
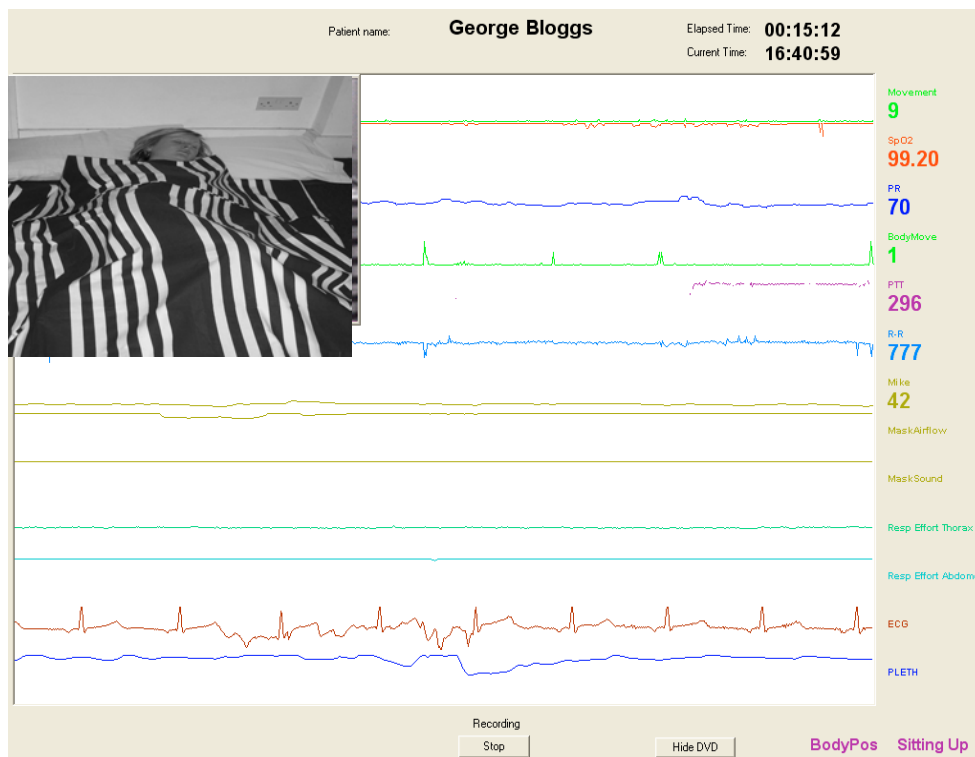


Visi-3

Digital Video sleep system 



- The Visi system for 2007 with **Digital Video/ Audio** DVD recorder and 2 EEG options: Neural Net and R&K (or the new AASM) sleep staging
- Up to 24 parameters including Masimo SpO2, Pulse Rate, Pleth. wave, ECG waveform, R-R interval, Pulse Transit Time, Airflow, Nasal/ thoracic/ abdominal respiration, 3 axis body position, body movement, ECG, CPAP pressure, nasal sounds, the Visi-3 HBX giving EEG/ EOG/ EMG/ Leg EMG, and also 4 (earthed) Auxiliary inputs.
- Audio sound levels in calibrated dBA (SPL)
- Stowood software for reviewing, analysis and reporting
- Neural net EEG analysis
- Full sleep staging capability to both Rechtschaffen & Kales and the new AASM Manual (W/ N1-N3/ R)
- Easily configured trolley/ portable systems

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Visi is suitable for both the DGH and specialised centre, allowing observed or non observed sleep recordings. Visi uses Masimo SET oximetry technology which performs excellently even when artefact is present. Synchronised with the data is infra-red video/audio recording (allowing movement detection from the video signal), There is Pulse Transit Time and using the latest MPEG digital video, calibratable sound, airflow and respiratory effort signals plus much more, but at an economic price.

Visi-3 is quickly set up by a nurse/ technician/ clinician prior to recording from a choice of storable templates.

- If the minimum connection of an oximeter probe only is used, Visi gives oxygen saturation, pulse rate, plethysmographic trace, body position and body movements, the camera and microphone supply the body movements, and snoring sounds to be recorded as digital video/audio.
- When an ECG channel is connected, the ECG waveform, R-R interval and Pulse Transit Time are also available.
- If nasal prongs are used, nasal airflow, and nasal sounds can be recorded.
- A more complex recording can include thoracic/ abdominal respiratory effort using inductance bands, full EEG/ EOG/ EMG sleep montages, leg EMG, signals from floating or earthed devices such as CPAP machines/ end tidal/ Tc pCO₂/ pH recorders etc.
- A whole night's video or specific parts of the video and the traces maybe stored automatically on a single or dual layer DVD, inserted when the study is commenced.

The Visi system comes complete: with Infra Red light, camera and microphone, Patient Junction Box and Comms unit. The hardware includes an isolating transformer, a PC with 1 or 2 TFT screens, digital video, network connection as well as a dual layer DVD R/W drive. Installation and training and warranty are included.

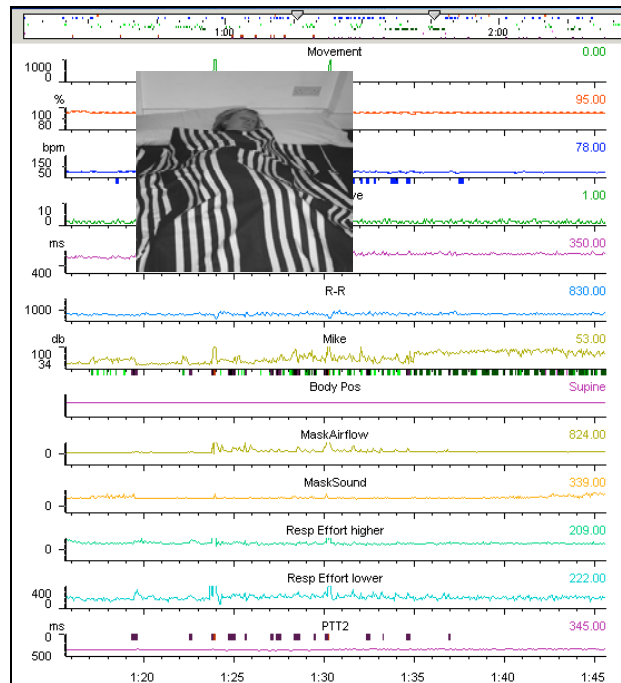
The system is ideal for the adult sleep lab, but has also made a mark in paediatrics where the simple transducer setup, artefact free oximetry and synchronised video are extremely important. Continuous recording for several days/ nights is possible because of the massive video disk space.

The new matchbox sized EEG headbox **Visi-3 HBX** plugs into the Patient Junction Box and has seven channels in all: four/ (or six) referential channels and one/ three bipolar channels for recording EEG/ EOG/ EMG/ Leg EMG. A typical combination as used by R&K could be: C4-A1, ROC-A1, LOC-A1, Chin EMG, plus an occipital channel and legs: eg O2-A1, L.Leg EMG, and R.Leg EMG.

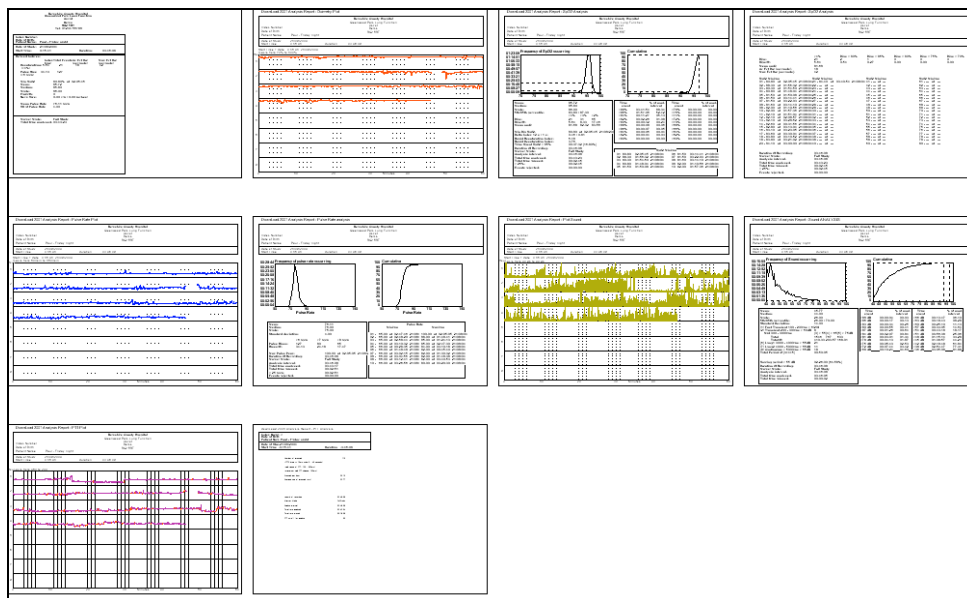
It can also be used with the new AASM 'manual for the Scoring of Sleep and Associated Events' recommended derivations F4-M1, C4-M1, O2-M1, E2-M1, E1-M1, EMG plus a leg channel.

Sleep staging: whether to use a Neural Network EEG analysis or Rechtschaffen & Kales (R&K)/ AASM? The question is whether you prefer simplicity or need the complexity of the latter. One may get a sleep hypnogram using Oxford Biosignals' Neural network software on a two channel (EEG and EOG) recording made (even with the standard PJB). If you need publishable data use the Visi-3 HBX and get the extra channels .

Review is with Visi-3: the latest version of Download 2001 software, which allows easy viewing of the trends, with instantaneous access to the digital audio-visual recordings. Software also contains analysis tools for saturation, pulse rate, pulse transit time, sound time series detection (number of snores, coughs etc), report generating and printing tools. Recordings, trends, results and frequency data can be exported for further analysis to mathematical programs such as Excel.



Review of the traces: with events and video/audio at cursor



Plots and analyses: Summary, Saturation, Pulse Rate, Sound and PTT

The system can also be used to obtain data from a range of capnometers, and the Stowood Scientific Visi-3 home unit: the 'Grey Flash'.

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Specification Visi-3 consists of 5 parts:

1. Patient junction box: (PJB) for mounting on chest or headboard with easy disconnect from the bedside

Comms unit. **Size:** 130x76x24 mm **Weight:** 180 g

Channels: Masimo oximeter SpO2/ Pulse Rate/ Pleth. Wave

Luer-lock for CPAP pressure & nasal airflow/ sound

ECG, + 2 x Aux. AC channels (Resp. effort – piezo or inductance/ ECG/ EMG/ EEG)

Movement, Tri-axial position sensor (R, L, F, B, & Vert/ Horiz) Patient event marker

1a. (Optional) Seven channel headbox for referenced and bipolar EEG/ EOG/ chin EMG/ Leg EMG, powered from the PJB **Size:** 59x48x20 mm **Weight** App 40gm

2. Comms. unit: for bedside placement

Size: 130x130x38 mm **Weight:** 270 g

Power: External mains supply 100-250v AC 50/60Hz 0.25A provided

Input Channels: External microphone, 4 x Auxiliary DC channels +/-5v, DC-16Hz

Output Channels: RS232 9W'D' type, RS485 -RJ45, Audio Line. 3.5 VRMS

Temperature Range: 0 - 40°C

3. Recording/ Review Station: for placement alongside the bed or at a distance

Isolation transformer: 840 VA

UPS: In case of power failures

Computer: IBM 3.0 GHz P-4 Tower Windows XP Prof. 1 or 2 17" TFT screens, 2 x HDD (400GB), MPEG Video/ audio capture, DVD dual layer R/W, network connection.

Recording duration: Up to 50 nights video/ audio/ signal data

Replay software: Stowood Scientific Visi-3

Analysis: Review and analysis of oximetry, pulse rate, PTT, sound etc.

Digital video/audio replay: Synchronised with cursor. Visible on optional 2nd screen.

4. Video/Audio: Wall mounted IR lighting & High resolution B&W or Colour camera and calibratable microphone

Microphone Sensitivity: -56db @ 1KHz (re 1v/ 0.1Pa)

Frequency Range: 150Hz-2.0KHz (-3db cutoff, 12db/ octave),

Dynamic Range/ resolution: 30db to 94 db (12 bits)/ 0.1db

Sound level validation: An (optional) 94db 1KHz acoustic calibrator may be used to confirm sound level recording.

Optional Pan Zoom and Tilt camera: Controlled from the computer

Safety: to BS EN60601-1 Class II BF. **MDD 93/42/EEC:** Annex II.

Stowood Scientific is certified by SGS to ISO 13485 CMDCAS: 2003

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