

# BIOSACA and Sleep Studio

## FREQUENTLY ASKED QUESTIONS

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### Can I use Compact Flash cards ( CF ) together with Biosaca?

- A Biosaca Memory Card Kit (order no: 760-010) is available from SwedSleep AB. The kit includes a 2 GB CF-card and a CF to PCMCIA adapter and it are tested together with Biosaca. The card is an Industrial grade card with special memory interface to guarantee full functionality with Biosaca.
- We do **not** recommend other cards.
- The card shall always be formatted to FAT, not FAT32.

### Problem with SanDisk 128 Mb PC-card !

Do NOT use SanDisk 128 MB PCMCIA PC-card together with Biosaca. The card sometimes gives problems with the recording results. If you used the card and lost the recording, see **“Recovering data from corrupt memory card”** below. The SanDisk 110 MB card work well and can be used.

### How long will the batteries last?

- Normal alkaline batteries will typically last up to 25 hours.
- Re-chargeable batteries will typically last up to 19 hours.
- On-line monitoring will reduce the time somewhat.

WARNING: Sleep Studio prior version 4.3 can only handle recordings up to 23 h 59 m. If a longer recording is imported from the PC-card, recording from 0 up to 24h will NOT be imported.

### Is the data compressed?

- No.

### Can a hard disk be used?

- No. Only Compact Flash card using an adapter or an ATA Flash Card.

### How long does a 1 GB CF Card last?

A 1 GB CF Card lasts up to:

- Setup for 16 head box channels using 256 Hz sample rate + Puls oximeter + Sensor Pad: Up to 25 hours.
- Setup for 1 head box channels using 8 Hz sample rate: Up to 36 hours.

WARNING: Sleep Studio version prior 4.3 can only handle recordings up to 23 h 59 m. If a longer recording is imported from the PC-card, recording from 0 up to 24h will **NOT** be imported.

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### **There is no data on the PC card:**

- The batteries in the BIOSACA are too weak and the BIOSACA won't start. Always use fresh batteries
- The PC card was not inserted properly into the BIOSACA.
- Faulty X-pod pulse oximeter. The puls oximeter seems to be OK and gives signal but could affect the recording. Try to run a recording without the X-pod.
- A new set-up was **not** downloaded onto the PC card. This is done from the Sleep Studio program, either via the IR eye or with the PC card still in the computer.
- Sleep Studio version prior 4.3 can only handle recordings up to 23 h 59 m. If a longer recording is imported from the PC-card, recording from 0 up to 24h will NOT be imported.
- Something is wrong with the PC card, which then must be re-formatted. Use FAT-mode, NOT FAT-32. See also "***Recovering data from corrupt memory card***" below.

### **No contact with the BIOSACA via the IR-device:**

- The headbox or the puls oximeter must be connected to the BIOSACA in order for the IR communication to function.
- The headboxes to be used during acquisition need to be connected to the BIOSACA when a new Patient Setup is done in Sleep Studio. If you are using Sleep Studio and if a DC headbox is used, it is important that it is connected to the BLUE connector at the BIOSACA.
- Check if the BIOSACA is working. A blinking green or yellow light in the BIOSACA indicates this.
- Sleep Studio prior version 4.3: The IR-device must be connected to comport 1.
- Sleep Studio version 4.3 and higher: The IR-device must be connected to comport 2 or to an USB to Comport adapter.
- If problems arise directly after connecting a headbox or the oximeter to the BIOSACA, you may have to wait until the Biosaca has carried out the boot sequence. Wait 15-20 seconds and try again.
- If it's still won't work, disconnect all the connectors at the Biosaca. Wait 10 seconds, reconnect and wait 20 seconds and try again.
- The distance between the BIOSACA and the IR eye may be too great. Use the holster with IR pocket for best result.
- Check that the batteries in the BIOSACA aren't too weak. Always use fresh batteries.

### **The BIOSACA won't start:**

- Old or weak batteries in the BIOSACA. Always use fresh batteries
- One of the batteries is turned the wrong way in the battery cassette. Open the battery cassettes lid and check.

### **The Pulse Oximeter doesn't work:** (Only the black REF 215 Pulse Oximeter)

- There is no 9v battery in the oximeter case.
- The battery is old or weak. Always use a fresh battery.
- The battery is turned the wrong way. Open the battery cassettes lid and check.

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### **The Pulse Oximeter doesn't work:** (All models)

- The oximeter may not be connected to the BIOSACA, or the oximeter sensor is not connected to the oximeter case.
- The oximeter sensor is poorly attached to the patient.
- Incorrect set-up in Sleep studio. The pulse oximeter must be checked in the set-up prior to recording. In setup ( Acquisition Setup), channels 17-32 are used by the oximeter and also Pulse shows as Types, DIG.

### **Biosaca Warning Signals:**

#### **Light signals:**

- Yellow LED blinks quickly: Biosaca system is starting up. Do not try to connect to Biosaca using the infrared device before the yellow led has stop blinking or starts blinking as described below.
- Yellow LED blinks quickly three times (altogether approx. 1 sec). Pauses approximately 5 seconds. Three short blinks. Etc. The Headboxes are not the same as entered in the setup. It is OK to use the IR device to connect. The blinking will end if a new setup is transferred to Biosaca.
- Green LED Slowly blinking: Everything working

#### **Audio signals (buzzer):**

- Three short beeps (altogether approx. 1 sec). Pause for approximately 5 seconds. Three short beeps. Etc. The Head boxes are not the same as entered in the setup

Warning signals available if the Monit software is used for the Biosaca setup:

- 1 second beeps, silent 1 second. Repeated 5 times: The PC Card has only room for 5 minutes more of recording.
- 0.5 seconds beep, silent 0.5 seconds, 0.5 seconds beep, silent 1 second. Repeated 5 times: The battery level is low.

### **The Sensor Pad does not work:**

- The sensor pad is not connected to the oximeter case. : (Only the black REF 215 Pulse Oximeter)
- The sensor pad is not connected to the Biosaca or to the oximeter Y-cable.
- Incorrect set-up in Sleep studio. The sensor pad must be checked in the set-up, prior to recording. To include the Sensor Pad, choose Channel 17-32 in the Acquisition setup page and change channel 17-19 to Signal Type: AUX. Change the channel Label to: BCG on channel 17, Move on channel 18 and to Resp on channel 19. Change the Disp sensitivity to 1 mV on all tree channels.

### **The channels shown in Sleep studio are in reverse order:**

- If you use one headbox with DC, It has to be connected to the blue connector at the Biosaca during setup and transferring the set up to Biosaca.

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### The signal doesn't look like it should:

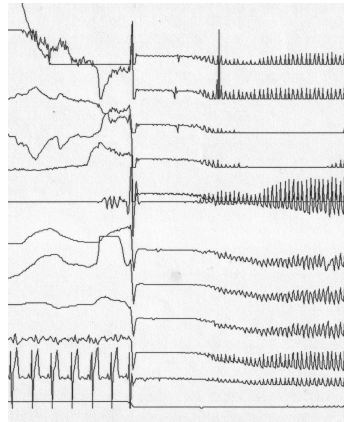
- Incorrect sample rate chosen in the set-up.
- Incorrect filter setting chosen in the set-up.

### Disordered signals.

The signals from the head boxes suddenly get flat and after some seconds, get disordered. See picture.

#### **Cause:**

- 1: The pulse oximeter is connected to Biosaca at the same time as the problem is occurring. The pulse oximeter is probably defect and need to be repaired.
- 2: Bad or defective batteries. Most likely batteries of rechargeable type. Replace the batteries.
- 3: One or more batteries is turned the wrong way in the battery holder.



### How do I set the clock in the BIOSACA?

- For an On line registration it's no need to set the clock, because it sets the clock automatically.
- In an Ambulatory registration setup, you need to set the clock in the Biosaca unit. It's done in the Tools/ Acquisition Setup window, for Ambulatory Setup. Press Set Date/Time to set the clock in the Biosaca unit. Note: You need to have the amplifiers connected to the Biosaca and the infrared device connected.

### Why can't I use the Windows Explorer in order to download files between the PC card and the hard disk?

- A recording must be opened using Sleep Studio. Sleep studio checks to see that the file is neither damaged nor contains faults. If the recording can't be imported, see ***"Recovering data from Corrupt Memory Card"*** below.

### What do the headboxes do?

- Headboxes are pre-amplifiers and not only a connection for the electrodes.

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### **What will happen if I don't use the headboxes that were specified in the set-up during recording?**

- Using a different headbox may cause the channels to change places, which means that the set-up defined for channel 1 may end up in channel 9. Biosaca will let a warning sound be started.

### **Do I need to put the headboxes in the same connectors as I have them when I started the registration at the first time?**

- If you stop a registration, disconnect the headboxes from Biosaca and later on restart the registration, the BIOSACA will detect which one of the headboxes earlier used channel 1 and if necessary, automatically re arrange the channels to the right positions.

### **Why must I connect the DC-headbox to the Biosaca BLUE connector during setup in Sleep Studio?**

- This way, Sleep studio will detect and display the DC-signals with proper settings.

### **I cannot get the SleepStudio sleep stage analyse to work.**

Use of the following channels during recording enables the possibility to do an automatic Sleep Stage analyze:

- EEG C3-A2
- EEG C4-A1
- EEG O2-A1
- EOG EOL
- EOG EOR
- EMG EMG

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### What's happens if I use 2 DC headboxes?

- We don't recommend using two DC headboxes at the same time.

### What's happens if I use 2 AC or 2 Referential headboxes?

- Everything is working, as it should. It is just when you have 1 DC headbox it is important to connect the Dc headbox to the blue connector.

### Can I look at the signals without saving them on the hard disk during on-line recording?

- Yes, if you are doing an On-line recording, nothing is saved until you Start recording by going in to Acquisition, Start recording or click on the red symbol for  recording.

### The Sleep Studio Basic Menu has disappeared

You have by mistake moved the Basic Menu outside Sleep Studio window or "outside" the LCD screen.

Try this first:

1. Start Sleep Studio.
2. Open any patient recording.
3. Minimize Sleep studio window by clicking on the '\_' button in the upper right corner.
4. Change the LCD display to the maximum available (Open windows Control panel -> Display -> Settings and move the Screen Resolution slide to the far right)
5. If the Basic Menu is visible, move it to the centre of the LCD display.
6. Restore the Sleep Studio window by click on the icon in the windows task bar.
7. Turn off Sleep Studio and restore the screen resolution back to normal.

If the Basic Menu still not appears, the menu can be restored by edit the Registry using a Basic Menu Restore Tool available from us.

#### **NOTE:**

**Editing the Registry incorrectly can cause serious, system-wide problems that may require you to re-install Windows to correct them. We cannot guarantee that any problems resulting from changing the Registry can be solved. Use this tool at your own risk!**

1. Turn of Sleep Studio
2. **IMPORTANT:** Back up the registry, se windows help about backing up Registry / System State.
3. At the desktop: create a directory and download "Restore\_Basic\_menu.zip".
4. Unzip the file in the directory.
5. Start the tool by clicking on "SleepStudio\_Restore\_Basic\_menu.reg" and click "Yes" to install the fix.
6. Start Sleep Studio and open any patient recording and the Basic Menu will be available in the centre of the screen.

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### How do I perform a Home Recording ?

1. Do a normal set up on the patient and the Biosaca as if it should be done at the clinic.
2. Connect the patient to the Biosaca and start the on line monitoring to check the signals.
3. Stop the on line monitoring and disconnect the headboxes and puls oximeter from Biosaca.
4. The recording on the Biosaca memory card will stop.
5. Let the patient go home and tell the patient to connect the headboxes and pulsoximeter to the Biosaca unit then it's time to go to bed. The recording will now start on the memory card and continue until the connector is removed from the Biosaca unit.

### How to use the infrared device to check the signal quality while Biosaca is recording to its memory card.

1. Start Sleep Studio.
  2. Open the Patient information for the patient connected to Biosaca.
  3. Press the  button to start the on line acquisition mode.
  4. The on line monitoring starts and "Biosaca records to PC-card" is flashing in the lower right corner to indicate the ongoing recording to the Biosaca pc-card.
  5. Press the Return button  to end the online monitoring.
- It's possible to store the on line monitoring to the local hard disk by pressing the Recording button . "Record" is flashing in the lower right corner to indicate the recording is saved to the computer hard disk.
  - To stop the recording to computer hard disk, press the Recording button again . "Biosaca records to PC-card" is flashing in the lower right corner to indicate the recording is continued to the Biosaca pc-card.
  - Note: If you have stored the on line monitoring to the PC hard disk, you must delete the raw data before it is possible to import data files from the Biosaca pc-card. Press "Acquisition" and click on "Delete Raw Data" to delete.

### Is it possible to invert the signal trace in Sleep Studio:

- No.

### Sleep studio Installation

The Sleep Studio installation stops responding and a warning message are displayed after 10-20 seconds.



Your computer has a program using a hardware key for software protection. The driver must be updated to the latest version. You can find drivers for it, for example on <http://www.aladdin.com/support/hardlock/index.aspx>

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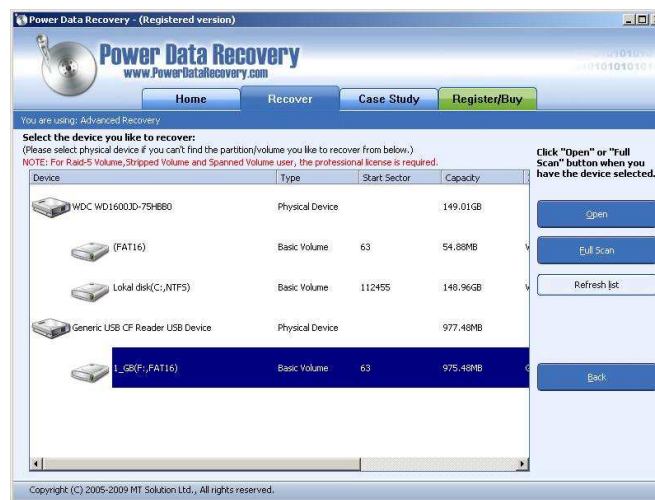
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### Recovering data from Corrupt Memory Card

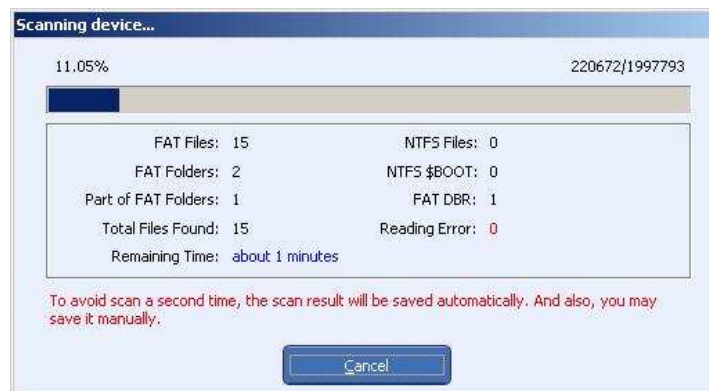
If disaster strikes and the recording on the Biosaca PC-card (PCMCIA or Compact Flash) are corrupt, you cannot import the recording to Sleep Studio. We have successfully used "Power Data Recover" to repair the recording before import it to Sleep Studio. We can recommend the software but we can of course not guarantee a successful recovery. A trial software version can be downloaded from Internet: <http://www.powerdatarecovery.com/> and if you find it useful, you should purchase the Professional License.

#### How to do it:

- Shut down Sleep Studio or any other program accessing the memory Card.
- Start Power Data Recover
- Press: Advanced Recovery



- Mark the Biosaca memory card (FAT16) and Press: Full Scan



- Wait until the scan process has ended.



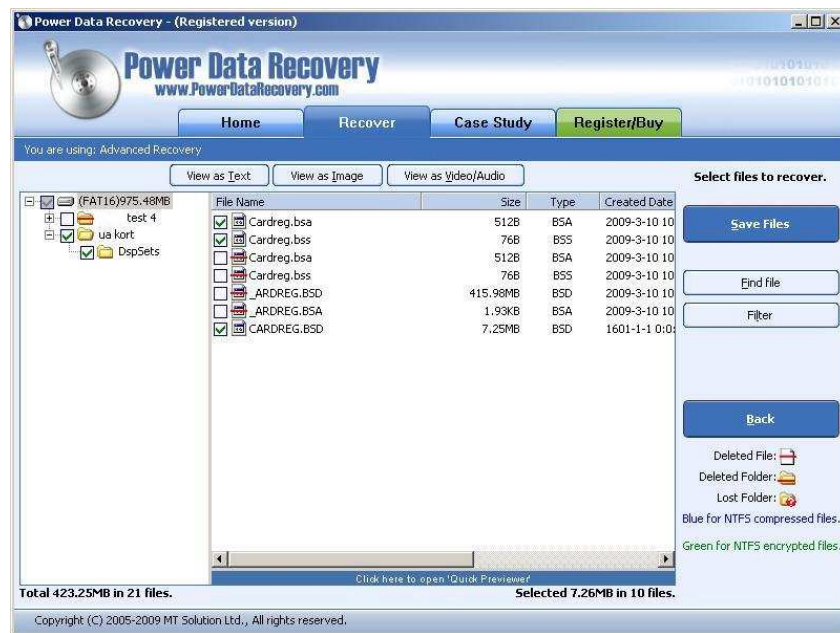
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- Click on the displayed FAT16 partition and press "Show Files".



- Set a check mark on all displayed directories and files without any red mark and press "Save Files".

**NOTE:** Any previous old recording on the memory card will displayed with a red mark. You can see it on the picture above as directory "test4" and Cardreg.bsa, Cardreg.bss, \_ARDREG.BSD, \_ARDREG.BSA. Do not use this files or directories.

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- Press: Save Files



- Create a directory on the computers hard disk.
- **NOTE:** Do NOT create the directory on the memory card.
- Press OK and the recording will be saved on the computers hard disc.
- Shut down Power Data Recover.
- Use another empty memory card (do not the use the card with corrupt files in case you need to do another try) format it, use FAT not FAT32, and copy the rescued files and directories to the memory card. The memory card would be like below. The directory name "ua kort" could differ depending on the given recording name.



- Start Sleep Studio and import the recording.
- On success, format the memory card with the corrupted files with FAT (not FAT32) before the next use.