMOTE CONTROL gives the user the possibility to remote the photometer. All instructions are embedded in a STX / ETX / BCC-protocol. Each information represented by an ASCII-string starts with a start character (start of text = STX) and stops with an end character (end of text = ETX). After each ETX a block code character called BCC is send. The BCC is the result of a XOR-function including the information and the ETX.

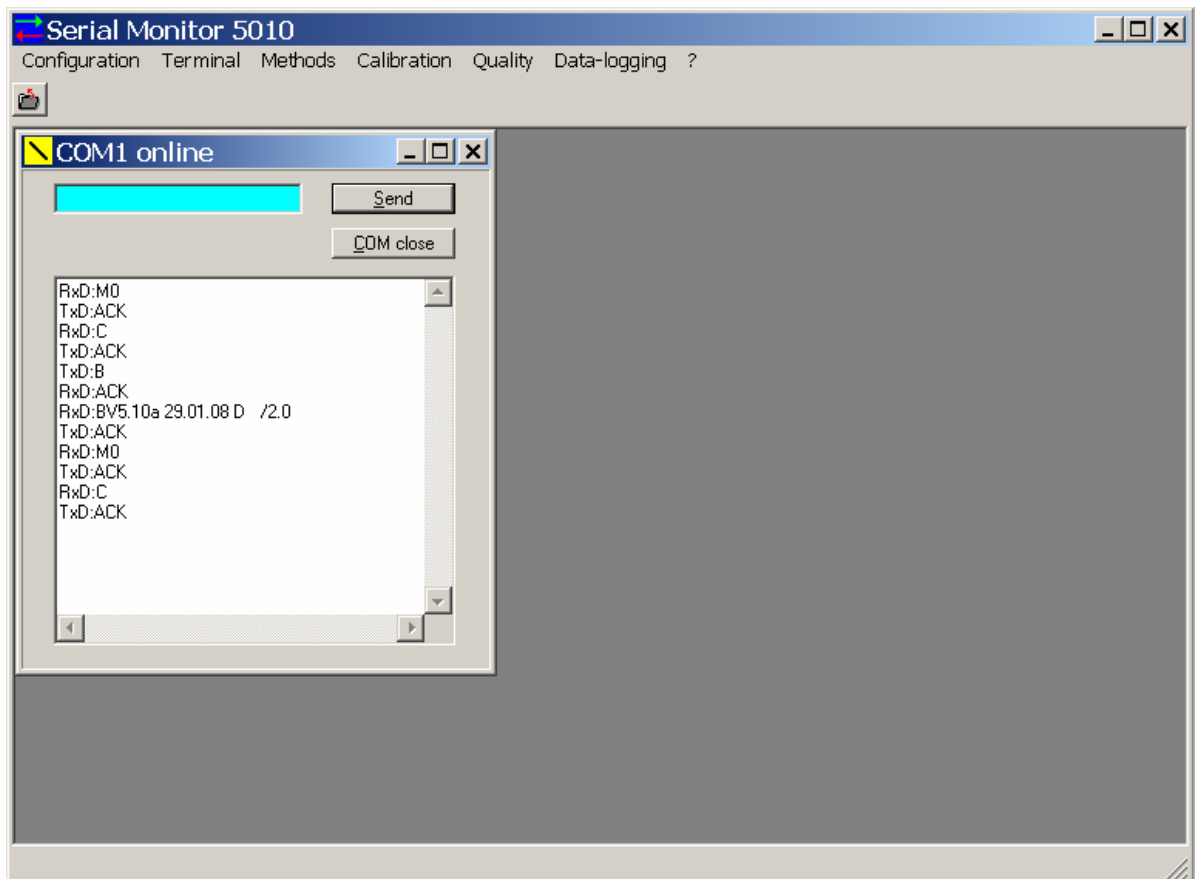
Protocols are accepted by the receiver with an acknowledgement (ACK) or a negative acknowledgement (NAK) character.

- Select the menu "REMOTE CONTROL".
- Invoke the item REMOTE CONTROL
- The Serial Monitor 5010 shows the following window:



Example for using remote instructions:

- Enter the character "B" to the single line edit for instruction and push the button "Send". The command "B" gives the information about the firmware of Photometer 5010 V5+.
- The PC sends a protocol "B" to Photometer 5010 V5+. In history of data dialog the line appears: TxD:B
TxD means: Transfer of data from PC to Photometer 5010 V5+
- Photometer 5010 V5+ accepts the instruction with an acknowledgement character. In history of data dialog the line appears: RxD:ACK
RxD means: receipt of data from Photometer 5010 V5+
- Photometer 5010 V5+ sends to the PC the information about the software version. In history of data dialog the line appears: RxD:BV5.10a 29.01.08 D /2.0
- The PC accepts the instruction with an acknowledgement character. In history of data dialog the line appears: TxD:ACK
- After a complete dialog Photometer 5010 V5+ sends "M0" (Module 0 = M0) and "C" (Command = C) and is ready to accept a new instruction.



For further details see Service Manual chapter 6.1 – communication protocol

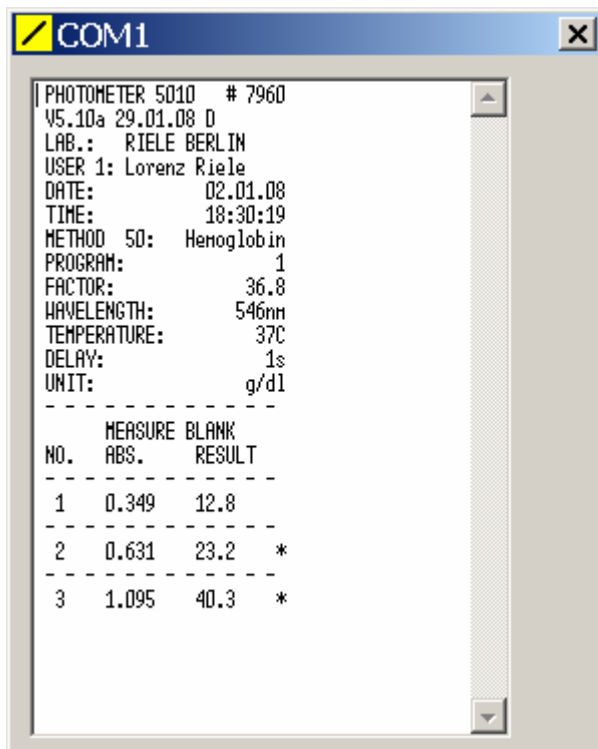
5.2 Printout to screen

The menu PRINTOUT TO SCREEN shows the operating of EDP mode. The EDP mode of Photometer 5010 V5+ supports STX / ETX / BCC-protocol or CR /LF protocol.

In menu PRINTOUT TO SCREEN all instructions are embedded in a STX / ETX / BCC-protocol. Each information represented by an ASCII-string starts with a start character (start of text = STX) and stops with an end character (end of text = ETX). After each ETX a block code character called BCC is send. The BCC is the result of a XOR-function including the information and the ETX.

Protocols are accepted by the receiver with an acknowledgement (ACK) or a negative acknowledgement (NAK) character.

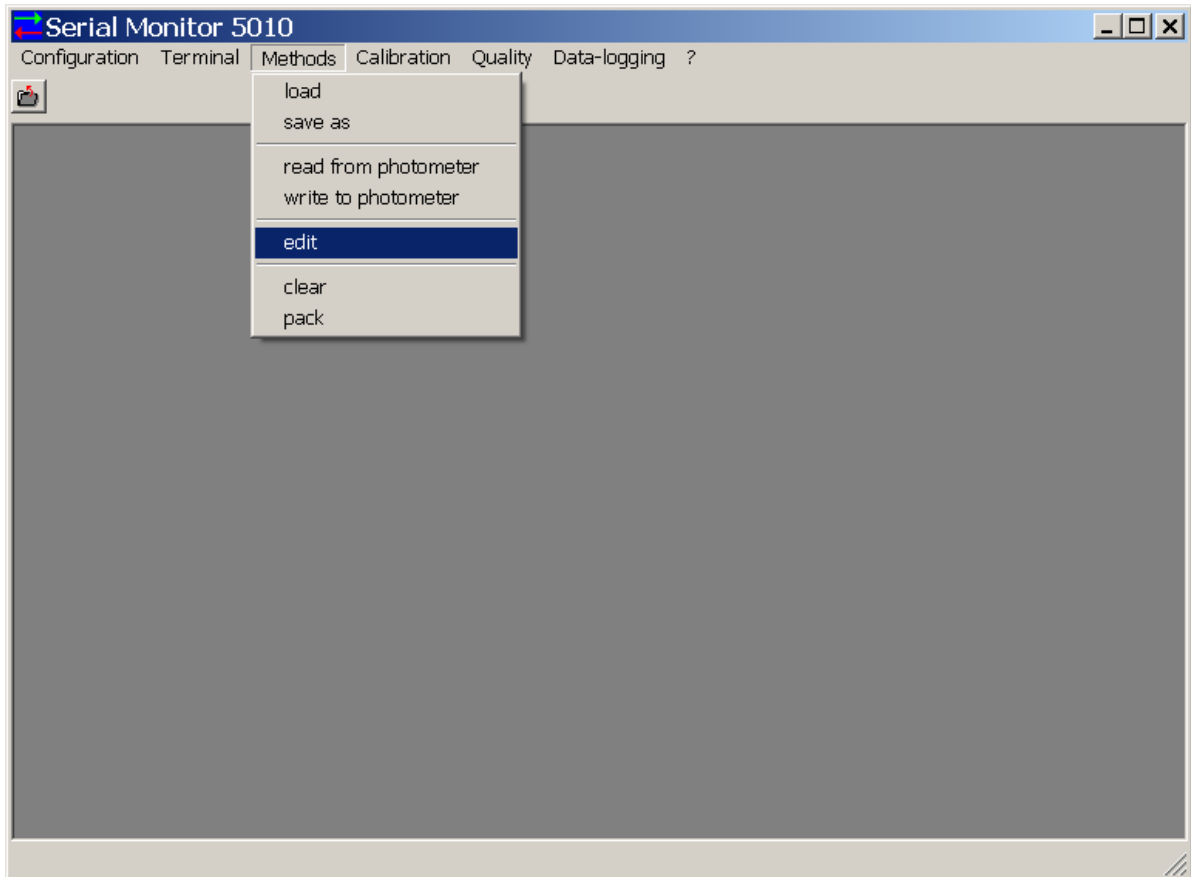
- Select the menu „PRINTOUT TO SCREEN“.
- Activate on Photometer 5010 V5+ the utility program EDP by [UTILITIES], [MENU SERIAL COM], [EDP ON / OFF], [SELECT], [EDP ON (STX-ETX-BCC)] and [OK].
- The program shows e.g. the following window while performing a method:



6 Menu METHODS

The menu METHODS enables the user to upload and download pre-programmed methods. Additionally, methods can be created and edited on the PC.

All methods are stored in a database called "Methods.dbf" located in the subdirectory "Files". The data base has the format of a dBase III-file. The file may be replaced with a pre-programmed file.



6.1 load

... replaces the database "Methods.dbf" with a customer-specific file. The old file "Methods.dbf" will be renamed to "Methods.bak".

6.2 save as

... copies the database "Methods.dbf" under a new file name.

6.3 read from photometer

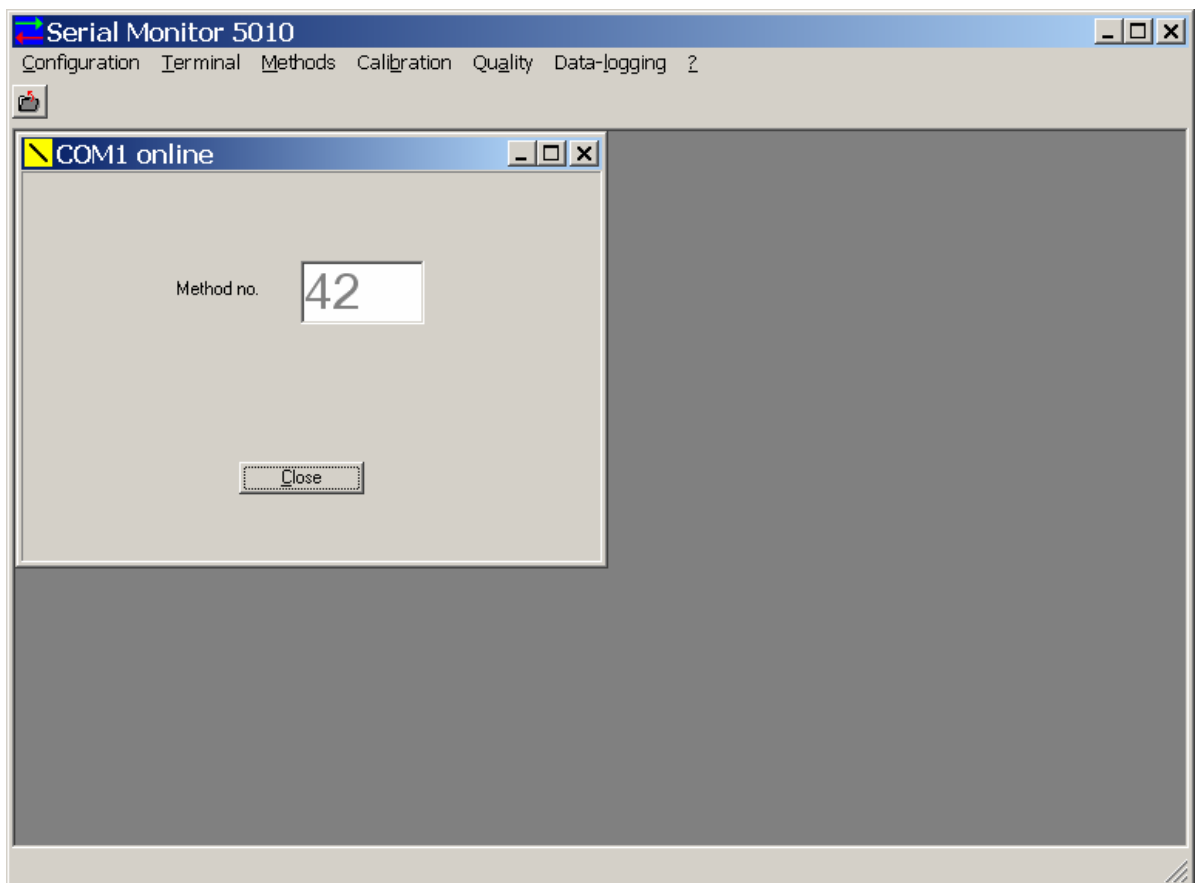
... fills the database "Methods.dbf" with all user-defined methods. The function also reads the status of the photometer and defines the range of the free programmable methods. If the database is not empty, the methods read will be merged with the existing ones.

- Select the menu "READ FROM PHOTOMETER".
- Activate on Photometer 5010 V5+ the utility program "REMOTE MODE" by [UTILITIES], [MENU SERIAL COM], [REMOTE MODE] and [START].
The Photometer 5010 V5+ displays:

```

REMOTE MODE ON
PUMP SWITCH EXIT
    
```

- The Serial Monitor 5010 shows the following window during reading from Photometer 5010 V5+:



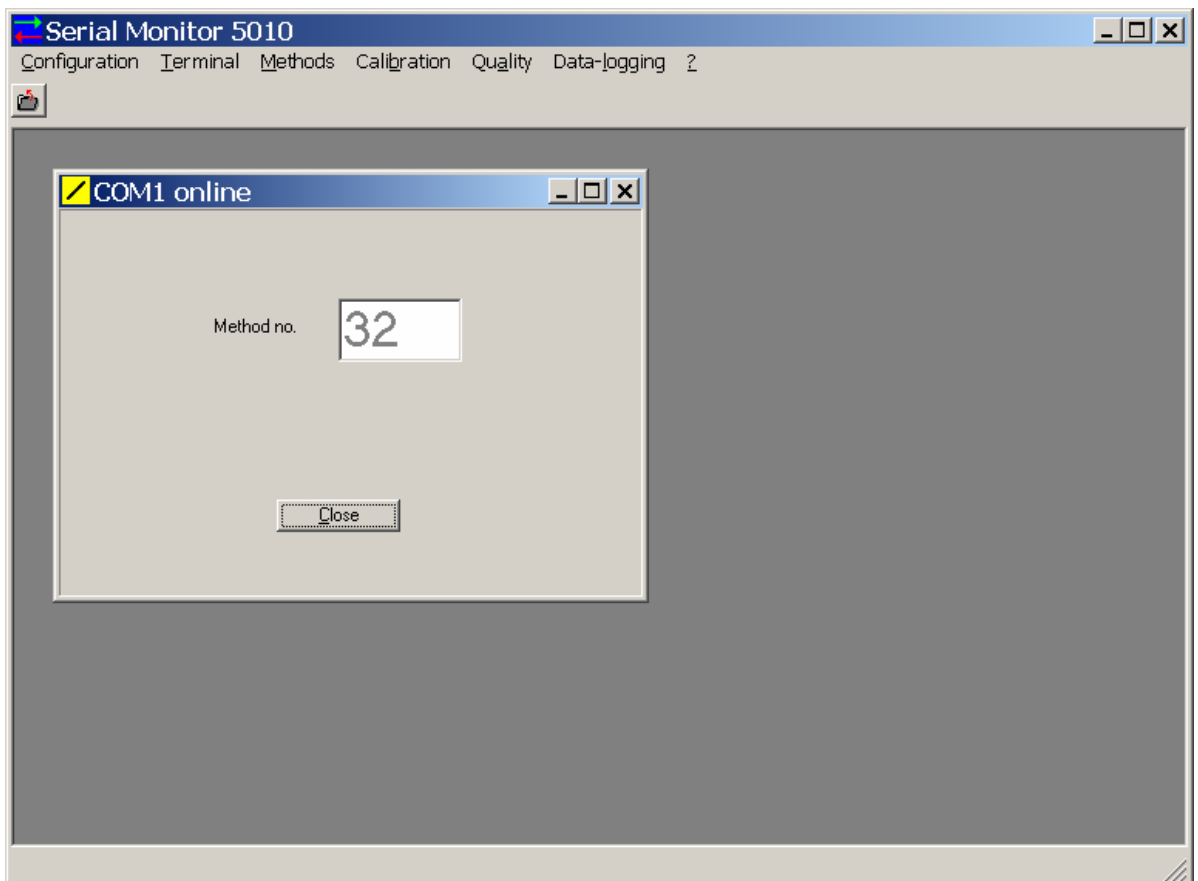
6.4 write to photometer

... stores all user-defined methods of the database "Methods.dbf" to the photometer. The database methods will be merged or overwritten with the existing ones of Photometer 5010 V5+.

- Select the menu "WRITE TO PHOTOMETER".
- Activate on Photometer 5010 V5+ the utility program "REMOTE MODE" by [UTILITIES], [MENU SERIAL COM], [REMOTE MODE] and [START]. The Photometer 5010 V5+ displays:

REMOTE MODE ON
PUMP SWITCH EXIT

- The Serial Monitor 5010 shows the following window during writing from Photometer 5010 V5+:



6.5 Edit

The browse view (write-protected):

The screenshot shows the 'Serial Monitor 5010' application window. The main area is titled 'Editor for methods' and contains a table with 13 columns: METH #, CP, NAME, DIMENSION, VOL ASPI, VOL WASH, FILTER [nm], FILTER-Bi [nm], FACTOR STANDARD, TEMP, T0, T1, MIN, and MAX. The table lists 16 method records. A context menu is overlaid on the right side of the table, listing actions: Browse view, Form view, Delete record, Append record, Go bottom, Next record, Previous record, and Go top. Green lines connect the menu items to their corresponding rows in the table.

METH #	CP	NAME	DIMENSION	VOL ASPI	VOL WASH	FILTER [nm]	FILTER-Bi [nm]	FACTOR STANDARD	TEMP	T0	T1	MIN	MAX
20	5	GLUCOSE	mg/dl	900 ul	1000 ul	546 nm	623 nm	100.00	37 °C	10	0	0	400.0
21	5	GLUCOSE	mmol/l	900 ul	1000 ul	546 nm		5.55	37 °C	10	0		
22	5	GLUCOSE	g/l	900 ul	1000 ul	546 nm		1.00	37 °C	10	0		
23	5	QHOL	mg/dl	900 ul	1000 ul	546 nm	623 nm	200.0	37 °C	10	0		
24	5	QHOL	mmol/l	900 ul	1000 ul	546 nm		5.20	37 °C	10	0		
25	5	QHOL	g/l	900 ul	1000 ul	546 nm		2.00	37 °C	10	0		
26	5	TRIGL	mg/dl	900 ul	1000 ul	546 nm		200.0	37 °C	10	0		
27	5	TRIGL	mmol/l	900 ul	1000 ul	546 nm		2.28	37 °C	10	0		
28	5	TRIGL	g/l	900 ul	1000 ul	546 nm		2.00	37 °C	10	0		
29	11	GOT	u/L	950 ul	1000 ul	340 nm		-1746.0	37 °C	60	3846		
30	11	GOT	ukat/l	950 ul	1000 ul	340 nm		-29.11	37 °C	60	3846		
31	11	GPT	u/L	950 ul	1000 ul	340 nm		-1746.0	37 °C	60	3846		
32	11	GPT	ukat/l	950 ul	1000 ul	340 nm		-29.11	37 °C	60	3846		
33	10	UREAUV	mg/dl	900 ul	1000 ul	340 nm		50.0	37 °C	60	60		
34	10	UREAUV	mmol/l	900 ul	1000 ul	340 nm		8.35	37 °C	60	60		
35	10	UREAUV	g/l	900 ul	1000 ul	340 nm		0.500	37 °C	60	60		

The form view for editing fields:

Serial Monitor 5010

File Edit Help

Editor for methods

Method no. **20**

Name **GLUCOSE** Dimension **mg/dl**

Filter **4** **546 nm** Filter bichrom **6** **623 nm**

Factor/Standard **100.00**

Volume Aspirate **14** **900 ul** Volume Wash **16** **1000 ul**

T0 (s) **10** T1 (s) **0**

No. of Deltas Time per Delta (s)

Linearity R² **0**

Minimum **0** Maximum **400.0**

General

Nonlinear

Multi measure

Protected

Temperature

OFF / open

25 °C

30 °C

37 °C

Programs

CP 1: C/F

CP 2: C/F/Rb

CP 3: C/F/Sb

CP 4: C/F/SbRb

CP 5: C/S

CP 6: C/S/Rb

CP 7: C/S/Sb

CP 8: C/S/SbRb

CP 9: FTK/F/Rb

CP 10: FTK/S/Rb

CP 11: KIN/F/Rb

CP 12: KIN/S/Rb

CP 13: TRANSM.

CP 14: C/F DELTA

CP 15: C/F 3 WL

A method of Photometer 5010 V5+ can be protected against clearing und editing. The form view of the edit mode allows setting a checkbox with the name "protected". Setting and resetting of the checkbox is only possible with a password. After writing to photometer a protected method can be cleared in the database. But the protected method of the Photometer 5010 V5+ can not be cleared.

6.6 clear

... deletes and packs all records of the database "Methods.dbf"

6.7 pack

... packs the database "Methods.dbf"

7 Menu CALIBRATION

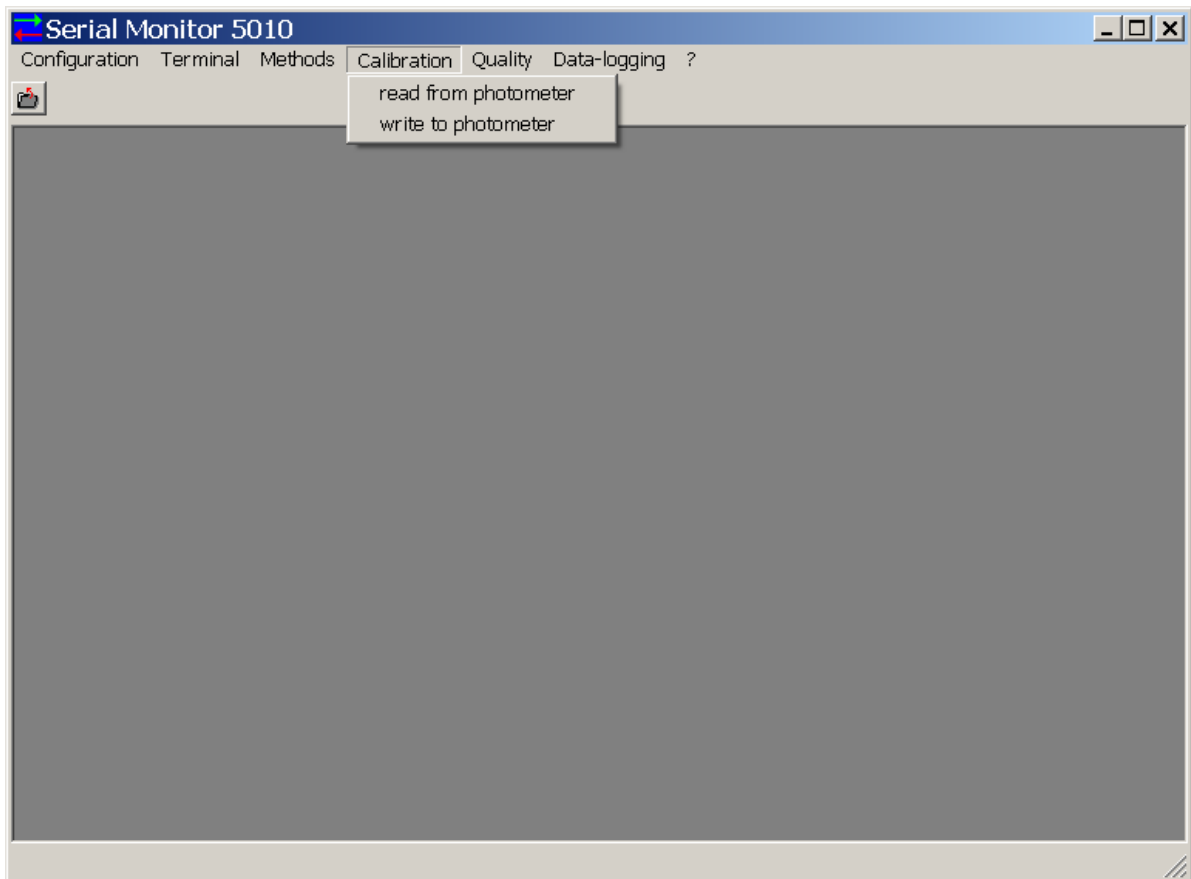
All calibration data can be stored in a database called "M_<Serial number>.dbf" located in the subdirectory "Files". The data base has the format of a dBase III-file. The file may be replaced with a pre-programmed file.

7.1 read from photometer

... fills a database called "M_<Serial number>.dbf" with calibration data of the photometer.

7.2 write to photometer

... restores calibration data of the database "M_<Serial number>.dbf" to the photometer.



8 Menu QUALITY

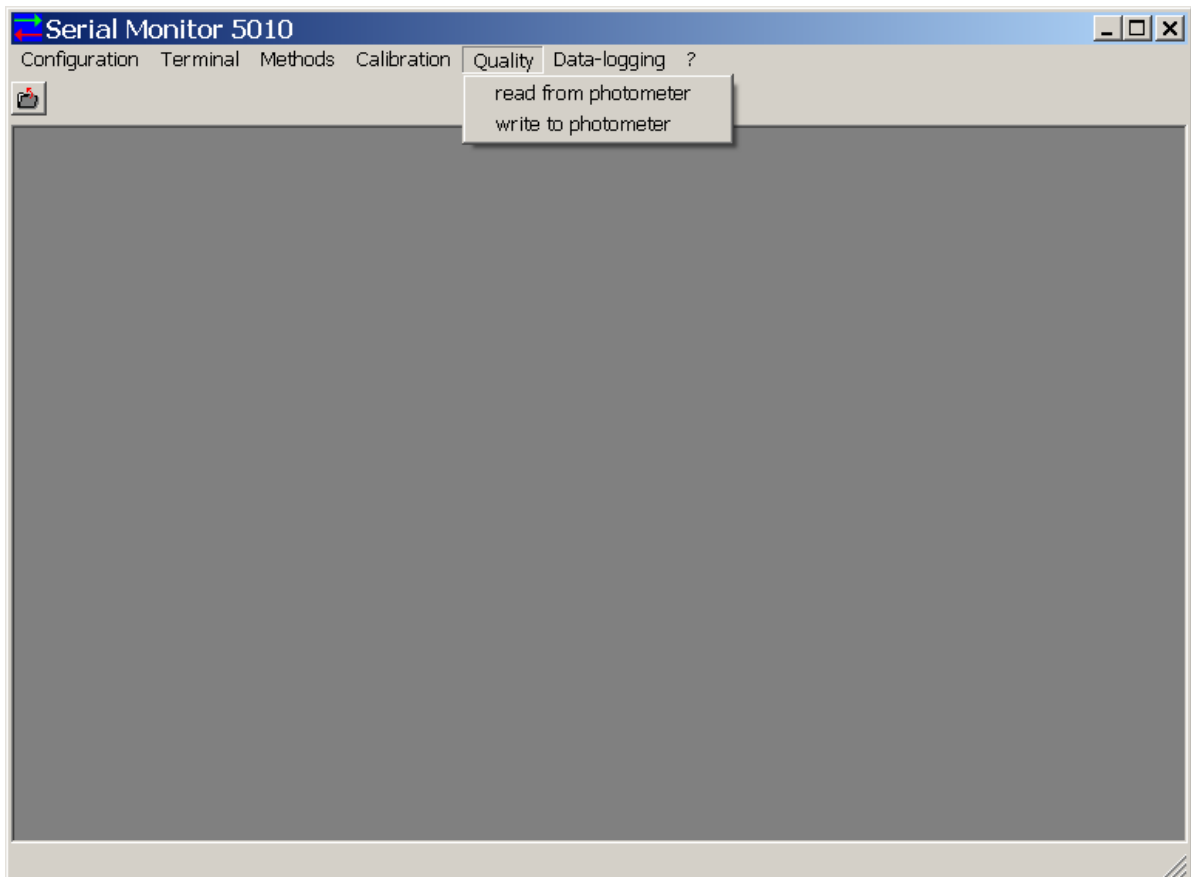
All quality data can be stored in a database called "M_<Serial number>.dbf" located in the subdirectory "Files". The data base has the format of a dBase III-file. The file may be replaced with a pre-programmed file.

8.1 read from photometer

... fills a database called "M_<Serial number>.dbf" with quality data of the photometer.

8.2 write to photometer

... restores quality data of the database "M_<Serial number>.dbf" to the photometer.



9 Menu DATA-LOGGING

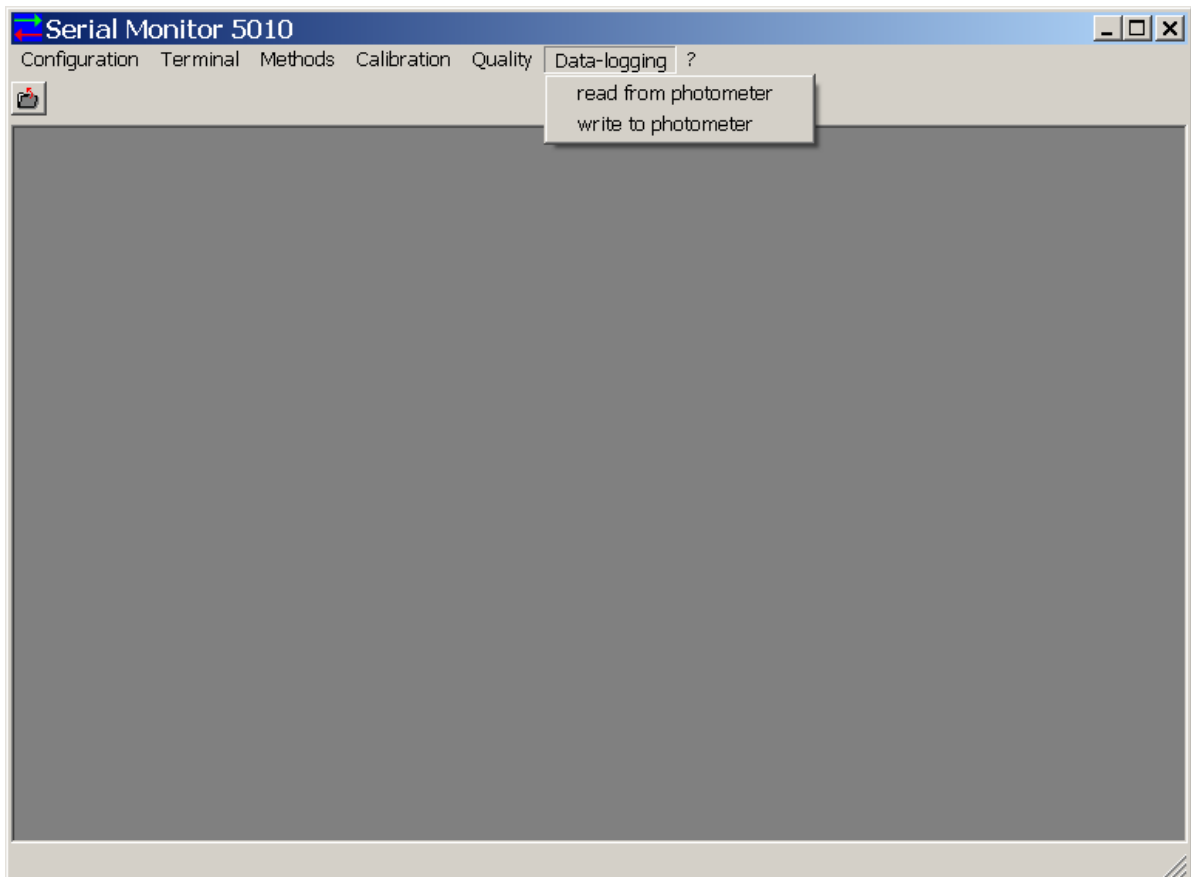
All data-logging can be stored in a database called "M_<Serial number>.dbf" located in the subdirectory "Files". The data base has the format of a dBase III-file. The file may be replaced with a pre-programmed file.

9.1 read from photometer

... fills a database called "M_<Serial number>.dbf" with data-logging of the photometer.

9.2 write to photometer

... restores data-logging of the database "M_<Serial number>.dbf" to the photometer.



10 Menu ?

The menu ? contains the item:

- **Info**

...shows information about application name and version

