

# Nicolet VikingSelect

## Specifications



### General Specifications

**Power Supply** 100 - 120 V, 220 - 240 V $\pm$  10%  
50 Hz or 60 Hz, 850 VA primary; 600 VA secondary

**Power Consumption** Approx. 150 - 500 W, depending on model of printer and monitor

**Dimensions**  
Approximately 45" H x 21" W x 32" D (114 x 53 x 81 cm)

**Weight** Approximately 198 lbs (90 kg) with 19" flat panel monitor and Okidata laser printer

**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 (0-3 km)

**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)

**Features** Custom cart with built-in transformer/power supply and EMG speaker

### System Architecture

**Central CPU** Intel® Pentium® Core 2 Duo 2.13 GHz Processor or better with minimum 2 GB memory

**ADC** 16-bit, 1 to 4 channels with 100 kHz maximum sample rate

**Graphics** High Resolution, minimum 1280 x 1024 pixel AGP graphics

**Mass Storage** Minimum 80 GB hard disk (formatted) and 500 GB DVD/RW

**Standard Interfaces** 1 9-pin serial port, 8-USB 2.0 ports, 10/100/1000 fast Ethernet interface

**Full-sized Keyboard** In retractable drawer

**Hardcopy Device** Okidata Laser or HP InkJet printer

**Parallel Processing** Allows simultaneous waveform acquisition, display, plotting and real-time signal analysis including a wide spectrum of quantitative EMG techniques

### Operating System Software

Microsoft® Windows® XP Professional

### Display

**Size & Type** 19" TFT-LCD display with built-in speakers and extending swivel arm

**Resolution** Maximum 1280 x 1024

**Features** Variable screen formats, depending on recording mode. Simultaneous display of waveforms, graphs and alphanumeric data. Multiple latency and amplitude cursor and trigger levels under computer and manual control, with on-screen read-out.

### Averager Capabilities

**Number of Channels** 8 Channels

**Display Modes** Normal, odd and even, normal and plus/minus, plus/minus

**Mode** Normalized dual buffer averaging with choice of display modes

**Artifact Reject** Fixed or variable threshold with adjustable delay of reject start time, or off, depending on test

**Averager Display Sensitivities** 0.001  $\mu$ V/division to 10 mV/division in 22 steps depending on test

### Waveform Acquisition, Display & Storage

**Timebase Range** 0.2 ms/division to 5 sec/division in 23 steps depending on test

**Timebase Type** Single, dual and individual, independently selectable in specific tests

**Waveform Trigger** Computer and manual control, selectable for positive and negative slope and input channel

**Waveform Delay** 0 to 10 divisions in 1 division steps or -3000 to +500 ms in 0.01 ms increments depending on test

**Waveform Storage** Number of waveforms that can be stored permanently varies depending on the specific test

**Free Run Storage** Store multiple records of free run EMG data and sound for up to 120 seconds each. 40 recordings/muscle.

**Resolution** 16-bit A/D converter with 1  $\mu$ s effective time resolution

**Features** Roll and zoom capability in specific tests

CareFusion  
Middleton WI

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### Amplifiers

**Number of Channels** 8 with electrode switching, 2 or 4 without electrode switching

**Sensitivity** 1  $\mu$ V/division to 10 mV/division in 13 steps

**Input Impedance** >1000 M $\Omega$

**Common Mode Rejection Ratio**

>110 dB (316,227:1) at 50 to 60 Hz

>100 dB (100,000:1) at 10 kHz without electrode switching

**Low Filter Settings** 0.2, 1, 2, 10, 20, 30, 150, 500 Hz, 1 kHz, 2 kHz, 5 kHz; selectable at 6 or 12 dB/octave slope, 0.1 (select test)

**High Filter Settings**

4 and 8 channel: 30, 100, 250, 500, 1K, 1.5K, 3K, 5K, 10K Hz; fixed 12 dB/octave slope

2 channel: 100, 250, 500, 1K, 1.5K, 3K, 10K, 20K Hz; fixed 12 dB/octave

**Notch Filter** Selectable by application, 50 Hz, 60 Hz, On or Off

**Noise** < 0.7  $\mu$ V RMS from 2 Hz to 10 kHz with inputs shorted without electrode switching

**Built-in Calibration** 2, 20, 200, 2,000, 20,000  $\mu$ V, rectangular pulse

**Stimulus Artifact Suppression** Included in amplifier

**Temperature Meter** Without switching, built-in temperature meter with optional temperature probe

**Electrode Impedance Meter** Built-in impedance meter, 0 to 180 k $\Omega$  at 20 Hz

**Safety Isolation** Fully optically isolated European isolation of type BF

### Auditory Stimulator (optional)

**Signal Types** Click, tone pip or tone burst

**Stimulus Intensity** 0 to 139 dB pSPL or -31 to 109 dB nHL, depending on stimulus type and frequency and transducer type

**Stimulus Increments** 1 to 30 dB steps (selectable)

**Stimulus Polarity** Condensation, rarefaction and alternating

**Click Duration** 0.50, 01.00, 0.2500, 0.500, 1.0 ms

**Tone Frequencies** 250, 500, 750, 1K, 1.5K, 2K, 3K, 4K, 6K, 8K (Hz)

**Tone Burst Ramp** 1 to 10 cycles

**Tone Burst Plateau** 1 to 400 cycles

**Tone Pip Total Cycles** 2 to 20 cycles

**Tone Pip/Burst Envelope** Linear, Gaussian, Hanning and Blackman

**Noise** Broadband, -15 to 125 dB SPL or -1 to 103 dB nHL, depending on transducer type

**Transducers** 300 $\Omega$  TDH-39 Headphones, TIP 300 Insert Phones, Bone Vibrator

### Isolated Electrical Stimulator (optional)

**Independent Outputs** 2 channels

**Stimulus Intensity** 0 to 100 mA or 0 to 400 V continuously adjustable intensity within user selectable maximum range into a 4 k $\Omega$  load

**Stimulator Switching (optional)** Switch between 8 or 16 electrical stimulation sites, software selectable control

**Stimulus Duration** 0.01 - 1 ms

**Stimulus Modes** Single, dual, train, recurrent and non-recurrent operation

**Stimulus Rate** 0.1 - 100 per second, depending on test

**Isolation Features** Fully isolated outputs

**Level Control** Console/Remote mode for adjusting stimulus intensity either from console or remotely from electrical stimulator probe

**Stimulus Type** Choice of stimulus type: selectable constant-current or constant voltage

**Stimulator Probe (Handpiece)** Electrical stimulator probe with reversible polarity and optional stimulus intensity control

**Level Readouts** Separate current (or voltage) readout on screen for each waveform

**Features**

"Impedance limit" indicator in constant-current mode when stimulus electrode impedance is too high to allow delivery of requested current. Removable isolated electrical stimulus unit for placement close to patient

### 2015 Visual Stimulator (optional)

Refer to separate product specifications

### LED Goggles Visual Stimulator (optional)

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

**LED Flash Rate** 0.1 to 100 per second

**LED Flash Duration** .01 to 1 msec in .05 steps under software control

**System Interface** Single 15' cable

### NicVue™ Patient Administrator Software

Manage Nicolet EMG, EP, EEG and Monitoring data through a centralized interface

Integrated to Microsoft® Access™ database

### Quality Standards

Manufactured, designed, developed and marketed by CareFusion NeuroCare under ISO 13485

### Compliance/Regulatory Standards

Designed, tested, manufactured and certified 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

Specifications, design options and terms quoted are subject to change without notice  
U.S. Patents: 5,657,763 7,424,322

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