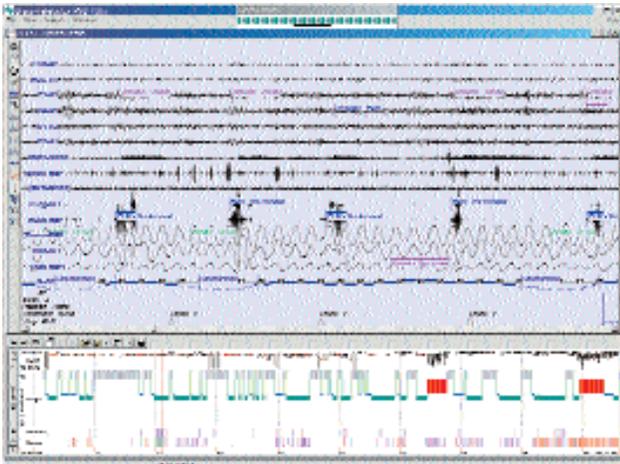# TWin PSG
Flexible, easy-to-use software

TWin PSG is the software that brings everything together! Many years of dedication to the field of neurodiagnostics has allowed Grass-Telefactor to develop a software platform that is easy to use, yet flexible enough to expand upon.

Easy Setup: With TWin's simplified installation package, utilize the pre-defined list of annotations, keyboard events, photic stimulation routines, duration events, or montages to set up the PSG system quickly.

User Profiles: Use Profile Manager to configure a profile for each technician or doctor using the system. Their montage, trace color, record configuration, review setup, and other preferences are stored and loaded at any time.

Montages: Create virtually an unlimited number of montages, off-line or real-time, with the intuitive Montage Editor. Referencing A1 and A2 to eliminate artifact, average referencing, specific channel types, and colored tracings are some of the features within the Montage Editor.

Recorder: The recording module opens instantly, with just a double-click on the TWin "start-up" icon. Easily perform impedance checks, calibrations, and montage adjustments. Entering user-defined events and annotations is as simple as a single keystroke. Accurate, high-quality digital PSG recording is guranteed.

Reviewer: TWin's intuitive database makes it easy to bring up a patient study for quick review. Utilize keyboard or on-screen controls to navigate through a record. Amplitude and measurement tools, along with zoom capabilities allow the user to accurately analyze specific waveforms. Potential Mapping and Spectral Analysis tools are included with TWin for advanced data review.

Sleep Scoring: Stage and score recordings efficiently and accurately. A pre-defined list of stages and scores can be utilized, or create new events to meet your specific needs. Computer assisted sleep scoring is available for Respiratory, Leg Movement, Snore, Bruxism, and Desaturation events. Automatic Arousal correlations and EKG, body position, and DC channel trending is also available. Finally, utilize the Sleep Scoring Comparison Module to assist with intra-lab QA comparisons.

Reports: Use the Sleep Report Wizard to create a comprehensive sleep report. TWin exports the calculated sleep statistics, hypnogram, graphs, and trends to a familiar Microsoft Word template. Customized reports can be created to meet the specific needs of your sleep lab.

ARCHIVE MANAGER SOFTWARE
Included with the CometXL and Comet Portable EEG is TWin's Archive Manager software. Archive Manager allows easy archiving of the studies to different types of media, such as CD or DVD.

TWINLOOK™ REVIEW SOFTWARE
- Review patient data anywhere
- Friendly, easy-to-use interface
- Ideal for sharing data with colleagues

TWinLOOK is a view-only review package that offers a friendly interface allowing physicians and technicians to quickly and easily review a patient study. Change montages, sensitivities, and trace colors, along with fast reviewing of the patient data, and digital video and audio that is synchronized with the patient data.

Any TWin-based study, along with its synchronized digital video/audio, may be transported on a writable CD or DVD. Then, using the disk in a Windows 98/2000/XP-based PC, review that study and digital video/audio. Physicians and hospitals can send data acquired in their laboratory to others for review, facilitating exchange of data with referring physicians, colleagues, collaborators, and/or to obtain a second opinion.

Options
Software, Carts, Cabinets, Electrodes & Accessories

Panorama™ Digital Video/Audio Software
New Enhanced Features Include:
- Full screen digital video with waveform data overlay which allows waveforms to appear over the video image
- Full window resizing during both acquisition & review
- Virtual Pan & Zoom features during both acquisition & review
- MPEG4 video compression for 640 x 480 NTSC (768 x 576 PAL) high resolution video with ultra low data rates
- Real-time streaming of video & data on remote PC
- Multiple camera views (up to three) in a single recording
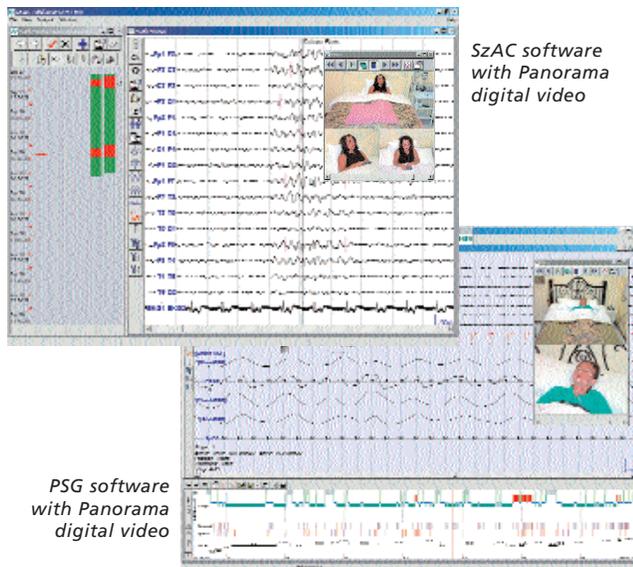
SzAC software with Panorama digital video

PSG software with Panorama digital video

This exciting new video package uses the latest MPEG4-based video compression. Panorama permit the user to store 640 x 480 video in the same disk space that used to be required for 320 x 240 pixel video. Essentially this results in an increase of 4 times in picture quality without the need for any additional disk space.

Additionally, on a remote reviewing station with a network connection, both EEG/PSG waveforms and video can be seen real-time with virtually no delay.

Multiple video recording is another major feature of the system. By recording from multiple cameras simultaneously, view of the patient is never blocked, again ensuring that nothing is obscured. Waveform overlay, video resizing, and virtual pan and zoom capabilities apply to the multiple

camera video setup as well and video storage rates remain amazingly low. A complete line of cameras and monitors is also avialable.

EEG Software/Hardware Add-on
The PSG upgrade includes the following: TWin EEG software, and UPM-1 integrated Universal Personality Module.

SzAC® Seizure and Spike Analysis Software
SzAC® Seizure and Spike Analysis Software
SzAC is an on-line seizure and spike analysis software package. SzAC's utility is proven to reduce review time of long-term EEG recordings, allowing the person reading the EEG study to quickly view events of interest without having to page thru the entire recording. SzAC was the first commercially available seizure and spike detection program. It has continued to evolve and improve through Grass-Telefactor's ongoing research and development. The default detection parameters are optimized for minimal false positive and false negative results, however the user can adjust parameters as needed.

During data review, the SzAC Timeline graph shows marks to indicate patient push button events and automatic detections. Clicking on these marks will bring up the corresponding page of EEG data for visual confirmation. The SzAC Timeline is also used for marking events of interest for saving, both EEG and digital video (shown in red in this example).

Carts & Cabinets
Several cabinet sizes available, along with IT8/L mobile cart for use with lap-top computer, IT8/T mobile cart for use with tower computer, IT9 mobile rack cart for use with desk-top computer and drawer for full size keyboard. Request separate specifications.

Electrodes & Accessories
A complete line of high quality genuine Grass electrodes, electrode application products, transducers, digital impedance meters, etc. are available to suit all of your needs. For your shopping convenience these items may be purchased from our Online Store.

Comet® Series PSG

Lab-based and Portable PSG Systems
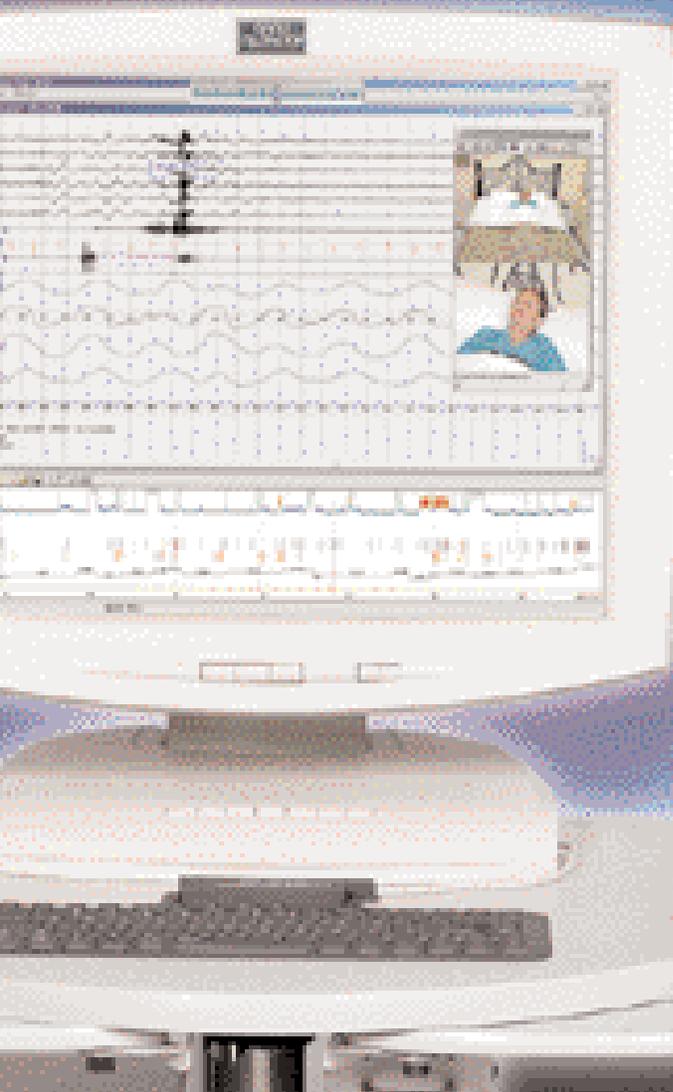
GRASS TELEFACTOR®
An Astro-Med Inc Product Group

With over 60 years experience of designing and manufacturing reliable, high-quality instrumentation for the neurodiagnostic community, the Comet® systems continue to provide a complete solution for all of your PSG monitoring needs.

These powerful, easy-to-use PSG systems consist of the high response 50-channel AS40 Amplifier System, a Personality Module with electrode inputs designed especially for PSG, and TWin Sleep Record and Review Software. These flexible systems upgrade easily to also record EEG. Powerful digital video options are available.

FEATURES:

- Compact design that is rugged, lightweight, and easy to use
- On-board analog to digital conversion for interference-free recordings
- Easily connect to any PC with the on-board Ethernet connection
- Flexible enough for both EEG and PSG applications
- Up to 50 total available channels
- Integrated pulse-oximeter connection providing SpO2 and heart rate
- Easy, identifiable electrode input with the head and body diagram layout
- On-board impedance checking, calibrations, and photic control at the amplifier system
- Easily mounted next to a patient bed or attached to a cart
- Limited Lifetime Warranty on Grass-Telefactor manufactured parts

COMETXL LAB-BASED PSG

CometXL is a complete PSG system designed to satisfy the needs of the the physician's office, hospital, or medical center. Ready to use, CometXL is supplied with the latest high performance PC. A DC Input Module is included for up to 8 channels. Select from various mobile carts, cabinets and monitor sizes to suit your individual needs.

COMET PORTABLE PSG

Comet Portable PSG is supplied with the latest high-performance laptop computer. A wide selection of accessories can be added.
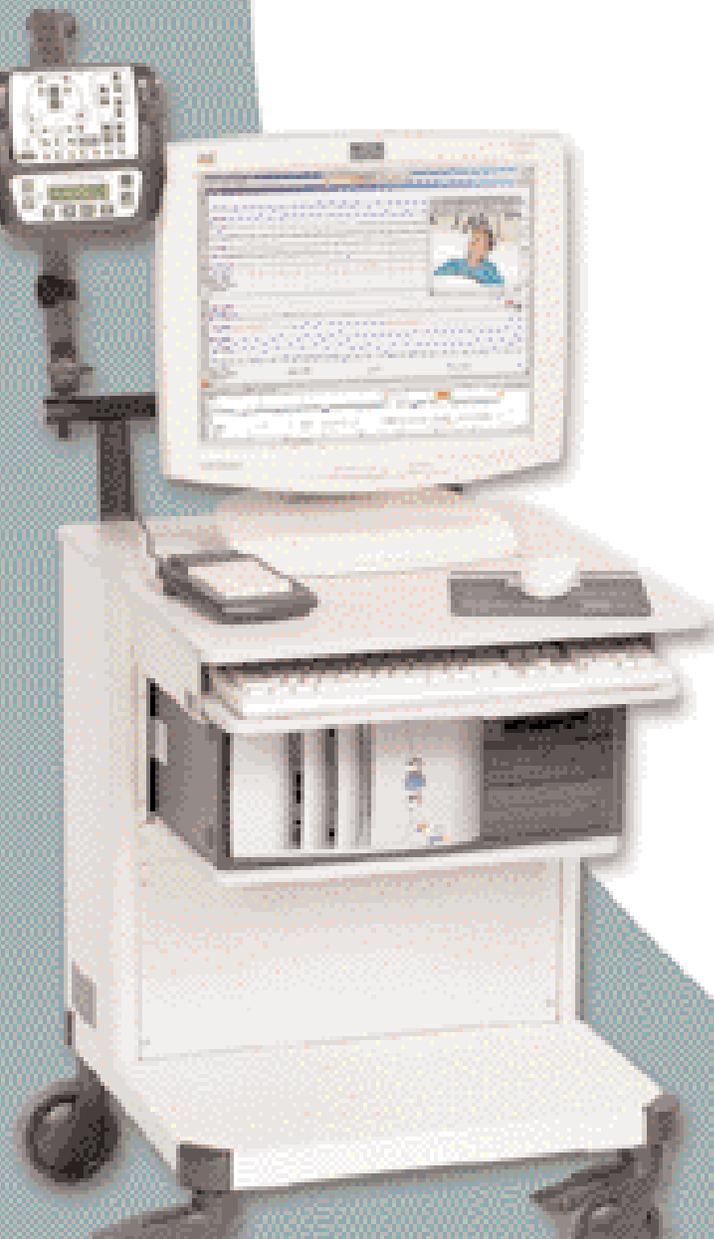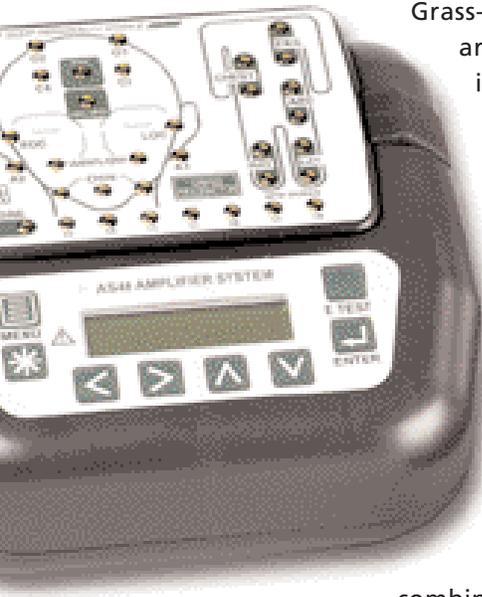
CometXL PSG with optional IT9 mobile rackcart, and 18" flat panel monitor

Comet Portable PSG

Amplifier System
Reliable, state-of-the-art

Grass-Telefactor amplifiers are world-renowned in the field of neurophysiology for their quality, reliability, simplicity, and serviceability.

At the heart of the Comet PSG system is the AS40 Amplifier System. The amplifier is designed specifically for the PSG and EEG monitoring lab and combines the latest digital design techniques with years of amplifier design and manufacturing experience.

The AS40 is a compact 35-channel AC amplifier unit which is expandable up to 50 channels. An 8-channel DC input module and optional pulse oximeter allow for an additional 10 channels of data. This flexibility allows for wide range of physiological parameters to be monitored and recorded.

The amplifier system provides for patient safety isolation, signal conditioning (physiological signal amplification and filtering), and digitization. Communications with a host computer are accomplished using TCP/IP protocol over a 10BaseT Ethernet network or dedicated cable. A host computer, using TWin software, sets the sample rate, starts and stops the data transmission, monitors the digital data, and stores it to hard disk.

An intuitive user interface with LCD screen is present with the amplifier. From the amplifier itself, a user is able to implement such features as electrode impedance checking, amplifier calibration, and photic stimulator control. Also from the LCD display a user is able to obtain information such as connection status to the host computer, and oximetry/pulse rate information when an oximeter is in use.

PERSONALITY MODULES

The flexibile design of the amplifier allows different Personality Modules to be used. A patented concept*, the Personality Module communicates with the TWin software for setup and configuration of the system.

The SPM Sleep Personality Module is supplied with the amplifier in Comet PSG systems. The SPM has 18 referential EEG inputs, 1 reference input, 1 patient ground and 7 bipolar AC channels (for a total of 25 AC channels),and 2 DC inputs (integrated pulse oximeter input). An optional UPM, Universal Personality Module, is also available for extended sleep
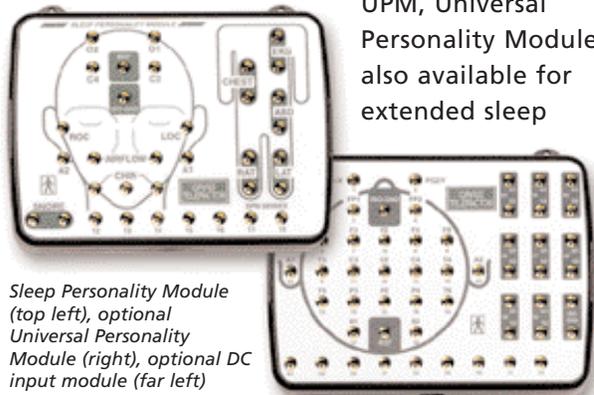
Sleep Personality Module (top left), optional Universal Personality Module (right), optional DC input module (far left)

studies. The UPM offers a combination of referential and bipolar inputs for a total of 40 AC channels.

The Personality Module's design allows for an easy disconnect/reconnect to the amplifier system. Direct-connect and tethered versions of the personality modules are available.

SUPPORT AND SERVICE

All Grass-Telefactor instrumentation is backed by a strong support staff ready to respond to all of your needs. Technical support is available 24 hours a day, 7 days a week. Request information on our Customer Support Plans. Training is also available.

* Patent Number: 5,265,607

Specifications

Amplifier	Grass-Telefactor AS40 with 35 channels of data (expandable up to 50*): 18 referential EEG inputs (AC), 1 reference input, 1 patient ground 7 bipolar AC channels 2 DC inputs (integrated pulse oximeter connection) DC Input Module for up to 8 channels (supplied with CometXL. optional for Comet & Comet Portable) Optional module for up to 40 AC channels	**Calibration Signal**	*Referential inputs only:* 500 µV peak to peak ±2%; frequency selectable, 10 Hz square wave
		Patient Bias Current	*Maximum:* <4 nA *Typically:* 300 pA
		Event Input	1 pushbutton patient signaling input
		Photic	1 photic (flash unit) control line
		Connectivity to Host PC	Standard Ethernet, TCP/IP protocol
AC Input Signal Range	*Referential and Bipolar AC channels:* 4 mV peak to peak full-scale *Differential DC voltage tolerance:* 500 mV max	**Physical Size**	*AS40 Amplifer System:* approximately 7"W x 6"H x 2"D (17.8 x 15.3 x 5.1 cm) Weight: 2.3 lbs (1.1 kg) *Personality Module alone:* approximately 5"W x 4"H x 1.5"D (12.7 x 10.2 x 3.8 cm) Weight: 0.4 lbs (0.2 kg)
DC Input Signal Range	±2.5 volts		
Input Characteristics	10 Megohm impedance, all inputs including reference. All referential and bipolar AC inputs electrically isolated from earth ground	**Software**	Powerful and user-friendly TWin record, review and analysis PSG software included
		Operating System	Windows® 2000/XP
		Power	Medical-grade Isolated Power Supply
Frequency Response	0.5 Hz to 100 Hz, -3 dB 0.1 to 130 Hz recoverable with TWin	**Warranty**	Lifetime Limited Warranty on Grass-Telefactor manufactured parts (see our full warranty for details)
Amplification	*AC channels:* 1200 ±2%		
Vertical Resolution	16 bits (0.06 µV/bit)	**Regulatory**	AS40 Amplifier System: certified to UL2601-1, EN60601-1, EN60601-2-26, EN60601-1-2, EN60601-1-1, CAN/CSA22.2.No.601.1; CE marked to EC MDD (93/42/EEC), Referential and Bipolar AC (patient) inputs isolated, Type BF
Sampling Rate	800 samples/second/channel, simultaneous sample and hold. Data stored at 200 or 400 samples/second, user definable via TWin software		
CMR	>100 dB, all AC channels, at 50/60 Hz		
Noise	<2 µV peak to peak referred to input		
Impedance Test Mode	*Referential inputs only:* 30 Hz square wave; range, 1 kohm to 100 kohms, 10%		

* Maximum data channel count is determined by the typeof AC and DC input modules in use. All specifications are subject to change.

All specifications are subject to change with out notice

Ordering Information

CometXL lab-based PSG (CMXL-P) recorder includes:
Latest high-performance PC, keyboard and mouse, CD-R/RW Archiver (internal), 10/100 Base-T NIC and Modem. Several monitor options are available. TWin PSG Record and Review, TWin Archive Manager, MS Office, and pcAnywhere software. 35-channel AS40 Amplifier System with integrated Sleep Personality Module and Power Supply. DCM8 DC Input Module for up to 8 channels, 20-button programmable keypad for notation entry and system operation. Medical-grade Isolated Power System.
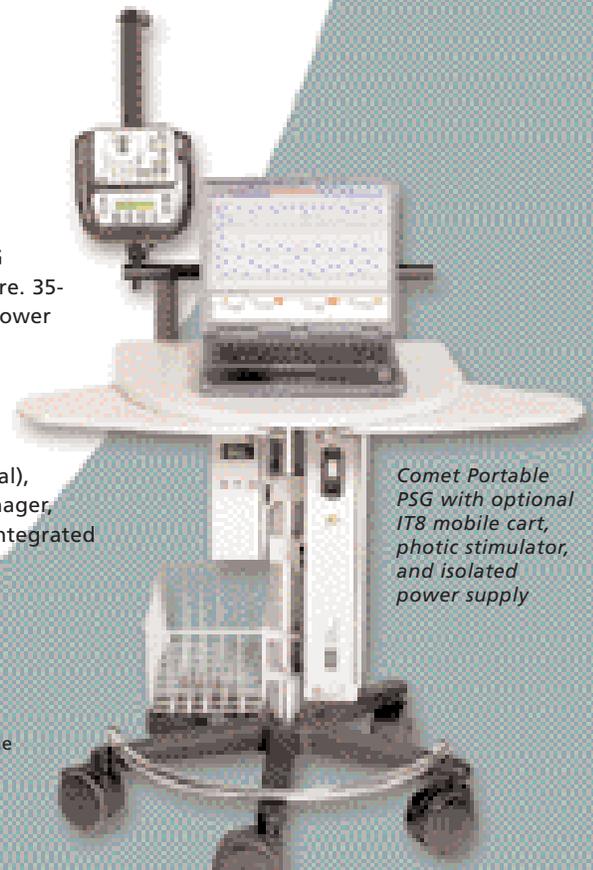
Comet portable PSG (CMP-P) recorder includes:
Latest high-performance lap-top computer, DVD reader/CD-RW Archiver (internal), 10/100 BaseT NIC and Modem. TWin PSG Record and Review, TWin Archive Manager, MS Office, and pcAnywhere software. 35-channel AS40 Amplifier System with integrated Sleep Personality Module and Power Supply.

Comet PSG (CM-P) recorder base only includes:
TWin PSG Record and Review software, 35-channel AS40 Amplifier System with integrated Sleep Personality Module, and Power Supply (provide your own PC or laptop).**

Comet Portable PSG with optional IT8 mobile cart, photic stimulator, and isolated power supply

** Grass-Telefactor personnel must approve all personal computers or laptops used with the Comet base unit. Please contact Grass-Telefactor with any questions