Connecting the Nonin RespSense™ and LifeSense® in a Sleep Lab

Using the Nonin SensDAC Capno Module and Cable

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- The Nonin SensDAC CAPNO (Digital-to-Analog Converter) Module with cable is an accessory device that accepts the real-time $EtCO_2$, respiratory rate and CO_2 waveform outputs and provides analog signals representing those outputs.
- The SensDAC cable you will need will depend on which brand PSG system you have. Refer to the following charts to determine which cable you should use.

Nonin *RespSense*™ Sleep Lab Integration

Sens DAC Cable Matrix

Manufacturer	Brand(s)	Voltage/Pin	Nonin P/N	Mfr. Contact Info
Cadwell Laboratories	Easy II, Easy III	0-1V/3.5mm phono	7489-001 (2 pin)	U.S. toll free 800.245.3001 Tel. +1 509.735.6481
Carefusion/Sensormedics	SomnoStar	0-1V/1/8" phono	7489-001 (2 pin)	U.S. toll free 800.231.2466 Tel. +1 714.283.2228 Germany +49 (0) 931 4972-0
CleveMed	Crystal Monitor 20-S	0-1V/Direct connection	7491-000	U.S. toll free 877.253.8363 Tel. +1 216.791.6720
CompuMedics	E-Series	0-1V/3.5mm phono	7489-001 (2 pin)	U.S. toll free 877.717.3975 Tel. +1 704.749.3200 Germany +49 7731 79 76 9-0
Embla	S4500, N7000	0-1V/RJ9	7488-000	U.S. toll free 888.662.7631 International +31 20 3460130
Grass Technologies	Comet	0-1V/1/8" phono	7489-001 (2 pin)	U.S toll free 877.472.7779 Tel. +1 401.828.4000
Natus	Bio-logic, XLTEK	0-1V/3.5mm phono	7489-001 (2 pin)	U.S. toll free 800.303.0306 Tel. +1 905.829.5300
Natus	Stellate	0-5V/BNC	7486-000	U.S. toll free 800.303.0306 Tel. +1 905.829.5300
Nihon Kohden	Neurofax	0-1V/2.5mm mono 0-1V/2.5mm stereo	7491-000 7487-000	U.S. toll free 800.325.0283 Tel. +1 949.580.1555
Respironics	Alice 5	0-1V/3.5mm phono	7489-001 (2 pin)	U.S. toll free 800.345.6443

* Please contact Nonin Technical Service (tel. 1.800.356.8874) regarding PSG systems not listed above

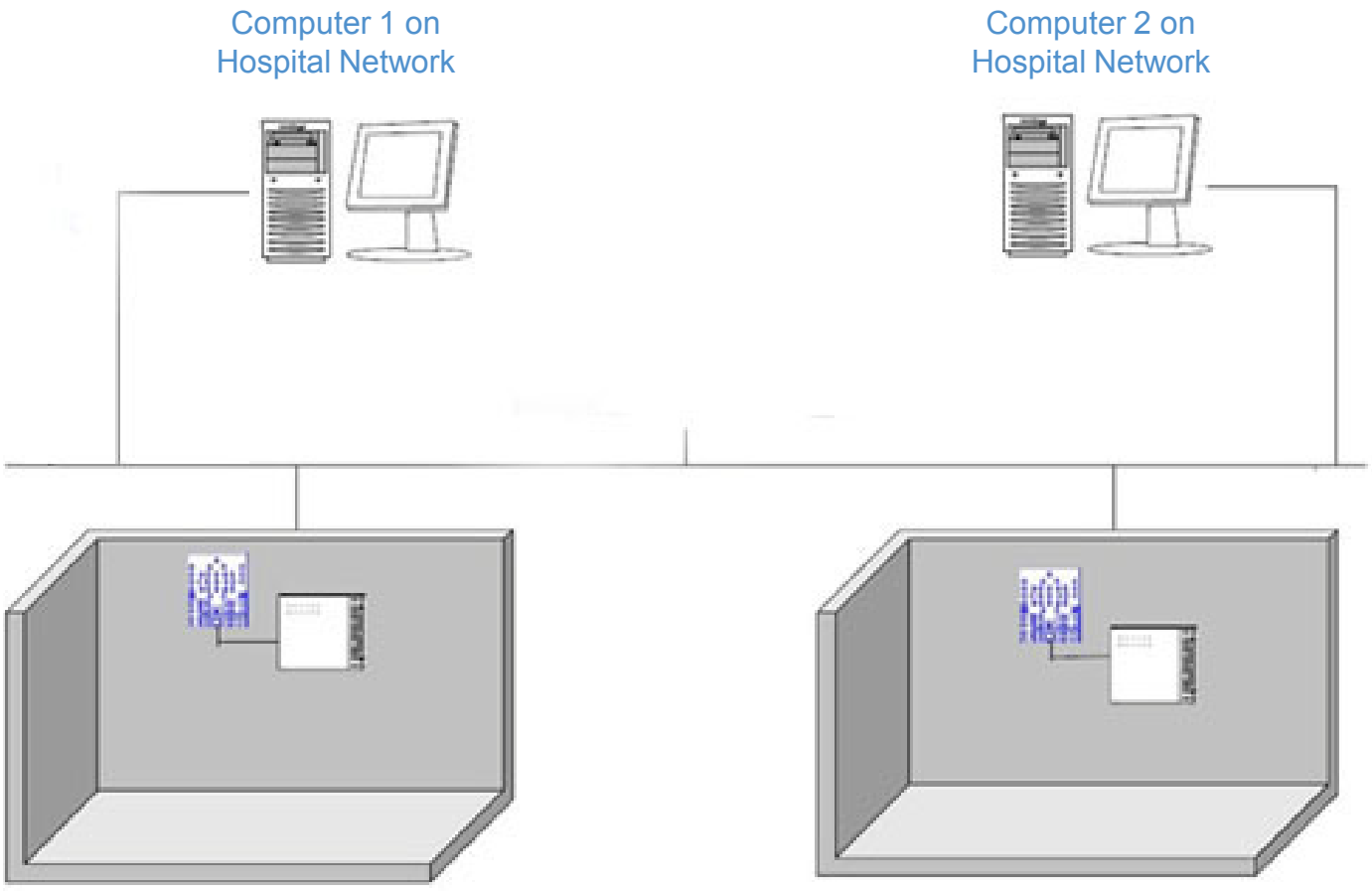
Nonin *LifeSense*™ Sleep Lab Integration

Sens DAC Cable Matrix

Manufacturer	Brand(s)	Voltage/Pin	Nonin P/N	Mfr. Contact Info
Cadwell Laboratories	Easy II, Easy III	0-1V/3.5mm phono	7489-000	U.S. toll free 800.245.3001 Tel. +1 509.735.6481
Carefusion/Sensormedics	SomnoStar	0-1V/1/8" phono	7489-000	U.S. toll free 800.231.2466 Tel. +1 714.283.2228 Germany +49 (0) 931 4972-0
CleveMed	Crystal Monitor 20-S	0-1V/Direct connection	7491-000	U.S. toll free 877.253.8363 Tel. +1 216.791.6720
CompuMedics	E-Series	0-1V/3.5mm phono	7489-000	U.S. toll free 877.717.3975 Tel. +1 704.749.3200 Germany +49 7731 79 76 9-0
Embla	S4500, N7000	0-1V/RJ9	7488-000 (4 pin) 8123-001 (2 pin)	U.S. toll free 888.662.7631 International +31 20 3460130
Grass Technologies	Comet	0-1V/1/8" phono	7489-000	U.S toll free 877.472.7779 Tel. +1 401.828.4000
Natus	Bio-logic, XLTEK	0-1V/3.5mm phono	7489-000	U.S. toll free 800.303.0306 Tel. +1 905.829.5300
Natus	Stellate	0-5V/BNC	7486-000	U.S. toll free 800.303.0306 Tel. +1 905.829.5300
Nihon Kohden	Neurofax EEG-9100	0-1V/2.5mm mono 0-1V/2.5mm stereo	7491-000 7487-000	U.S. toll free 800.325.0283 Tel. +1 949.580.1555
Respironics	Alice 5	0-1V/3.5mm phono	7489-000	U.S. toll free 800.345.6443

* Please contact Nonin Technical Service (tel. 1.800.356.8874) regarding PSG systems not listed above

Sleep Lab Integration – Typical PSG Setup



Each patient room contains an amplifier and jack box

Connecting the SensDAC Cable to the Monitor

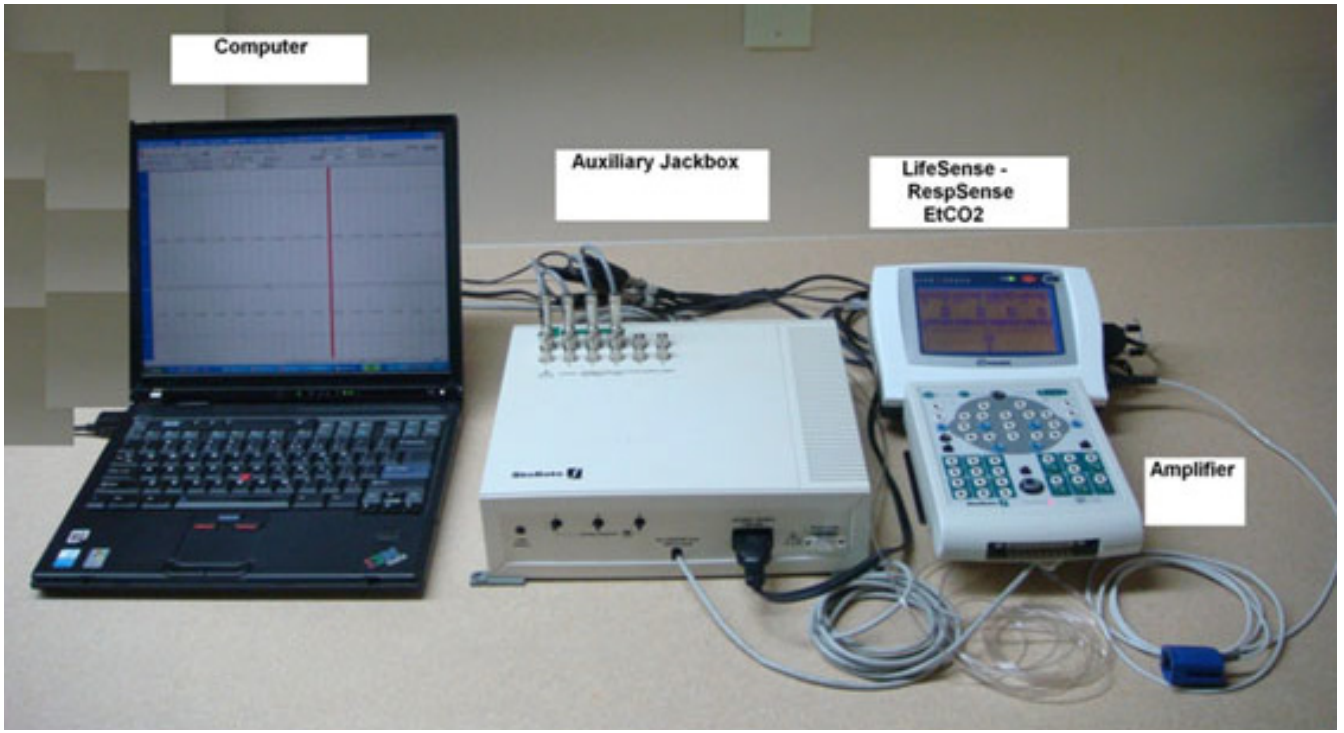
- Connect the SensDAC cable to the RS232 (labeled ‘IOIOI’) connection on the monitor.

Connecting the SensDAC cable to LifeSense

Connecting the SensDAC cable to RespSense

Connecting the SensDAC Cable to the PSG System

- Connect the color-coded pins (refer to the Instructions for Use included with your SensDAC cable) to the auxiliary box of the PSG system.
  - **Contact your PSG manufacturer for proper input locations.**



(Note: For illustration purposes only. The above set-up includes LifeSense unit with SpO_2. RespSense does not have SpO_2 connection to PSG system.)

Connecting the SensDAC Cable to the PSG System

- Close up of connection to auxiliary box.
  - Contact your PSG manufacturer for proper input locations.

(Note: For illustration purposes only. The above set-up includes LifeSense unit with SpO_2. RespSense does not have SpO_2 connection to PSG system.)

Calibrating the Signal to the PSG System

- The two-point calibration signal sequence is initiated every time at the start of the device.
- The waveform will be at 0% for 1 minute (LED light on the module will be lit) followed by 100% for 1 minute (LED light on the module will be off).
- As soon as the sequence is done, the LED light will blink once and readings from the screen will be transmitted in analog mode.

Time Interval	SensDAC 1V CAPNO Analog Signal	SensDAC 5V CAPNO Analog Signal
60 seconds	0.0 VDC on all four channels	0.0 VDC on all four channels
60 seconds	1.0 VDC on all four channels	5.0 VDC on all four channels

Troubleshooting Tips for Sleep Labs

Problem Description	Possible Cause	Recommended Action
No waveform/values on PSG montage	• SensDAC cable is not connected properly to monitor or PSG system • Calibration still in progress • Faulty SensDAC cable	• Ensure a secure connection of the SensDAC cable to the RS232 port on the LifeSense or RespSense monitor (labeled IOIOI) • Check color-coded plug ends for proper connection to the PSG amplifier or auxiliary box. (Verify locations with your PSG manufacturer.) • During calibration signal will read zero for 1 minute followed by 100 for 1 minute • Check SensDAC cable for damage • Contact Nonin Technical Services Department at 1.800.356.8874
Interference on EtCO2 waveform	• SensDAC cable not connected properly to monitor or PSG system • Interference from other sensor (e.g. airflow pressure transducer) or device connected to PSG system	• Ensure a secure connection of the SensDAC cable to the RS232 port on the LifeSense or RespSense monitor (labeled IOIOI) • Check color-coded plug ends for proper connection to the PSG amplifier or auxiliary box. (Verify locations with your PSG manufacturer.) • Check other sensors or devices connected to the PSG system. While running the capnograph, disconnect the other sensors/devices to locate source of interference.
Monitor does not power on	• Power supply is not plugged in to AC power source • Battery is depleted	• Ensure that power supply is properly plugged into the monitor and AC power source • If running on battery, unit must be charged for approximately 17 hours for 8 hours of usage.
Occlusion Alarm/Indication	• Moisture in system*	• Press red Reset/Alarm Silence button up to 2 times • Change filter • Change cannula followed by trap and filter if occlusion persists

***NOTE: If using an oral/nasal cannula, trim the oral tube so that it is in front of but not in the patient's mouth**