VIASYS™ HEALTHCARE
Excellence For Life
NEUROCARE GROUP

NICOLET ENDEAVOR *CR*™

PRODUCT SPECIFICATIONS

QUALITY SYSTEM

Manufactured, designed, developed and marketed by VIASYS Healthcare Inc. NeuroCare Group under ISO 13485, ISO 9001 certified system.

COMPLIANCE / REGULATORY STANDARDS

Designed, tested and manufactured to meet the following domestic (USA), Canadian, European and International Standards:

UL 60601-1
Medical Electrical Safety Standard (USA)

CAN/CSA-C22.2 no. 601.1-M90
Medical Electrical Safety Standard (Canada)

EN/IEC 60601-1
Medical Electrical Safety of Medical Equipment (International and Europe)

IEC 60601-2-26
Particular Safety of electroencephalographs equipment

IEC 60601-2-40
Particular Safety of electromyography and evoked response equipment

EN 60601-1-2
Collateral safety standard for EMC

EUROPEAN COMMUNITY (CE MARK)
Class 2B, Medical Device Directive (MDD) product certified by N.V. Kema, Arnhem, The Netherlands, Notified Body (ID No. 0344) to comply to "EC Directive" 93/42/EEC

GENERAL SPECIFICATIONS

Power Supply
110, 220 V± 10%, 50-60 Hz

Power Consumption
Approx. 50 -100 W, depending on model of notebook.

Dimensions
Case: Approx. 14" D x 19" W x 8.75" H
(35.5cm x 48cm x 22cm)
Base: 14" D x 19" W x 3.125"H
(35.5cm x 48cm x 7.3cm)

Weight
21.5 lbs. (9.7 Kg) including peripheral hardware and without laptop CPU

Features
System includes iso-transformer/power supply for laptop CPU power connection

Environmental Limits:
Operating (in use):
Temperature: 60 to 90° F, (15.6 to 32.2° C)
Relative Humidity: 20-80%, non-condensing
Altitude: 0-10,000 ft, 0-3km.
Non-operating (in storage):
Temperature: 0 to 132° F, (17.7 to 55° C)
Relative Humidity: 10-90%, non-condensing
Altitude: 0-40,000 ft, (0-12 km)

SYSTEM ARCHITECTURE

Base:
Intel® Pentium® M 1.4Ghz
PC-ATX compatible
256 MB memory minimum

ADC
16 bit, 16 channel analog-to-digital converter with 12,000 Hz per channel sample rate

Graphics:
15" Super VGA or higher

Mass Storage
Disk controller with > 30GB, Hard Disk
DVD/CD-RW

Hardcopy Device (Optional)
Choice of HP DeskJet, Okidata laser

Parallel Processing
Allows simultaneous application acquisitions, display, plotting and real-time signal analysis. Two digital processors run concurrently with the CPU.

OPERATING SYSTEM SOFTWARE

Windows XP® Professional

DISPLAY

Dependent on Laptop CPU

FEATURES

Capable of multiple data type(MDT) acquisition. Can record multiple EP applications (ie, SEP and AEP) with EEG, CSA, EMG, data waveform stacks simultaneously. Automatic markers and measurement tables for EP and data stack waveforms. Data can be acquired as true differential or referential with the Endeavor amplifier.

WAVEFORM ACQUISITION, DISPLAY AND STORAGE

Timebase Type & Range
5 ms to 120 seconds

Waveform Storage
Any number of waveforms, as well as the raw data, can be stored permanently with patient demographic information on the hard disk or CD-R.

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AVERAGER CAPABILITIES

Number of Channels
EP: 1 to 16
EMG: 1 to 16

Number of Averages
1 to 9999

Averager Display Sensitivity
.05 µV to 100 mV full scale

Averaging Types
Normal averaging, plus-minus averaging, pre-stimulus averaging

Artifact Rejection
User-selectable level and on/off, independent for each channel

EXTERNAL STIMULUS CONTROL

External Trigger Input
Standard TTL logic levels
(5 µ sec minimum pulse width)

External Stimulus Outputs (2)
Standard TTL logic levels

AMPLIFIERS

Number of channels
16 channels user selectable differential and/or referential Amplifier can be utilized for EP, EMG, EEG, CSA and spectral trends simultaneously.
Amplifier is optically isolated (type BF) for patient safety.
Amplifier has 2 electrode input boxes with a total of 44 active electrode inputs and four programmable ground inputs

Sensitivity
10 µV to 100mV scale in 13 steps
Input Impedance
>1000MW

Common Mode Rejection Ratio
110 dB typical at 50 to 60 Hz

Low Filter Settings (High Pass)
Selectable 6 or 12 dB/octave rolloff
Settings: 0.2, 1, 2, 10, 20, 30, 150, 500Hz
User selectable any value from 0.2Hz to 500Hz

High Filter Settings (Low Pass)
Second-order analog Butterworth low-pass filter with 12dB/octave rolloff
Settings: 100, 250, 500, 1000, 1500, 3000Hz
User selectable: any value from 100 Hz to 3000Hz

Notch Filter:
Digital 50Hz or 60Hz with On/Off

Noise Level:
0.7µV RMS from 5 to 3000Hz with input shorted

Reject Filters
2 user selectable “notch like” filters that can significantly decrease the amplitude of unwanted noise form the physiologic data

Built-In Calibration
20Hz sine wave

Electrode Impedance
Test values displayed on screen

Electrode Switching
Complete keyboard/mouse control of each channel’s electrode montages.

ISOLATED ELECTRICAL STIMULATOR

Independent Outputs:
4 High-Level, 1 Low-Level

Stimulus Intensity:
0-100 mA or 0-400 V for High-Level
0-5mA for Low-Level

Stimulus Duration:
0.01 - 1 ms

Stimulus Modes
Single, pair, train; interleaved recurrent and nonrecurrent operation

Stimulus Rate:
0.01 - 100 per second

Isolation:
Fully isolated outputs

Features
Stimulus conditions/parameters are linked with one or more date acquisition panel(s) and are stored with that panel. Stimulus intensity is controlled via mouse, keyboard or dedicated stimulus intensity control knobs. Up to 12 switchable output sites available.

AUDITORY STIMULATOR (OPTIONAL)

Signal Type:
Broad band click

Stimulus Rates
0.1 - 100/sec in 0.1/sec steps

Stimulus Intensity
0 to 138 dB pSPL or -21 to 103 dB nHL, depending on stimulus type and frequency and frequency and transducer type.

Stimulus Attenuators
Keyboard controlled, separate units for right and left signal channels and for noise channel, each with 140 dB dynamic range and 1 dB or 5 dB step size.

Stimulus Polarity
Condensation, rarefaction and alternating.

Click Duration:
100 µsec

Noise Masking
Broadband, -15 to 125 dB SPL or -1 to 103 dB nHL, depending on transducer type routable to either or both ears. Acoustic calibration modifiable through software.

Transducers (300W)
TDH-39 Headphones; TIP 300 Insert Phones; Bone Vibrator. Independently calibrated and modifiable through software.

LED GOGGLES VISUAL STIMULATOR

LED Stimulus
High efficiency red LEDs (635 NM) in 3 x 5 array in each eyepiece

LED Flash Rate:
3.4 to 71.1 per second

LED Flash Duration:
.01 to 5 ms

System Interface:
Single 15’ cable

NETWORK

Windows Ready, 10/100 Ethernet Card included

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