Compumedics · Slaap

Grael

4K PSG:EEG / PSG

Amplifier for high-definition sleep studies, in two versions: Grael 4K PSG:EEG (sleep study and EEG) and Grael PSG (sleep study only). One network cable (PoE) for power and data, with Profusion software.

Channels	Sampling	Connection
60 (Grael 4K…	**16,384 Hz, storage up…**	**One PoE cable for…**

Description

One amplifier for sleep studies and EEG
Grael from Compumedics is an amplifier for high-definition polysomnography (PSG); the Grael 4K PSG:EEG is also suitable for EEG. Power and data run over a single network cable (PoE) and the connections for electrodes and sensors are built into the amplifier. Pressing the lever on the docking cradle releases it. The cradle stands on a desk or trolley, or hangs on the wall.
Two versions
Grael 4K PSG:EEG: sleep study and EEG with the same amplifier. 60 channels, of which 32 referential and 16 differential, with storage up to 4,096 Hz.
Grael PSG: only the channels for a sleep study. 29 channels, of which 13 referential and 6 differential, with storage up to 2,048 Hz. According to the manufacturer, these are the channels specified for an AASM type 1 study.
Which version suits your department and what can be supplied in your region, we discuss with you beforehand.
Sleep study
The Grael 4K PSG:EEG and the Grael PSG have everything for a full study built in: a light sensor, an oximeter for sleep studies, connections for inductive respiratory belts (RIP), a snoring microphone and a position sensor that needs no calibration.

Specifications

Type	Amplifier for high-definition polysomnography (PSG); the Grael 4K PSG:EEG also for EEG. One box, one cable: power and data over a single network cable, with all connections for electrodes and sensors built in.
Versions	Grael 4K PSG:EEG (sleep study and EEG in one amplifier) and Grael PSG (sleep study only).
Channels	In total 60 on the Grael 4K PSG:EEG (32 referential and 16 differential) and 29 on the Grael PSG (13 referential and 6 differential).

Sampling and storage	Both versions sample at 16,384 Hz. Storage at 256, 512, 1,024, 2,048 or 4,096 Hz on the Grael 4K PSG:EEG; up to 2,048 Hz on the Grael PSG.
Resolution and inputs	24 bit on all channels, DC-coupled inputs. On the Grael 4K PSG:EEG you choose the range per channel: ±150, ±300, ±600 or ±1,500 mV, for lower noise or more permitted DC offset. The Grael PSG has ±300 mV.
Signal quality	Referential channels: input impedance above 100 Mohm, CMRR above 100 dB and noise of about 2 µVpp (typical, 0.1 to 70 Hz). Differential channels: the same values, with an input impedance above 20 Mohm. Frequency response DC to 1,150 Hz (adjustable) on the Grael 4K PSG:EEG and DC to 580 Hz (adjustable) on the Grael PSG.
Respiration	Both versions: 2 channels for inductive respiratory belts (DC to 64 Hz) and a pressure channel of ±100 cmH2O (accuracy ±1 cmH2O at 25 °C). Grael 4K PSG:EEG only: respiratory impedance derived from the ECG electrodes and airflow via a differential input with 2 male luer connectors (±12 cmH2O, accuracy ±0.6 cmH2O).
Position, sound and light	Three-axis position sensor (supine, prone, left, right and upright), electret microphone for snoring and integrated light sensor, on both versions. Microphone range: 5 to 1,150 Hz (Grael 4K PSG:EEG) or 5 to 580 Hz (Grael PSG), adjustable.
Oximeter	Integrated oximeter for sleep studies, on both versions: SpO2 from 25 to 100%, SpO2 accuracy 70 to 100% ±2.5 digits (within 1 standard deviation) and heart rate ±1% ±1 digit. Heart rate range: 35 to 300 per minute (Grael 4K PSG:EEG) or 18 to 300 per minute (Grael PSG). According to the manufacturer the resolution is 0.1%.
EEG connection	Grael 4K PSG:EEG only: connection for a Quik-Cap electrode cap on the 32 referential channels.
Linking	Grael 4K PSG:EEG only: link several amplifiers via PTP hardware (precision time protocol) for 64 or more referential channels; a virtual amplifier is created in the software. Not possible with the Grael PSG.
Connection and power	One network cable: 10/100 Mbit Ethernet with PoE to IEEE 802.3af (via a midspan injector or PoE switch), 48 V and less than 10 W. Docking cradle with quick release, on a desk, a trolley or on the wall.
Dimensions and weight	240 × 144 × 50 mm and 700 g, for both versions.
Environment	Operating temperature 0 to 40 °C, storage -10 to 50 °C, humidity 20 to 90% (non-condensing), altitude below 3,000 m.
Standards	According to the manufacturer: CF patient connections to IEC 60601-1 and IEC 60601-2-26, EMC to IEC 60601-1-2. According to the manufacturer, the Grael meets the digital specifications of the AASM (the American Academy of Sleep Medicine).

Software	Profusion Sleep for sleep studies and, on the Grael 4K PSG:EEG, Profusion EEG for EEG, supported according to the manufacturer from Profusion Sleep 4 and Profusion EEG 5. Profusion neXus 360 manages studies and data in a web environment.
Expansion and accessories	Grael DC for external signals from other equipment, such as CPAP, tcCO2 and pH. Also, among other things, disposable and reusable sensors, cables and electrode sets, and a carrying strap.
Other specifications	On request. Ask us for the full technical data of this model.
Source	Brochures, specification sheets and product pages from Compumedics. Values are the manufacturer’s figures; subject to change. The values for respiratory impedance and airflow, the signal quality of the Grael 4K PSG:EEG and the environment come from the specification sheet of the Grael 4K; for the Grael PSG they come from the manufacturer’s product page.

Request Grael

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