



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.

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 inout)
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 μ V ($\times 1000$ 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 k Ω
Pattern	36 sets of programmable montages combined with programmable individual amplifier settings
Marking signal	Photoc stimulation mark, Hyperventilation mark

Photoc 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
Photoc 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 $\pm 50\%$
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, photoc stimulator control unit and analog 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) \times 72 (D) \times 167 (H) mm, 1.0 kg
PC unit	200 (W) \times 300 (D) \times 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) \times 320 (D) \times 140 (H) mm, 13 kg
Photoc stimulator control unit	155 (W) \times 300 (D) \times 75 (H) mm, 4.10 kg
Cart	565 (W) \times 625 (D) \times 830 (H) mm, 44 kg



NIHON KOHDEN EUROPE GmbH
Raiffeisenstr. 10, 61191 Rosbach, Germany
Phone: +49 (0) 6003 827-0, Fax: +49 (0) 6003 827-599
Internet: www.nihonkohden.com, E-mail: info@nke.de



NIHON KOHDEN CORPORATION
1-31-4 Nishiochiai, Shinjuku-ku, Tokyo 161-8560, Japan
Phone: +81 (3) 59 96-80 36, Fax: +81 (3) 59 96-81 00
Internet: www.nihonkohden.com