



Grael HD EEG



Grael Jackbox

grael 4K eeg

High-Definition EEG

A DC-coupled, digital amplifier system with a high input range and 24-bit resolution providing amplification and digitization of electroencephalographic physiologic signals from surface, cortical and depth electrodes. The amplifier provides 40 channels (32 isolated high-frequency referential channels, 8 bipolar channels), an integrated pulse-oximeter and event button input. The unit has a POE 100BASE-TX network connection for both power and communication.

Technical specifications



INPUTS	32, DC-coupled, fully isolated, referential (monopolar); 8 user-defined, DC-coupled, fully isolated, bipolar inputs
INPUT IMPEDANCE	>100 M Ω 1-32; >20 M Ω 33-40
BIAS CURRENT	typically 1nA
INPUT NOISE	< 2 μ Vpp typical (referential ch)
INPUT RANGE	300mVpp, 600mVpp, 1200mVpp, 3000mVpp user selectable
CMRR	> 100dB
CROSSTALK	<- 60dB to adjacent channels FSR
HIGH PASS FILTER	DC coupled on all channels
LOW PASS FILTER	(3dB): 71 Hz at 256 s/s 143 Hz at 512 s/s 284 Hz at 1024 s/s 580 Hz at 2048 s/s 1150 Hz at 4096 s/s
NOTCH FILTER	Software based display filtering of 50Hz, 60Hz, or off

ISOLATION SPECIFICATIONS

Complies with IEC 60601-1 CF patient Inputs

ANALOGUE TO DIGITAL CONVERTER

24 bit resolution

SAMPLE AND DATA RATES CHANNELS 1 TO 40

Data sampled at 16384 samples per second and decimated to data rates shown below. Actual data rate sent is determined by controlling PC software application.

Output data rate 4096, 2048, 1024, 512 or 256 samples per second

COMMUNICATION INTERFACE

Network Type 802.3/802.3u twisted pair Ethernet with auto MDIX; RJ45 connector.

OXIMETER

SPO₂ range 25 to 100%

Heart rate range 18 to 300 pulses per minute

SPO₂ accuracy 70 – 100% \pm 2.5 digits within 1 standard deviation

Heart rate accuracy \pm 1% \pm 1 digit

Sample rate (SPO₂, HR, status) 1 sample per second, up sampled to match the other channels

Sample rate (plethysmograph) 256 samples per second, up sampled to match the other channels

EVENT BUTTON CHANNEL x 1

DIMENSIONS

Grael EEG System Component	Size L x W x H	Weight
Amplifier	240mm x 144mm x 50mm 9.45in x 5.66in x 1.97in	700 grams 24.7 ounces
Jackbox	200mm x 83.1mm x 49mm 7.87in x 3.27in x 1.92in	250 grams 8.81 ounces

ENVIRONMENTAL REQUIREMENTS

Temperature Ambient operating temperature range:
0°C - 40°C (32°F - 104°F)

Storage temperature range:
-10°C - 50°C (-4°F - 122°F)

Humidity 20% - 90%-relative humidity (non-condensing)

Altitude Less than 3,000m

ELECTRICAL SPECIFICATIONS

Power Supply All power provided by the network connection using Power Over Ethernet (either mid-span injector or POE Switch, per IEEE 802.3af standard)

Operating voltage 48 volts

Power consumption <10 watts

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