

## 9. General (V05)

This section describes the serial data format as well as other 'data' issues like software upgrading and printer selection. The reader must have basic understanding of serial data communication, printer- and XML protocol in case of host programming. If using host programming contact Boule Medical for latest XML-protocol.

### 9.1 Serial output (hardware)

The connections from the BM800 to an external PC must be according to the drawing below:

PC Computer using a 25 pin RS232

| Cable end BM800<br>9 Pin Female DSUB | Cable end 'standard' PC<br>25 Pin Female DSUB |
|--------------------------------------|---|
| 2-----                               | 3   |
| 3-----                               | 2   |
| 5-----                               | 7   |
| 7-----                               | 4   |
| 8-----                               | 5   |

PC Computer using a 9 pin RS232

| Cable end BM800<br>9 Pin Female DSUB | Cable end PC<br>9 Pin Female DSUB |
|--------------------------------------|-----------------------------------|
| 2-----                               | 2                                 |
| 3-----                               | 3                                 |
| 5-----                               | 5                                 |
| 7-----                               | 7                                 |
| 8-----                               | 8                                 |

The pinning on the 9 Pin BM800 female connector is as follows:

|    |                                |
|----|--------------------------------|
| 1. | N. C.                          |
| 2. | $\overline{\text{TX}}$ -OUTPUT |
| 3. | $\overline{\text{RX}}$ -INPUT  |
| 4. | N.C.                           |
| 5. | GND                            |
| 6. | N.C.                           |
| 7. | CTS-INPUT                      |
| 8. | RTS-OUTPUT                     |
| 9. | N.C.                           |

The input and output follows strictly the RS232 specifications.

Serial parameters are set to fixed values within the BM800:

Baud rate = 19200 (9600 can be chosen)

Bits = 8

Parity = None

Start/Stop bits = 1

## 9.2 Serial output connection between instrument and host computer

The BM800 has the capability to send the measured data to the serial output. This can be done sample by sample, using the [Auto Send Mode] function, or batch-wise from the 'Search' menu. The transmitted data to the serial output contain measured parameters including flagging, abnormalities, etc. and might contain technical parameters if selected in the Setup menu.

The software upgrade is also performed through serial communication.

**Note:** In current software versions, no commands via a host can be send to the BM800.

### Necessary Equipment:

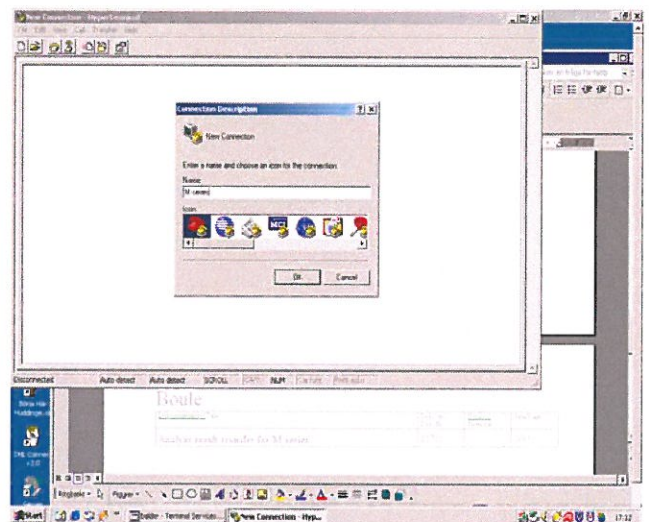
A Computer installed with windows and Hyperterminal

A straight serial cable [9 pin D-sub, female-female]

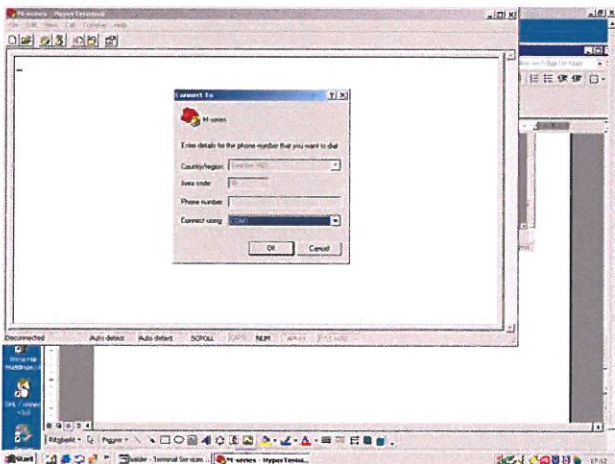
A printer

### 9.2.1 Establishing communication

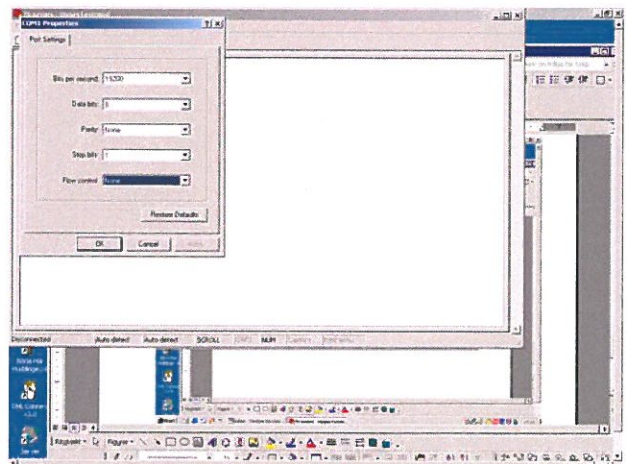
Connect the serial cable on the instrument D-sub and PC D-sub. Start the hyperterminal program. It is available at Programs→Accessories→Communications



Choose a name for your setup



Choose the serial port that you have connected the instrument to.



Choose the 'bits per second' [19200], 'flow control' [none] and then press [OK].

To determine if the connection is successful press <enter> and a '%' will pop up in the terminal screen.

## 9.2.2 How to transfer the memory of BM800 instrument in to a file

On BM800 choose the samples that you want to send from [SEARCH] in List menu.

**Select Sample Criteria**

ID

SEQ  to

Date  to

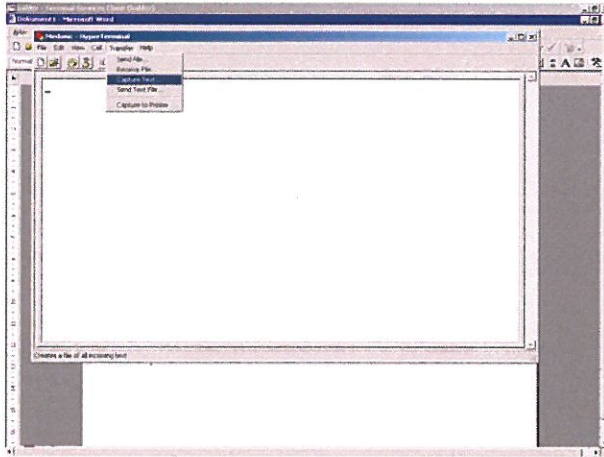
Profile

Selected 31 / 31

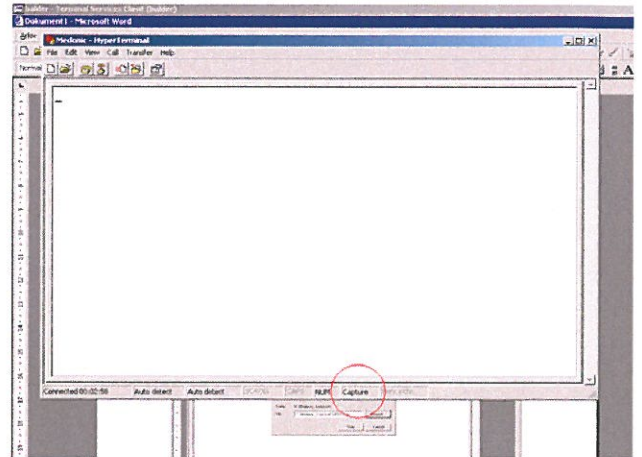
Selection commands:

When the samples are chosen the [Send] button will be activated.

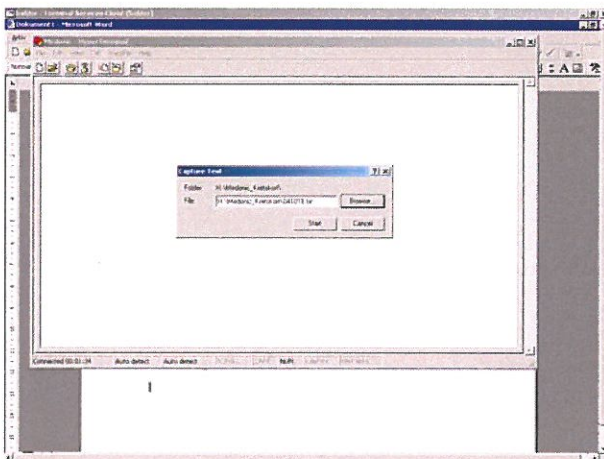
Start "Hyper terminal" on your computer as shown above



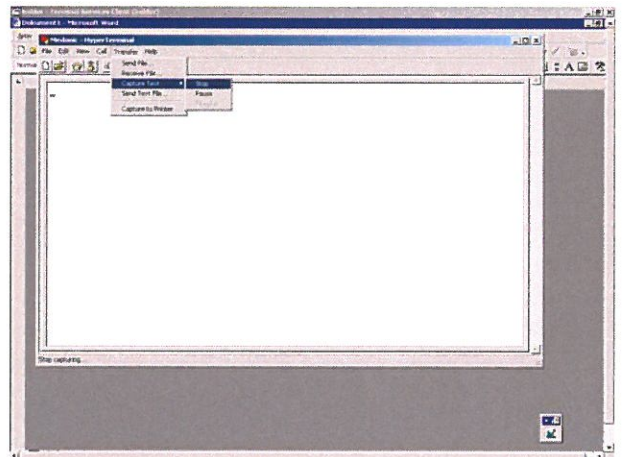
1. Choose [Transfer] and then [Capture text]



3. Make sure that the “capture text” is activated. Press [Send] on BM800 instrument. Now parameters will be scrolled on the screen. Wait until all chosen analyses are transferred and the scrolling has stopped.



2. Choose where you want to save the file. Make sure that file name ends with .txt. (Otherwise the file will be useless). Choose [Start].



4. Then stop the file by choosing [Stop] from transfer menu. Now the file has been saved on your computer.