Pioneering a New Direction in Sleep™
Visit our virtual sleep lab and let us show you an option just right for you.

out of center sleep testing • polysomnography • epilepsy monitoring • electroencephalography • ambulatory recording • ICU/or monitoring • electromyography • ncv • evoked potentials

Polysmith® Sleep

Nihon Kohden offers the most comprehensive array of products and services in the world to address the sleep diagnostic market. We pioneered the first polysomnographs and continue to lead the way in developing cutting edge smart solutions for out of center sleep testing, polysomnography, combined EEG and PSG tools, data management and IT compatible solutions.

At Nihon Kohden, we focus on workflow and delivering the latest and best technology to keep your lab running smoothly. We provide 24/7 knowledgeable product support and service because we understand that you rely on your equipment day and night. Quality has been our priority for the 60 years since the development of our first EEG technology in 1951.

NIHON KOHDEN

Serving the Best Minds in Neurology for Over Sixty Years.

Front Desk

Simplify your scheduling and patient tracking needs with Polysmith® DMS. Polysmith DMS can read HL7 ADT or orders from centralized scheduling and update patient and scheduling information automatically.

The convenient user interface keeps everyone assigned to the patient informed of the patient's study status. You can also rely on Polysmith PQ to electronically capture patient questionnaire information and update the database. At Nihon Kohden, we understand the demands and budgetary constraints of a sleep lab. We continue to develop our product to maximize efficiency and streamline workflows, so you can focus on patient care and satisfaction.

Managing patient throughput presents challenges that are addressed by the following:

- Daily, weekly and monthly views
- Single click re-scheduling
- Block out dates
- ADT/orders scheduling from HL7
- Manage procedure orders
- Polysmith PQ electronic patient questionnaire (Not available outside the U.S.)
- Internet compatible
- Email compatible
- Patient and record status management
- Staff management

Patient Room

Meet your sleep recording needs with Nihon Kohden amplifiers. We offer PSG compatible amplifier choices ranging from 27-256 channels.

New PSG-1100 Amplifier The PSG-1100™ is the latest addition to the Nihon Kohden family of amplifiers and is designed to have the enhanced features while retaining the quality and reliability you have come to expect from Nihon Kohden.

- 100 MΩ input impedance, the highest in the industry
- IP addressable
- 25 EEG (full 10-20 montage)
- Dedicated body position, EOG (2), ECG (3 with reference) and Chin EMG (3)
- 8 bipolar pair inputs
- Internal SpO_2
- Internal mainstream $EtCO_2$
- Internal data storage
- Built in power isolation

JE-921

The JE-921 provides flexibility and configurability that is exclusive in the industry. With a full 10-20 electrode array, 7 bi-polar pairs, built in End Tidal CO_2 and SpO_2, this technology will increase ease of use and recording power for all types of EEG and polysomnographic recordings. This amplifier is available for dedicated or combination EEG/PSG Systems.

JE-120

Nihon Kohden sleep solutions are compatible with all Nihon Kohden EEG and EEG HD amplifier solutions (JE-120) giving you the flexibility to record high density EEG from 64-256 channels. The JE-120 gives you the ability to perform sleep studies simultaneously with long term monitoring EEG.

- IP addressable
- Internal SpO_2
- Internal $EtCO_2$
- 200 MΩ input impedance
- Internal data storage
- Built in power isolation
- Combination EEG/PSG with dual data streaming
- Clip out PSG and leave LTM intact

CapOne End Tidal CO$_2$

The Nihon Kohden legacy of creating industry changing technology started with the invention of Pulse Oximetry in the late 1970s and now continues with the CapOne™ Main Stream EtCO$_2$ technology. In an effort to overcome the difficulties of monitoring carbon dioxide in different environments, the engineers at Nihon Kohden developed a miniaturized flow through EtCO$_2$ sensor for CapOne. The goal of this new development was not only to create technology that could monitor EtCO$_2$ in the critical care environment, but also to create a solution that could better monitor CO$_2$ in polysomnography. The TG-970 sensor represents the second generation of miniaturized main stream EtCO$_2$ technology, producing an even smaller sensor. The result improves the way CO$_2$ is monitored and interpreted. Benefits of the CapOne EtCO$_2$ system include:

- Integrated airflow pressure interface
- Breath to breath EtCO$_2$ values
- Very low dead space for added accuracy
- No calibration
- Miniature size
- Built in interface to JE-921, PSG-1100 and JE-120 amplifier
- Stand alone OLG-2800A model for interface with DC channel

Control Room

Seamless data acquisition is the basis for the Polysmith recording interface. A direct interface with Polysmith DMS scheduler eliminates the need for patient information entry to begin a recording. Simply point and click on the name of the patient to start a recording or view other recordings ongoing in your lab. A configurable interface allows the user to customize the software to best suit their role in the lab. Our full featured Polysmith software suite is used in a variety of sleep lab environments and provides a comprehensive approach to studying your patients. From easy to use scoring and recording tools to convenient remote access solutions, using Polysmith allows you to work with your entire lab's data from the convenience of the control room.

Diagnostics are the specialty of your sleep lab. These features help technologists manage their patients and data easier.

- Single click initiation of recording from calendar
- Live trending of multiple parameters
- Selectable video and audio quality
- On-line scoring and editing
- On-line AHI and total sleep time
- On-line arousal index
- Remote viewing of live data
- Auto append
- Automatic MSLT\MWT timer and recording tool
- Off-line video monitoring
- Auto copy to server or alternate media

Hospital Room—Combo System

Multi-modality electrodiagnostic equipment represents increasing value for hospitals that need to add polysomnography to their existing services when space is at a premium and reimbursements are threatened. The Nihon Kohden EEG-1200A with PSG offers the channel set to provide your facility the best of both worlds. Capable of working independently as an EEG or PSG system or as a combined unit, Nihon Kohden offers a full range of hardware and software features to fit your needs by providing easy to use analytical software, flexible montages, built-in SpO_2, $EtCO_2$, photic and more. To meet your epilepsy monitoring needs as well as expand your PSG capabilities, your EEG-1200 combo system can be expanded to record 64, 128 or even 256 channels.

Add polysomnography to your EEG/EMU environment and Nihon Kohden can add the following benefits:

- Simultaneous scrolling of live PSG and EEG data in separate montages

- Separate recording modalities for daytime EEG and night time PSG

- Spike and seizure analysis

- Photic stimulation

- Real time quantitative EEG trending

- Instant PSG studies using long term monitoring data

- Compatible with amplifiers ranging from 27 to 256 channels

- Up to 16 DC channels available

- Full routine EEG capability

- Full PSG capability

Out of Center Sleep Testing

Record and track your out of center sleep testing (OCST) studies via Polysmith DMS. Our Type II (Trackit™ 18+8 and Sleepwalker) and Type III (Nomad®) recorders use the same interface as our in-lab studies for scheduling, initialization, download and scoring. A common interface reduces training time and facilitates better tracking of your sleep records; thereby increasing efficiency. Rest assured, you can expect that our OCST devices incorporate signal quality, reliability and durable construction, the hallmarks of Nihon Kohden.

Nihon Kohden offers integrated out of center sleep testing solutions. Run exclusively out of center sleep tests or manage both PSG and OCST through the same portal. Scheduler integrated initialization and download, Smart Start SpO_2 initiated recording, Polysmith DMS data integration, and customizable sleep reports are features of our type II and III recorders (Nomad and Trackit Sleepwalker).

If OCST is your main goal, download the free Polysmith portable software for Nomad to allow you the flexibility to read portable studies on any computer.
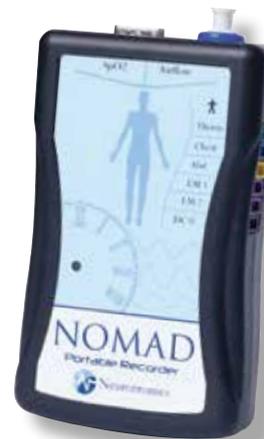
Doctor's Office

Remotely access your data with Citrix® compatible Polysmith, Polysmith DMS and Surveysmith® report viewer. With HL7 compatibility, electronic signature, and drop down dictation fields, Surveysmith report viewer creates an efficient environment for the physician on the go. Verifying Surveysmith report data using the exclusive interactive report feature allows the office or remote based physician the ability to navigate and verify all of the sleep data via the results in the report. Integrating all aspects of the patient's evaluation through Polysmith DMS gives the physician the ability to access a patient's status without being in the lab or picking up a phone.

We take into consideration the demands placed on the reading physician when designing our tools and services for healthcare providers. For those who thrive on accessibility and an intuitive user interface, Polysmith offers the following conveniences:

- Remote access via Citrix and Polysmith Tracer
- Customizable report builder
- 24/7 phone support
- Scanned attachments
- Polysmith PQ electronic questionnaire integration into reports
- Customizable normative data
- Interactive report allowing navigation of the recording through the report
- Over 5,000 fields that can be queried in Polysmith DMS
- Report compatibility with Excel® and Word®
- Report compatibility with PDF
- HL7/electronic medical records
- Dictation field storage in database
- Desaturation analysis which can calculate and report desaturation events in bins of >2%, >3%, >4% and >5%.
- High resolution trend plots for reports

A key new feature that aids physicians in diagnosing and treating patients include ASV reporting which captures the adaptive/automatic servo ventilation parameters.

Reorder Type	Nomad III	Trackit Sleepwalker II/III	Trackit 18+8 II
Number of Channels	12	16	18 ref and 8 poly
EEG	N/A	6	Assignable
EOG	N/A	3 poly	Assignable
Airflow Channels	Therm and pressure	Pressure	Assignable
Snore	Yes	Yes	Assignable
Respiratory Effort	2	2	Assignable
Built-in Body Position	Yes	Yes	No
Built-in SpO$_2$	Yes	Yes	Optional
PLM	2	1	Assignable
DC Channels	1	4 optional	1

Technologist/Scoring

The technologist is the center of any sleep services operation. Every day and night is a combination of patient care, data management, scoring and review. With innovative tools in both Polysmith DMS and Polysmith software, the technologist's work day is made more manageable. Finding and editing patient information, querying data and customized scoring are a big part of the technician's job. Polysmith DMS allows the technician to instantly know which patients are already scored and which remain to be scored.
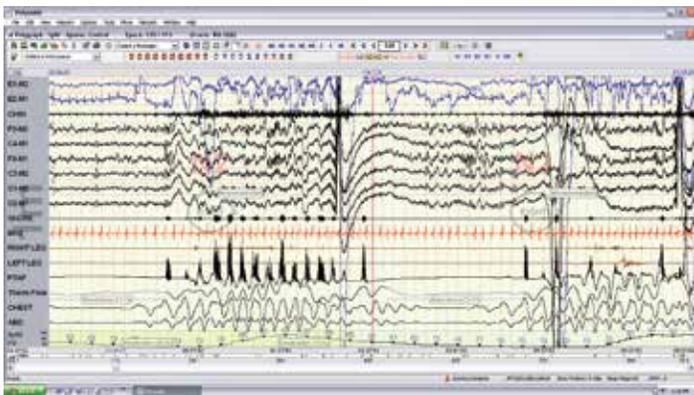
In the ever changing sleep medicine environment, the only constant is the need for quick and efficient data scoring and processing such as found with:

- Customized event wizard
- Single click editing
- Patient status tracking
- Auto updating of patient information
- Auto record tracking
- Slide show
- File size management through file migrator
- LTM tool for use with LTM EEG or EMU files
- Custom workspaces
- Custom channel creation
- Custom normative data
- Custom watermarks
- Configurable keyboard and mouse keys
- Edit scoring from trend plots

A key new feature designed to enhance the value of scoring expertise by reducing scoring times is Stage Assist. Polysmith autoscores the study and presents the scorer with epochs of a low auto scoring confidence rating for editing. Using Stage Assist, the scorer can efficiently use their scoring knowledge to make difficult scoring decisions which reduces staging time up to 80%.

Administration/Lab Management

The administrator console is a simplified user interface that tracks and trends the performance of your lab. You no longer need to program complex queries to determine lab performance. The administrator console does the work for you and presents the information in an easy to interpret graphical format. Some of the parameters covered by the administrator console include:

- Average turn-around-time from recording the study to interpretation
- Average time to each record status (recorded to scored, scored to read, and read to interpreted)
- No-show statistics
- Most frequent type of studies performed
- Most frequent diagnostic and billing codes
- Most frequent insurance providers
- Percent of studies turned around within 48 hours, 5 days, and 10 days
- Primary care, referring and reading physician synopsis

### Resource Management and Calendar

Polysmith DMS was designed to improve communication between staff members, facilitate scheduling, and provide quick access to information. Polysmith 9 builds on these characteristics.

- Resource management — limit number of studies that can be run based on available technicians or based on type of studies
- Icon coded display of patient status, scheduled, recorded scored, reviewed, report generated etc.
- Patient waiting list and compliance evaluation scheduling
- Electronic notes — add notes to the calendar to communicate important information to staff members, e.g. parent will be staying overnight.
- Patient profile day view with patient picture
- Configurable date blocking

IS/IT Features

Today's sleep lab is ever increasing its dependence on the IS/IT department to provide security, remote access, connectivity throughout the lab and interface with medical records. Polysmith provides a scalable enterprise solution that can accommodate a single site to a multi-center organization.

- Citrix compatible
- HL7 ADT/results interface improvements
- Windows® 7 compliant
- Windows server 2008 R2 compliant
- Active directory
- MSSQL® database
- Auto-copy — copy files to a central location immediately after the study is collected. A backup copy resides on the local computer and is automatically deleted after a user-defined period.
- Remote physician access to live patient recording
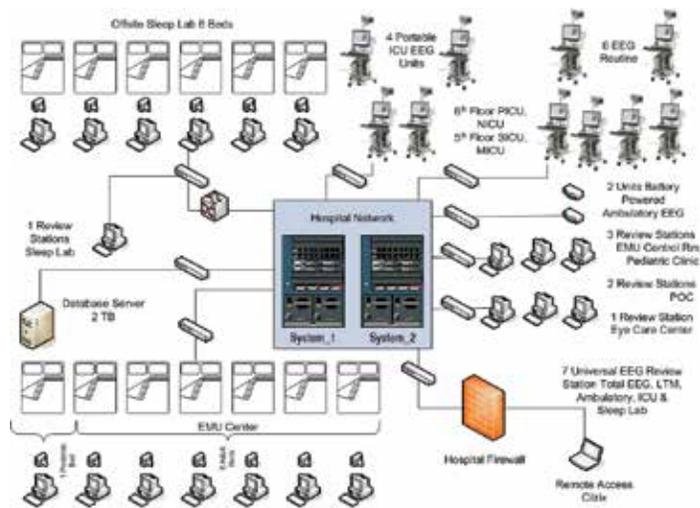
Multimodality integration hospital backbone.

Comprehensive Customer Care and Services

Clinical and Technical Training

To maximize utilization and satisfaction with your new system, registered Clinical Support Specialists are available for customized product training programs at your facility.

Technical Support

With greater demand for product standardization, data integration and networking, Nihon Kohden employs highly qualified Applications and IT Specialists to work with you to design a customized solution and site plan around your workflow, data access and data management requirements. Nihon Kohden offers direct Field Service Support backed by a team of certified Technical and Clinical Support Specialists. The specialists are available to assist around the clock with hardware and applications support. The team can securely connect into your system using remote diagnostics tools if needed.

Service Agreements

To assist you in delivering maximum system uptime, we offer flexible service agreement options and extended warranties available at the time of purchase or at any time during the warranty period.

Supplies and Accessories

To supplement the superior performance offered by the sleep diagnostic solution, we offer a full line of quality electrodes, needles and supplies.

Our Commitment to You

When performance counts, you can rely on Nihon Kohden to assist you in delivering the highest quality patient care as efficiently as possible. Nihon Kohden is committed to bringing trusted and innovative solutions to the changing demands of the sleep diagnostic field today and into the future.

SPECIFICATIONS

JE-912 PSG Amplifier

Number of inputs: 20 unipolar
14 bipolar inputs
Optically isolated
Input impedance: 100 MΩ
Input circuit current: < 5 nA
CMRR: > 105 dB or greater at 60 Hz (bipolar input: 60 dB or greater)
Internal noise level: < 1.5 µVp-p (0.53 to 60 Hz)
High cut filter: 120 Hz (-18 dB/oct)
Low cut filter: 0.08 Hz (TC = 2 s)
Offset tolerance: ±600 mV
Sampling frequency: up to 500 Hz
USB interface
Cat5 connectivity

JE-921 Multimodality 10-20 System Amplifier

Number of inputs: 32 channels total
10-20 input layout
3 dedicated bipolar channels
4 programmable bipolar channels
4 DC channels
Optically isolated
Input impedance: 100 MΩ
CMRR: > 105 dB
Internal noise level: < 3 uVp-p (0.53-120 Hz)
High cut filter: 300 Hz (-18 dB/oct)
Low cut filter: 0.016-160 Hz
Sampling frequency: up to 1000 Hz
USB interface
Cat5 connectivity

Nomad Type III Out of Center Sleep Testing

Battery type: 2 x AA batteries
Weight: 155 g (without batteries)
Size: 11.75 cm x 7.24 cm x 2.54 cm (L x W x D)
ADC resolution: 16 bits
5 bipolar inputs
3 respiratory channels
2 limb movement channels
1 DC input
Integrated Nonin SpO$_2$
Integrated body position sensor
Pressure transducer channel with derived snore channel
Sampling frequency: up to 250 Hz

Air EEG/PSG Wireless Acquisition

Input impedance: EEG input/extra input: 200 MΩ
DC input: 1.5 MΩ
Input circuit current: 10 nA or less
Internal noise level:
EEG input/extra input: 3 µVp-p or less
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 (τ = 2s)
High-cut filter: 60 Hz (-18 dB/oct)
A/D conversion: 16 bits (97 nV/LSB)
Sampling and hold: All electrodes at the same time
Sampling frequency: 200 Hz
Impedance threshold: 2, 5, 10, 20 and 50 KΩ

PSG-1100

Inputs:
EEG 2S
ECG 2
CHIN EMG 3
EKG 3 plus reference
16 bipolar inputs
6 DC channels
Internal SpO$_2$ (wave and value)
Internal EtCO$_2$ (wave and value)
ADC 16 bits
Input impedance: 100 MΩ
CMRR: >105dB or greater at 60 Hz
Internal noise level: < 1.5 µVp-p (0.53 to 60 Hz)

JE-120A-24

Number of inputs: 256
4 bipolar (with JE-125 input box)
1 common reference (with JE-125 input box)
16 DC channels
Optically isolated
Input impedance: 200 MΩ
CMRR: > 110 dB (EEG input box)
>100 dB (bipolar input jack)
Internal noise level: <1.5 microVp-p (up to 120 Hz)
High-cut filter: 15 to 3000 Hz (-18dB/oct) sample rate dependent
Low-cut filter: 0.016 to 160 Hz (-6dB/oct)
Clinical sampling frequency: 100, 200, 500, 1000, 2000 Hz all 256 channels
5000, 10,000 Hz 128 and 64 channels
Research stream sampling frequency: 200, 500, 1000, 2000, 5000, and 10,000 Hz all channels
Microsoft Windows 7 compatible

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