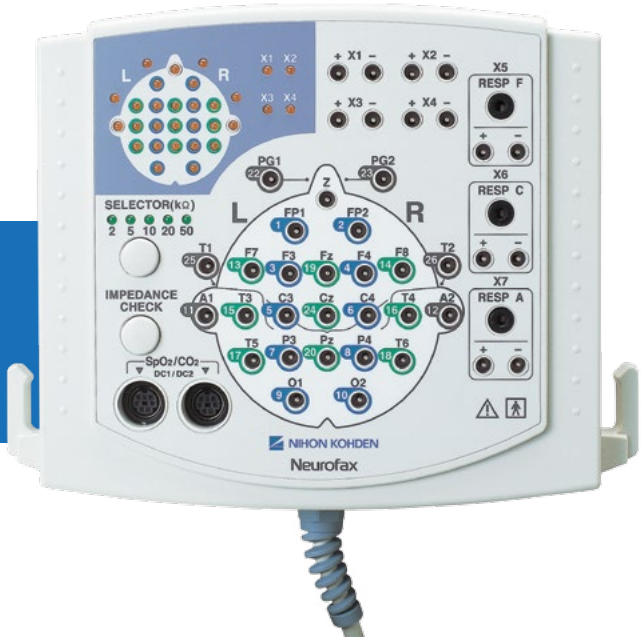
Neurofax
EEG-1200

Neurofax EEG systems: the perfect brain insight

With their modular design and intelligent, future-oriented concept, Neurofax EEG systems offer maximum flexibility and can be tailored to the most demanding requirements in standard clinical and research applications. As such, this high-end digital range sets a new benchmark in system solutions for diagnostics and monitoring.

The high-acuity Neurofax EEG system is extremely intuitive. Its user-friendly software features a wide range of functions including record, playback, and quantitative data analysis. As a standard examination in neurology, electroencephalography is used in many scenarios – from routine diagnostics to critically ill patients, or neuromonitoring in the ICU. The Neurofax EEG system is built to cover all aspects of diagnostics, delivering innovative functionality, high signal quality, and durability to ensure efficiency – all while remaining simple to use.

NIHON KOHDEN



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Pioneering technology for enhanced efficiency

Neurofax EEG systems, designed for high-acuity performance, feature cutting-edge technology to deliver superlative versatility for even the most demanding clinical requirements.

- **Polaris.one**, a powerful data management system, supports the straightforward administration and organization of diagnostic data. Modern communication interfaces (HL7 and GDT/BDT) enable integration into hospital and practice information systems.
- **Digital Video** Software allows synchronized digital video for EEG systems using webcam, professional HD camera, or picture-in-picture as per requirements.
- **EEG Mapping**, offers amplitude with spectral and frequency online mapping during acquisition, even with single channels and montages.
- **Spike and Seizure Detection** Software with a high sensitivity and a stunningly low false positive rate.
- **Polysmith*** combines sleep analysis software with recording devices to provide quick and precise data analysis – for a complete PSG solution customized to individual needs.

* Product of Neurotronics Inc. USA

Progressive presentation for smart monitoring

Neurofax EEG systems feature a smart active display that enhances ease of use for more effective monitoring.

- **EEG Trend Program** converts EEG signals into clear trend graphs making them easy to interpret (aEEG, DSA, CSA, Power FFT).
- **Smart vital signs interface** for holistic multimodality assessment of patient, with capability to pull up 8 channels from bedside monitors.
- **Live View Panel** offers intuitive real-time management of diverse neuromonitoring data from a centralized location.

Practical functions for greater applicability

Designed with a modular approach, Neurofax EEG systems offer prudent, versatile functionality with many practical applications.

- **Amplifier:** high-quality amplifier with 38 to 256 channels realizes wide-band EEG recording from slow shift to fast ripple.
- **Brain function mapping system:** a comprehensive and sophisticated system for brain function mapping reduces time-consuming procedures by combining cortical stimulation, easy switch between stimulation and recording, and a brain function mapping report all in one place.
- **EEG scope:** data reviewer that allows review of previous EEG while monitoring, acquiring, and opening up to 4 EEGs at the same time.
- **3D voltage mapping:** whole head maps offer a complete overview and better interpretation of the topography of EEG abnormalities.

Features for increased convenience

Neurofax EEG has futuristic features that allow data integration with more flexibility, compatibility, and customization for efficient and convenient monitoring.

- **Customizable Main Menu** that allows registration of examination protocol buttons on the main menu. Each button has user-defined settings for an examination which can be adjusted for different examination conditions and methods.
- **Note Window** offers to save up to 1,000 sections of waveforms for comparison by dragging and dropping. Up to 100 copied waveforms can be registered as sample data for comparison with other patients or teaching purposes.
- **NeuroReport**, which is integrated in all Nihon Kohden EEG systems, offers individually configured report templates, including adaptive auto text functions, for fast and simple reporting. It guarantees maximum flexibility and compatibility.

Specifications

JE-921A/AG, JE-120A

Display

Display resolution	Up to 1920x1080 pixels
Number of display channels	Up to 64 and one mark channel When multi-channel electrode junction box and mini junction boxes are used: up to 250 and one mark channel
Display modes	Overwrite and page-by-page
Waveform display color	16 colors
Waveform display on/off /freeze	Provided
Waveform position adjustment	Provided
Waveform sweep speed	0.1, 0.2, 0.5, 1, 2, 5, 10, 15, 20, 30, 60 s or 5 min/page
Timing mark	0.1, 1s
Time scale	Off, 0.2, 1s
Event mark	Displayed
EEG scale	Provided
Multiple displays	Available

Data Acquisition (JE-921A/AG)

Number of inputs	
EEG input	25
Extra input	4
Bipolar input (pairs)	7; The extra jacks (X1-X4) can be used as bipolar jacks.
DC input	4
SpO_2 connector	1
CO_2 connector	1
Input impedance	
EEG input/extra input	100 MΩ
DC input	1.5 MΩ
Input circuit current	5 nA or less
Internal noise level	
EEG input/extra input	1.5 µVp-p or less (0.53 to 60 Hz)
DC input	10 mVp-p or less
CMRR	
EEG input/extra input	105 dB or greater (60 Hz)
Bipolar input	100 dB or greater (60 Hz)
Low-cut filter	0.08 Hz (Time constant: 2 s)
High-cut filter	300 Hz (-18 dB/oct)
Offset tolerance	±600 mV
AD conversion	16 bits (97 nV/LSB)
Sampling and hold	All electrodes at the same time
Sampling frequency	100, 200, 500, 1000 Hz, selectable

Data Acquisition (JE-120A)

Total input of inputs	Up to 256
Bipolar input	4
DC inputs	16
Maximum number of recorded referential electrodes and sampling frequency (clinical line)	256 (2kHz), 128 (5kHz), 64 (10kHz)
Maximum number of recorded referential electrodes and sampling frequency (extended line for research)	256 (10 kHz)
Input range	±3.2mV or ±12,8mV (selectable)
Input impedance	200 MΩ
Internal noise level	Less than 1.5 µVp-p (0.53 to 120 Hz)
CMRR	110 dB or greater (60 Hz) (EEG input)
Time constant	2s, 10s (Selectable)
High-cut filter	3000 Hz (– 18 dB/oct), depending on the sampling frequency
Offset tolerance	±1000 mV
A/D conversion	24 bits
Sampling and hold	All electrodes at the same time
Sampling frequency	10.000 Hz (max)

Data Processing

EEG Input	OFF, 1, 2, 3 (2.5), 5, 7, 10, 15, 20, 30, 50, 75, 100, 150, 200, 300, 500, 700, 1000 µ V/mm
DC inputs	OFF, 10, 15, 20, 30, 50, 75, 100, 150, 200, 300, 500, 700, 1000 mV/mm
Time constant (Low-Cut filter)	0.001, 0.003, 0.03, 0.1, 0.3, 0.6, 1.0, 2.0, 5.0, 10.0 s 0.016, 0.03, 0.08, 0.16, 0.27, 0.53, 1.6, 5.3, 53, 159 Hz (– 6 dB/oct)
High-cut filter	**JE-921A/AG** 15, 30, 35, 60, 70, 120 (– 12 dB/oct), 50 (RAPID), 300 Hz (– 18 dB/oct) **JE-120A** 15, 30, 35, 60, 70, 120, 300, 600, 1200 (– 12 dB/oct), 50 (RAPID), 3000 Hz (– 18 dB/oct)
AC filter	50 or 60 Hz, (rejection ratio: 1/25 or more)

Data Processing (continued)

Calibration waveform

Waveform shape	0.25 Hz step wave or 10 Hz sine wave
Voltage	2, 5, 10, 20, 50, 100, 200, 500, 1000 µV (×1000 for DC input signal)
ECG elimination filter	Available in acquisition and review programs
Impedance check	Electrodes are displayed on the screen in electrode position layout. Impedance for each electrode is displayed and electrodes with impedance higher than the preset impedance threshold are highlighted
Indication on LED	LEDs on the electrode junction box with impedance higher than the preset impedance threshold light
Impedance threshold	2, 5, 10, 20 and 50 kΩ
Pattern	36 sets of programmable montages combined with programmable individual amplifier settings
Marking signal	Photic stimulation mark, Hyperventilation mark

Photic Stimulation

Maximum flash energy	1.28 J/Single
Stimulation modes	3 automatic (30 steps, programmable), manual, and single
Mode of operation	Continuous operation with intermittent loading
Automatic stimulation	
Stimulus rate	0.5, 1 to 33 (1 Hz steps), 50 and 60 Hz
Stimulation period	1 to 99 seconds in 1 second steps
Pause period	1 to 30 seconds in 1 second steps
Manual stimulation	Manually set frequency and stimulation period
Photic frequency	0.5 Hz, 1 to 33 Hz in 1 Hz steps, 50 and 60 Hz
Stimulation time	1 to 99 s in 1 second steps and continuous stimulation
Pulse mode	Normal, random and double
Random stimulation	1 to 33 Hz in 1 Hz steps with ± 50%
Single stimulation	Manual key operation single stimulation or automatic single stimulation by external trigger signal
Trigger input	TRIGGER IN connector (1 to 5 V)
Trigger output	TRIGGER OUTPUT connector (3 V or more)

Power requirements

Line voltage	SM-120AK isolation unit: AC 220 to 240 V
Line frequency	50/60 Hz
Power consumption	750 VA (for PC unit and display) 1 kVA (PC unit, display, photic stimulator control unit and analogue output unit)

Safety

Safety standard and electromagnetic compatibility

CISPR11 GROUP 1 CLASS B: 2003

CAN/CSA C22.2 No.60601-1-2-03

IEC 60601-1: 1988

CAN/CSA C22.2 No.601.1B-90

ICE 60601-1 Amendment 1: 1991

CAN/CSA C22.2 No.60601-1-1-02 (R2002)

IEC 60601-1 Amendment 2: 1995

CAN/CSA C22.2 No.60601-2-26-04

IEC 60601-1-1: 2000

IEC 60601-1-2: 2001

IEC 60601-1-2 Amendment 1: 2004

IEC 60601-2-26: 2002

CAN/CSA C22.2 No.601.1-M90: 1990

CAN/CSA C22.2 No. 601.1S1-94

Type of protection against electric shock	Class I
Type BF applied part	Electrode jacks, bipolar jacks, SpO_2 connector, CO_2 connector
Type CF applied part	Electrode jacks, bipolar jacks
Mode of operation	Continuous

Dimensions

JE-921A, electrode junction box	185 (W) × 72 (D) × 167 (H) mm, 1.0 kg
PC unit	200 (W) × 300 (D) × 185 (H) mm, 6.5 kg The dimensions and weight differ according to model. Refer to the Operator's manual of the PC unit.
Isolation unit	181 (W) × 320 (D) × 140 (H) mm, 13 kg
Photic stimulator control unit	155 (W) × 300 (D) × 75 (H) mm, 4.10 kg
Cart	565 (W) × 625 (D) × 830 (H) mm, 44 kg

EC REP

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