ApneaLink Plus featuring EasySense technology

Sleep-disordered breathing (SDB) is recognized as a serious health problem that impacts approximately 43 million US adults. More than 80% remain undiagnosed, and many barriers prevent patients from getting access to therapy.[1]

Now, the detection of this chronically debilitating condition has been made easier with the ApneaLink Plus, a Type III home sleep testing diagnostic device, the latest addition to the ApneaLink family of diagnostic products and accessories.

The ApneaLink devices provide you with a cost-effective, easy-to-use method of diagnosing or screening patients for obstructive sleep apnea (OSA) in the home. The device reports apneas, hypopneas, flow limitation, snoring, blood oxygen saturation and the probability of Cheyne-Stokes respiration (CSR) breathing patterns within the recording.

1 Young et al. State of the Art, *AJRCCM* 2002

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ORDERING INFORMATION & PRODUCT CODES

ApneaLink Plus Complete Set
(includes respiratory effort and oximetry)

- ApneaLink Plus recorder device
- Program CD software
- Quick software setup guide
- USB download cable
- ResMed EasySense respiratory effort sensor
- 2 reusable belts
- XPOD oximeter sensor clip
- ResMed XPOD oximeter
- 3 single-use oximeter sensors
- 3 nasal cannulas
- Carrying case
- 2 AA batteries

US and Latin America	**22328**
Canada	**22327**

ApneaLink Plus Basic Set
(includes respiratory effort)

- ApneaLink Plus recorder device
- Program CD software
- Quick software setup guide
- USB download cable
- ResMed EasySense respiratory effort sensor
- 2 reusable belts
- 1 nasal cannula
- Carrying case
- 2 AA batteries

US and Latin America	**22319**
Canada	**22323**

ApneaLink Basic Set

- ApneaLink recorder device
- Program CD software
- Quick software setup guide
- USB download cable
- 1 reusable belt
- 3 nasal cannulas
- Carrying case
- 2 AA batteries

US and Latin America	**22302**
Canada	**22303**

ApneaLink Oximetry Accessories Kit

- ResMed XPOD oximeter
- XPOD oximeter sensor clip
- 3 single-use oximeter sensors

US and Latin America	**22304**
Canada	**22308**

ACCESSORIES

ApneaLink Plus (only)

ResMed EasySense Respiratory effort sensor	**22333**
Belt, reusable stretch (required)	**629052**

ApneaLink Plus and ApneaLink Software

(compatible with all devices)	**22325**

Other Optional Accessories and Disposables

Belt, single use (24 pack) (for use with ApneaLink only)	**70406**
Nasal cannulas (25 pack)	**70388**
Nasal/oxygen cannulas (25 pack)	**70319**

Oximetry Components

Oximeter soft sensor, reusable (recommended)	**70413**
Oximeter sensor – single-use	**70412**
XPOD oximeter sensor fixation clip	**22306**

TECHNICAL SPECIFICATIONS

Signal Recording
- Respiratory effort
- Respiratory flow
- Breathing sounds
- Blood-oxygen saturation
- Pulse
- Battery voltage

Sampling Rates for the Channels
- Respiratory flow / breathing sounds: 100 Hz
- Blood-oxygen saturation: 1 Hz
- Pulse: 1 Hz
- Battery: 1 Hz
- Respiratory effort: 10 Hz

Signal Processing
- Signal recording: 20 Bit
- Signal storage: 16 Bit

Internal Memory
- Storage capacity: 15 MB
- Recording period: 8 hours minimum

Power Supply to Recorder
- 2 batteries: LR 6 / Mignon / AA / 1.5 V / at least 2100 mAh
- 2 NiMH rechargeable batteries: Mignon / AA / 1.2 V / at least 2100 mAh

Dimensions (length x width x height)
- Recorder: 4.6" x 2.4" x 1.2" (125 x 60 x 30 mm)
- Pulse oximeter: 2.1" x 0.8" x 0.6" (53 x 20 x 15 mm)

Weight*
- Recorder (without batteries): Approx. 50 g (1.8 oz)
- Pulse Oximeter: approx. 30 g (1.1 oz)

*Recorder without batteries

Operating Conditions
- Temperature: 68°F to 104°F (20°C to 40°C)
- Humidity: 10% to 90% RH (non-condensing)

Shipment/Storage Conditions*
- Temperature: -4°F to +122°F (-20°C to +50°C)
- Humidity: 10% to 90% RH

Operating/Storage Air Pressure
- 800 hPa to 1060 hPa

Effective Range
- Flow sensor: -10 hPa to +10 hPa
- SpO_2: 70 to 100%
- Pulse: 18 to 300 bpm

Accuracy (No Movement)
- SpO_2: +/- 3 digits
- Pulse: +/- 3 digits

Interfaces
- Nasal pressure cannula: Luer connection
- Pulse oximeter: 3-pin binder plug
- Computer: Full speed USB 1.1

ResMed Corp San Diego, CA, USA +1 858 836 5000 or 1 800 424 0737 (toll free). ResMed Ltd Bella Vista, NSW, Australia +61 (2) 8884 1000 or 1 800 658 189 (toll free). Offices in Austria, Belgium, Brazil, China, Finland, France, Germany, Greece, Hong Kong, India, Ireland, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, United Kingdom (see website for details).

ResMed

ApneaLink™ / ApneaLink Plus

Home Sleep Test Screening and Diagnostic Devices

Simple, fast and easy to use.

ResMed's ApneaLink™ devices are the easy choice in OSA diagnosis

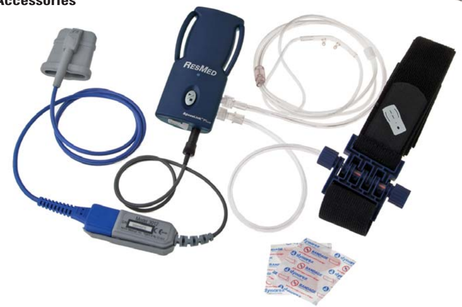
Simple, cost-effective and reliable results.

The ApneaLink™ improves patient care by providing easy access to treatment while helping you grow your sleep apnea business.

ApneaLink Plus
Type III Device

ApneaLink
Type IV Device

Accessories



Feature Comparison
ApneaLink vs ApneaLink Plus

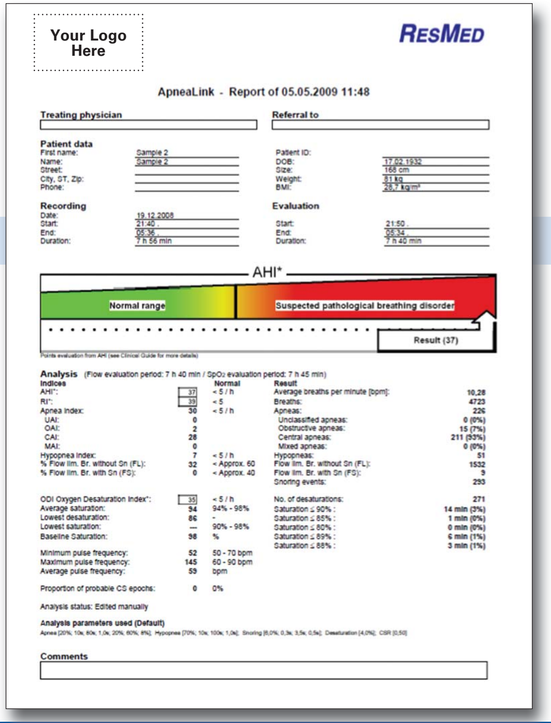
	ApneaLink	ApneaLink Plus
Apnea–hypopnea index	●	●
Risk indicator	●	●
Apnea index	●	●
UAI (Unclassified apnea index)	●	●
OAI (Obstructive apnea index)		●
CAI (Central apnea index)		●
MAI (Mixed apnea index)		●
Hypopnea index	●	●
Flow lim br without sn (FL)	●	●
Flow lim br with sn (FS)	●	●
Snoring events	●	●
ODI (Oxygen desaturation index)	Optional with oxymetry	●

ResMed's ApneaLink Plus is simple, fast and easy to use

New features for clearer diagnosis, time savings and potential increased reimbursement.

The ApneaLink Plus with EasySense technology, a unique respiratory effort sensor, is a simple, low-cost portable home sleep test diagnostic device that records up to four channels of information: respiratory effort, pulse, oxygen saturation and nasal flow.

- **Effort belt with EasySense respiratory effort sensor**
- **Enhanced recorder light status; improved start/stop button**
- **Simple, easy-to-use component connectors**
- **Same robust design as ApneaLink**



Your Logo Here

ResMed

ApneaLink - Report of 05.05.2009 11:48

Treating physician

Referral to

Patient data

First name:	Sample 2	Patient ID:	
Name:	Sample 2	DOB:	17.02.1930
Street:		Size:	168 cm
City, ST, Zip:		Weight:	81 kg
Phone:		BMI:	28.7 kg/m²

Recording

Date:	19.12.2008		
Start:	21:40	Start:	21:50
End:	05:36	End:	03:34
Duration:	7 h 56 min	Duration:	7 h 40 min

AHI*

Normal range | Suspected pathological breathing disorder

Result (37)

Points evaluation from AHI (see Clinical Guide for more details)

Analysis (Flow evaluation period: 7 h 40 min / SpO2 evaluation period: 7 h 45 min)

Indices		Normal	Result	
AHI*:	37	< 5 / h	Average breaths per minute [bpm]:	10.28
RI*:	39	< 5	Breaths:	4723
Apnea index:	30	< 5 / h	Apneas:	226
UAI:	0		Unclassified apneas:	0 (0%)
OAI:	2		Obstructive apneas:	15 (7%)
CAI:	28		Central apneas:	211 (93%)
MAI:	0		Mixed apneas:	0 (0%)
Hypopnea index:	7	< 5 / h	Hypopneas:	51
% Flow lim. Br. without Sn (FL):	32	< Approx. 60	Flow lim. Br. without Sn (FL):	1532
% Flow lim. Br. with Sn (FS):	0	< Approx. 40	Flow lim. Br. with Sn (FS):	0
			Snoring events:	293
ODI Oxygen Desaturation Index*:	35	< 5 / h	No. of desaturations:	271
Average saturation:	94	94% - 98%	Saturation ≥ 90% :	14 min (3%)
Lowest desaturation:	86	-	Saturation ≥ 85% :	1 min (0%)
Lowest saturation:	---	90% - 98%	Saturation ≥ 80% :	0 min (0%)
Baseline Saturation:	98	%	Saturation ≥ 89% :	6 min (1%)
			Saturation ≥ 88% :	3 min (1%)
Minimum pulse frequency:	52	50 - 70 bpm		
Maximum pulse frequency:	145	60 - 90 bpm		
Average pulse frequency:	59	bpm		
Proportion of probable CS epochs:	0	0%		

Analysis status: Edited manually

Analysis parameters used (Default)

Apnea [20%, 10s, 60s, 1.0x, 20%, 60%, 4%]; Hypopnea [70%, 10s, 100s, 1.0x]; Snoring [6.0%, 0.3s, 3.5s, 0.5x]; Desaturation [4.0%]; CSR [0.50]

Comments

All ApneaLink devices features:

Automatic analysis derives apnea–hypopnea index (AHI), hypopnea index (HI), flow limitation, snoring and oxygen desaturation index (ODI)

Validated results meet AASM and CMS definitions for hypopnea scoring guidelines

Cheyne-Stokes probability detection determines when to refer patients for further in-lab diagnosis

Manually score results for more detailed patient results

Add your business logo to increase your brand awareness

Email summary and signal reports can be sent to referral physicians or other relevant parties

Patient instructions can be printed when programming the device

Extended report contains additional overview of respiratory data

ApneaLink Plus additional features:

Differentiation of apneas leads to clearer diagnosis and more accurate, effective reports

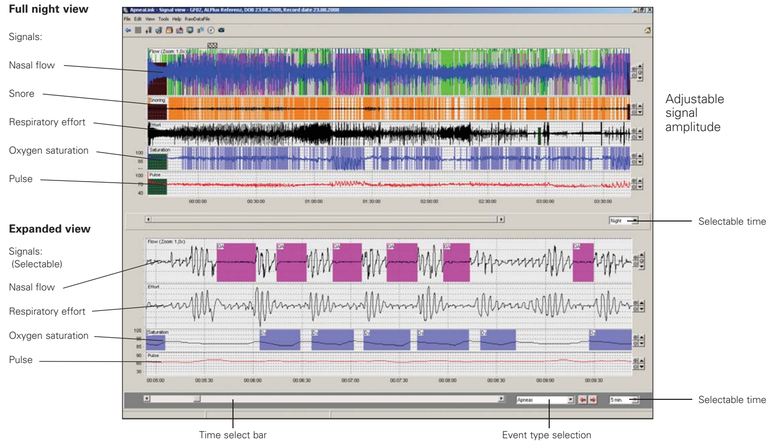
New prescription page streamlines process for healthcare professionals

AHI graphic and risk indicator can highlight either AHI or RI

Configurable analysis parameters allow for the adjustment of obstructive and central apnea thresholds

Five measurements of oxygen saturation including ≤ 89 and ≤ 88 allow for accurate billing documentation

Detailed Signal View



The ApneaLink and ApneaLink Plus have been validated in several studies worldwide

Validation of MicroMESAM* as screening device for sleep-disordered breathing

(Wang Y, Teschler T, Weinreich G, Hess S, Wessendorf TE, Teschler H)

MicroMESAM-generated flow-time curves correspond well with pneumotachograph-generated curves, producing automated AHIs** that are highly sensitive in detecting SDB.

Validation of ApneaLink as screening device for Cheyne–Stokes respiration.

(Weinreich G, Armitstead J, Töpfer V, Wang YM, Teschler, H)

The study demonstrated that the screening classifier was able to detect CSR with high diagnostic accuracy. Hence, the ApneaLink equipped with the CSR classifier is an appropriate screening tool that may help to prioritize patients with CSR for a polysomnography (PSG).

Validation of the ApneaLink for the screening of sleep apnea: A novel and simple single-channel recording device

(Erman MK, Stewart D, Einhorn D, Gordon N, Casal E)

The ApneaLink device provides reliable information, is simple to use, and is highly sensitive and specific in calculating AHI when compared with the AHI obtained from a full PSG.

Validation of ApneaLink Plus

Compared with the gold standard RIP technology using single-use RIP belts under a PSG study, the information provided by the ResMed ApneaLink Plus pneumatic sensor is equivalent, while the application of the sensor appears to be much simpler. The algorithms to detect respiratory events worked properly and reliably through the entire study. The correlation between PSG results and ApneaLink Plus results was good at any time. The differentiation between the apnea event types showed a good correlation compared to manual apnea scoring in the PSG.

* Distributed by ResMed as the ApneaLink in the US

** Values reported as AHI for MicroMESAM (ApneaLink) are actually RDI values (AHI plus flow limitation). See full translated article for details.