SOMNOLTER is an ambulatory sleep recorder intended for the diagnosis of Sleep Apnea Syndrome (SAS). It can also be used to assess the effectiveness of the administered treatment (by continuous positive airway pressure (CPAP), by mandibular advancement or by any other modality).

"Snoring, daytime hypersomnolence and witnessed apnoeas are symptoms frequently observed in the general population. Subjects with a combination of these abnormalities suggesting a high probability of sleep apnoea syndrome and in whom a sleep study is warranted represent 7.5% of the adult population." [1]

The Sleep Apnea Syndrome is serious. The unconscious struggle that a sleeper with sleep apnea leads in order to try and draw air in leaves marks. It exposes the person to repetitive nocturnal stress and puts considerable strain on the heart. Scientific studies have demonstrated that this syndrome can have severe health consequences like arterial hypertension, cardiac disease, stroke, diabetes, daytime drowsiness (responsible for many work and traffic accidents) and memory impairment.

"An undiagnosed severe sleep apnea syndrome multiplies by 5 the risk of cardiovascular mortality." [2]

SOMNOLTER, thanks to its unique characteristics, offers a simple, comfortable, and efficient solution for diagnosing sleep apnea.

In addition to other signals traditionally recorded during ambulatory sleep monitoring, the device records mandibular movements (the Jawac signal, where "Jawac" stands for "Jaw Activity").

Mandibular movements form an excellent marker of respiratory effort during sleep. Respiratory effort is an extremely important parameter in the diagnosis of Sleep-Disordered Breathing, but it has rarely been measured during home sleep studies due to previously unsuitable sensors.

Automatic discrimination between wake and sleep, detection of arousals, and measurement of the mouth opening are other indisputable assets provided by the Jawac technology.

SOMNOLTER comes with an extremely powerful software for detection and automatic recognition of sleep-related breathing disorders such as obstructive, central, and mixed apneas, hypopneas, mouth breathing, pathological snoring, and upper airway resistance.

**An automated analysis validated on more than 500 recordings**

* A clinical study comparing the use of Somnolter in automated analysis mode to polysomnography on 570 patients confirms that Somnolter provides accurate and reliable diagnoses: Sensitivity of 83% and Specificity of 96%.[3]

The software provides rapid and high-performance display and scoring, with:

1. Manual or automatic analysis, with selection of the parameters of the automatic analysis;
2. Automatic detection of all abnormal respiratory events: apneas, hypopneas, upper airway resistance and abnormal respiratory effort;
3. Recognition of the central or obstructive nature of the syndrome;
4. Detection of hypopneas followed by an arousal (with or without desaturation);
5. Automatic rejection of wake periods for the precise calculation of the indices;
6. Full analysis of oximetry signals (SpO2 desaturation/resaturation, pulse rate, ...);
7. A clear and detailed analysis report;
8. Automated transfer of raw data, analysis results and reports between colleagues;
9. Windows® XP/Vista/7 compatibility.

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A full analysis report in a few clicks...

### Patient/Recording Information

- **Patient ID:** SMMA1626883
- **Recording date:** 07/01/13
- **Recording duration:** 16 hours
- **Gender:** Male
- **Birthdate:** 10/08/62
- **Weight:** 70 kg
- **Height:** 175 cm
- **BMI:** 24.6

### Analysis Parameters

- **Analysis: multi-signal**
  - Oxygen desaturation index (ODI): 16.7
  - Oxygen saturation index (OSI): 95.3
  - Respiratory disturbance index (RDI): 15.9
  - Respiratory arousal index (RAI): 16.3
  - Apnea index (AI): 10.8
  - Cumulative time in respiratory effort (CTRE): 16.6
  - Mean mandibular breathing min (MML): 6.2
  - Mean total time (min, mmal): 35.5
  - Mean total time (min, mmal): 37.1

- **Analysis: oximetry**
  - Oxygen saturation (%): 96.7
  - Heart rate: 74

### Events

- **Respiratory Events**
  - OA: 152
  - Hyp: 169
  - MA: 12
  - CA: 123
  - REM: 348
  - Duration (minutes): 00:22:49
  - Mean duration: 22.4

- **Posture**
  - Supine: 65.3
  - Left: 29
  - Right: 36.8
  - Duration (minutes): 00:00:00

### Graphs

- Sleep
- Heart rate
- Sleep stages
- Body position

### Detailed Information

- A summary of the data pertaining to the patient and his/her recording.
- The settings of the parameters used by the automatic analysis.
- The indices.
- The distribution of events throughout the night.
- Detailed information, for each type of event.
- The influence of body position on the different indices.
**RECORDED SIGNALS**

**Mandibular movements**
« JAWAC » technology: resonant magnetic field transducer
Measurement range: 7cm (2.75”) to 23.5cm (9.25”)
Resolution: on the order of 0.1mm
Sampling frequency: 10Hz

**Airflow**
Technology: pressure transducer
Measurement range: ±3mbar difference with ambient pressure
Resolution: on the order of 0.006mbar
Sampling frequency: 4.000Hz, Downsamplled to 10Hz for airflow and snoring.

**Respiratory motion (Thorax, Abdomen, and Sum)**
Technology: inductive bands (RIP – Respiratory Inductance Plethysmography)
Sampling frequency: 10Hz

**SpO2**
Measurement range: 0 to 100%
Accuracy (for adults using the 8000AA Finger Clip Sensor, in the 70 to 100% range, with ±1SD): ±2%
Sampling frequency: 3Hz

**Pulse rate**
Measurement range: 18 to 300bpm
Accuracy (for adults using the 8000AA Finger Clip Sensor, no motion): ±3bpm
Sampling frequency: 3Hz

**Plethysmographic pulse waveform**
Sampling frequency: 75Hz

**Body position**
Technology: 3-axis accelerometer
Values: lying supine / lying on the right side / lying on the left side / lying prone / upright
Sampling frequency: 1Hz

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**RECORDER**

**Dimensions, weight**
85mm (3.35”) x 55mm (2.16”) x 16mm (0.63”), 80g (2.8oz)

**Power**
Internal battery, rechargeable via USB

**Average consumption**
In recording mode: 240mW
In sleep mode: 0.4mW

**Autonomy**
18 hours recording time (multiple recordings allowed)

**Data transfer**
Via USB to a PC