Ambulatory Monitoring, Inc.

PRODUCT CATALOG

INDUCTOTRACE SYSTEM

MOTIONLOGGER ACTIGRAPHS

PVT-192 PSYCHOMOTOR VIGILANCE TASK MONITOR

Tel: 1.800.341.0066 ■ 914.693.9240 ■ Fax: 914.693.6604
www.ambulatory-monitoring.com ■ info@ambulatory-monitoring.com
731 Saw Mill River Road ■ Ardsley, New York 10502-0609

Motionlogger Actigraphs

AMI offers an actigraph to fit all budget and protocol requirements. Various model Motionloggers offer intialization applications that include basic sleep estimation; simultaneous environmental data collection; time-of-day features; user rating scale; and on-wrist pvt reaction time test. A range of recording capabilities exist including four validated sleep algorithms, PLM analysis, and a suite of circadian rhythm analyses. Software for device operation and data analysis is available for Windows 7/Vista/XP and comparable systems – and our operational software programs allow for quick, easy download of actigraph data. All models are Lithium battery powered for long use and come with a full one-year warranty.

DESCRIPTION	CATALOG NUMBER

Motionlogger Watch

Motionlogger® Watch

27.000

Multi-Mode actigraphy including Zero Crossing (ZC) mode with selectable epoch length from 1-second to 1-minute, compatible with our well-validated sleep scoring algorithms (ActionW and Action4 analysis software sold separately), and Proportional Integrating Measure (PIM) mode for stratifying levels of daytime activity from sedentary to athletic. Additional channels include Life Measures for off-wrist detection, ambient light (photodiode, wavelength range 400-800 nm, peak response 520 nm) measuring in Lux, delta temperature, event marking (with beep on event feedback), user rating input (0-10) using Watch buttons, and a PVT reaction time test compatible with REACT PVT analysis software (sold separately). Other features include standard sports watch styling in a water resistant (50M) case, LCD activity and battery level indicators, with adjustable backlight, date function, stop watch, countdown timer, 12/24 Hr display with time/date adjust, and audible alarm (1 user settable and up to 10 fixed, daily programmable) with adjustable ring duration. Over 30-days of runtime using a DL2450 (user replaceable) battery, and 2 Mb of non-volatile memory. Dimensions: 1.75 x 2.0 x 0.6 inches. Weight: 2.3 oz.

MicroMini-Motionlogger

Motionlogger® Micro Watch

28.000

Zero Crossing and PIM activity modes of recording, ambient light, delta temperature, Life Measures for off-wrist detection, programmable epoch length as per model 27.000, above, in rugged translucent case (100M water resistant). Other features include LCD with time-of-day, activity and battery level indicators, selectable LED indicator for feedback on event marking, and date display. Over 30-days of runtime using a DL2430 (user replaceable) battery, and 2 Mb of non-volatile memory. Dimensions: 1.4 x 1.9 x 0.4 inches. Weight: 1.3 oz.

MicroMini-Motionlogger

27.100

WatchWare Operational Software with IrDA Cable/Connector

Required for initializing and downloading data from the Motionlogger Watch and Motionlogger Micro Watch.

27.120

IrDA Cable/Connector (without WatchWare program)

(Analysis Software sold separately. See page 4.)

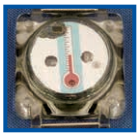
Ask about CPT reimbursement codes!

Motionlogger® Actigraph Systems

	DESCRIPTION	CATALOG NUMBER
 *MicroMini-Motionlogger*	**MicroMini-Motionlogger® Actigraph** 1-3/8" diameter waterproof MicroMini-Motionlogger weighing 0.9 oz. encased in a plastic enclosure. Features include user exchangeable battery and an approximate 4,000-hour battery run time. Contains 32K non-volatile memory; 16 Hz sample rate; 2-3 Hz bandwidth; modes of operation: Zero Crossing (ZC) or Proportional Integrating Measure (PIM, selectable high or low sensitivity); one-minute fixed epoch length (yielding up to 22 days of recording time per initialization in ZC and 11 days in PIM). Requires Micro Interface/Connector (Cat. #24.000C) to download data. Ask about custom graphics for the unit's face. Faux watch face standard.	**24.000BEF**
 *Micro Interface/Connector*	**MicroMini-Motionlogger® Actigraph Interface/Connector with ACT Operational Software** Required for initializing and downloading data from MicroMini Motionloggers.	**24.000C**
 *Micro SleepWatch*	**Micro Motionlogger Sleep Watch** Water resistant, 192K memory device with 1-4 month runtime, event marking, status feedback, multi-channel collection, off-wrist detection, and time-of-day display with a time-adjust feature for time zone change.	**24.000SW**
	Micro Motionlogger Sleep Watch Interface/Connector with ACT Operational Software Required for initializing and downloading data from Micro SleepWatch.	**24.000SWI**

Family of MicroMini's

Consists of single sensors similar to the MicroMini-Motionlogger activity monitor, which (together or separately) allow for multi-parameter data collection by means of a common Interface (Cat. #24.000C) and multi-channel integrated graphic display in ACTION4 analysis software.

 *Micro Light Sensor*	**Micro Light Sensor** Ambient light sensor with a 1 part in 256 resolution. Possible ranges include 0 to 1,000 LUX in 4 LUX increments or 0 to 4,000 LUX in 16 LUX increments (specify when ordering). 32K memory allows for 22 days of recording. 5 second samples averaged and stored each minute.	**24.000LS**
 *Micro Temperature Sensor*	**Micro Temperature Sensor** Single sensor to collect skin or ambient temperature. 32K memory allows for 22 days of recording. 5 second samples averaged and stored each minute. With a range of 19 to 43.6°C; 0.1°C resolution; and ±2°C precision.	**24.000TS**
 *Micro Sound Sensor*	**Micro Sound Sensor** Environmental sound sensor. 32K memory for 22 days of recording. 5 second samples averaged and stored each minute. With a range of 40 to 85 dB SPL "C" weighting 400 hz Sine, 0.1-5 dB resolution; precision ±5 dB SPL.	**24.000SS**

Motionlogger® Actigraph Systems

DESCRIPTION	CATALOG NUMBER

Basic Motionlogger

BASIC MOTIONLOGGER — 26.000

Features include event marker; audible feedback; 2MB memory; 2-3 Hz filter; sensitivity .01G at mid band; Zero Crossing (ZC), Time-Above-Threshold (TAT), ZC/TAT Dual, and Proportional Integrating Measure (PIM) modes of operation and Tri-Mode PZT (ZC, TAT, and PIM, simultaneously); water resistant (shower safe); and easy coin cell battery exchange (60-day battery life) via compartment isolated from sealed interior electronics. Epoch lengths are adjustable from one second to minutes.

BASIC MOTIONLOGGER-L — 26.000L

Contains all of the features of Cat. #26.000 above as well as a photo optic light sensor nominally set up for 1 LUX resolution and 0-4,000 LUX range.

BASIC MOTIONLOGGER INTERFACE with ACT Operational Software Powered by 9-V Battery — 25.111PS

This Interface is compatible with the above actigraph units; and it comes with an optional A/C power supply. For initializing and downloading data.

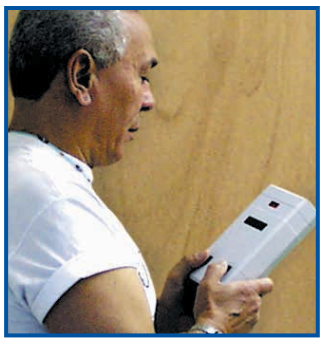
(Analysis Software sold separately.)

ACCESSORY AND REPLACEMENT ITEMS FOR MOTIONLOGGER® ACTIGRAPHS

Motionlogger Disposable Duracell Batteries (set of 6)	**21.196**
Motionlogger One-Piece Velcro Wrist Strap	**21.193**
Motionlogger One-Piece Ribbon Wrist Strap with Adjustable Buckle	**21.194**
One piece, single-use plastic, hospital-type wrist strap (set of one dozen)	**21.192**
Two-Piece buckled, plastic wrist strap	**21.199**

PVT-192 Psychomotor Vigilance Task Monitor

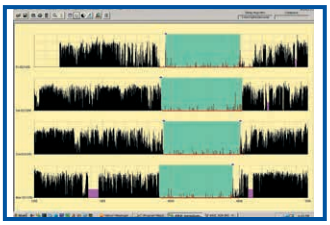
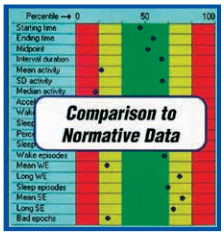
Reaction time testing is made easy with the PVT-192. The literature has shown that simple reaction time is a convenient and sensitive continuous performance test for long-term, large scale testing of awareness, effects of sleep deprivation, and drug effects. The PVT test, combined with easy-to-use React software, has proven to be a valuable tool wherever measures of performance or sleepiness are needed. These include the transportation and pharmaceutical industries. Call us for a bibliography.



PVT-192 Psychomotor Vigilance Task Monitor — 35.100

Hand-held, self-contained system that stores repetitive reaction time measurements. Features include an LCD display for instructions and programmable analog mood scale; buttons for test selection and a means to stop the clock; microprocessor controlled; solid state storage; initialize with or without PC; multiple subject recording capability; and visual/audio cue. It also features an LED display as a visual cue and display of results at time of testing. The length of each test is programmed as is the range of the inter-stimulus intervals. Includes one charger/adapter, serial cable, and operational and React Analysis Software for Windows-compatible computers. This instrument comes with a full one-year warranty.

Analysis Software

DESCRIPTION	CATALOG NUMBER	PRICE
 **Motionlogger Analysis Software Package** consisting of: **Action W-2:** Clinical sleep estimation and database program with periodic leg movement analysis **ACTION4:** Windows version of ACTION3 circadian rhythm and research software	**21.123**	
 **Supplement for AW-2:** Sadeh Infant Sleep Estimation Algorithm	**21.AW+**	
Motionlogger ActFAST Analysis Software: contains all of the features of Action W-2 described above with the added allowance of an expression of performance based upon the FAST SAFTE model.	**21.FAST**	
React PVT Analysis Software	**21.REACT**	

Case Study of Sleep, Performance and Circadian Rhythms

In the following examples the MicroMini Motionlogger, was worn continuously, even in the shower and while swimming.

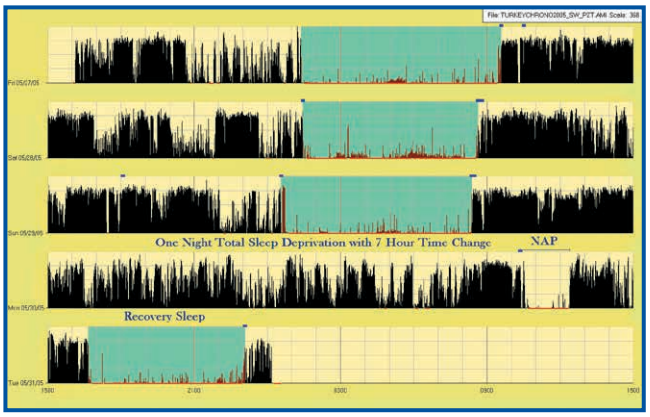


FIGURE 1

In **Figure 1** (using ActionW-2 clinical sleep analysis software) are the first days of a 22 day activity recording during eastward travel across 7 time zones demonstrating the change in sleep patterns.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	File: turkeychrono2005_sw_pzt.ami [ZCM] -- Down															
2	sday	wmin	smin	pslp	selff	slat	waso	actx	wep	mwep	lwep	lgwep	sep	msep	lsep	lgsep
3	Sat	18	474	96.34	99.79	8	1	35.98	3	6	2	9	2	237	2	427
4	Sun	30	400	93.02	95.92	10	17	61.86	10	3	3	10	9	44.44	6	150
5	Mon	25	444	94.67	98.67	18	6	36.46	7	3.57	1	18	6	74	6	233
6	Tue	19	366	95.06	98.92	9	4	48.05	5	3.8	2	9	4	91.5	3	327

FIGURE 2

A subset of available ActionW sleep statistics (**Figure 2**) shows the pre-flight Saturday night to be the most disturbed. Sleep efficiency is lower with 17 minutes of wakefulness within sleep and a high activity index indicating restlessness (61% of the minutes contained motion regardless of sleep/wake state.)

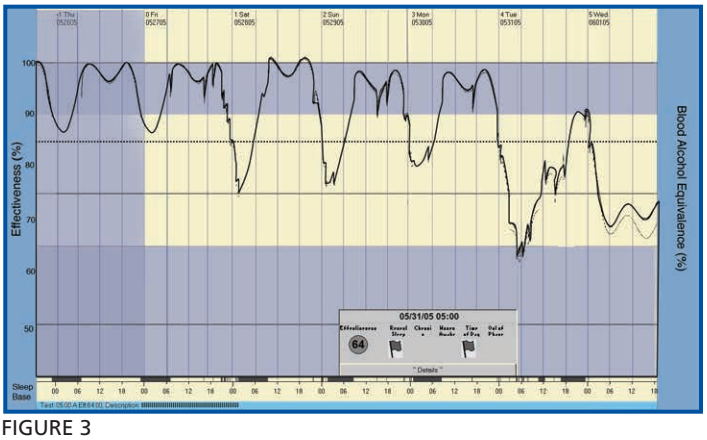


FIGURE 3

FAST (**Figure 3**) shows estimated performance level dips to 64% just before the recovery sleep which is equivalent to a Blood Alcohol Level of greater than 0.08.

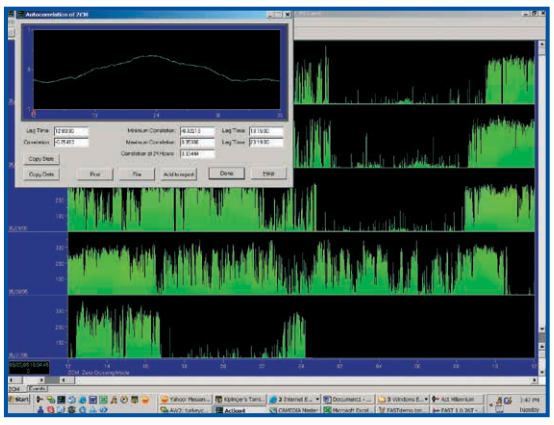


FIGURE 4

Action4 circadian analyses (**Figure 4**) shows circadian disruption according to the Autocorrelation value at 24 hours (R24 is 0.33).

Our software, supported by NIH funded experts, contains validated algorithms – 88 to 90% sleep estimation algorithm correlated with PSG.

Basic Inductotrace® System

The Inductotrace inductive plethysmograph consists of two elastic bands with insulated wires (Inductobands) wrapped around the rib cage and abdomen and connected to an Oscillator module and Calibration Unit. It measures rib cage and abdomen compartmental volume excursions through changes in self-inductance of the Inductobands. The sum of these two excursions can be calibrated to a known volume with spirobag or spirometer. The sensors have insulated wire for self-induction monitoring with gold plated contacts and come in sizes to fit torsos from premature newborn to super obese subjects. For animal studies we have sizes from kittens to horses.

	DESCRIPTION	CATALOG NUMBER
	**Calibrator/Demodulator Unit** AC/DC Coupled-Multifunction console: Provides isolated power for transducer-oscillator. Demodulates signals into scaled analog form. Conditions calibration input and displays voltage changes. Scales spirometer values in ml. Includes isolated power supply attenuators and cables. Instructions included. DC Switch — eliminates time constant. 110V-60 HZ. Size: 12" x 11 3/8" x 5 1/2" Weight: 10 lbs.	**10.9000**
	**Transducer Oscillator** Energizes Inductobands with radio frequency. Wide range with connector ports for transducer cable and interconnect cable, 2" x 2" x 7/8". For normal size subjects (child, adult).	**10.7000**
	Transducer Package This is a complete assembly with all components for operating Inductotrace System. It consists of five (5) sets of Inductoband transducers, three (3) sizes of Retainers, two (2) Transducer/Oscillator cables and one Spirobag. Kindly indicate sizes of transducers desired. Adult sizes: 66", 54", 48", 40", 36", 32", 28" Child sizes: 25", 20", 12", 10", 5"	**10.5000**
	**Spirobag for Calibration Procedure** Individual bag holds 800 cc when fully expanded. Kit of 10.	**10.4026**
	Total for Basic System	
	Special Model Oscillators Special Oscillator small volume for neonates, infants and small animals.	**10.7001**
	Large Volume Oscillator for extremely large subjects, horses and other large animals.	**10.7002**
	Underwater Oscillator specially sealed system with connecting wires for attaching waterproof connectors (not supplied).	**10.7003**

Ask about CPT reimbursement codes!

Inductobands, Retainers and Cables for Inductotrace Systems

Transducer Series 10.5000 is a specially manufactured coil on stretch knit fabric with gold plated connectors, safety tested insulated wires for use with Inductotrace electronics only. Cleaning by gas sterilization recommended or may be gently hand washed in mild Ivory detergent. Packaged in sets of two (abdomen/chest). Inductoband stretches for proportional fit to size. Best fit is snug, comfortable and secure. Select best size after measurement of circumference of both chest (under armpit) and abdomen (girth at umbilicus). Two Inductobands must be used. Select appropriate retainer to hold coils in place.

Inductobands

DESCRIPTION			CATALOG NUMBER
PREMATURE	torso girth 7" to 9"	(17.78-22.86 cm)	**10.5005**
EXTRA SMALL	torso girth 10" to 15"	(25.40-38.10 cm)	**10.5010**
INFANT/BABY	torso girth 12" to 17"	(30.48-43.18 cm)	**10.5012**
TODDLER	torso girth 14" to 20"	(35.56-50.80 cm)	**10.5020**
CHILD/TEEN	torso girth 18" to 25"	(45.72-63.50 cm)	**10.5025**
SMALL ADULT	torso girth 22" to 28"	(55.88-71.12 cm)	**10.5028**
MEDIUM ADULT	torso girth 26" to 32"	(66.04-81.28 cm)	**10.5032**
REGULAR ADULT	torso girth 28" to 36"	(71.12-91.44 cm)	**10.5036**
LARGE ADULT	torso girth 32" to 40"	(81.28-101.60 cm)	**10.5040**
JUMBO ADULT	torso girth 34" to 48"	(86.36-121.92 cm)	**10.5048**
REGAL ADULT	torso girth 42" to 54"	(106.68-137.16 cm)	**10.5054**
X-LARGE ADULT	torso girth 48" to 66"	(121.92-167.64 cm)	**10.5066**

Inductobands

Retainers

Retainers

Calibration accuracy depends on coil placement and retention.
Retainers can be cut with scissors to facilitate comfortable fit.

Small Retainer	for Inductoband 10.5005, 10.5010, 10.5012	**10.5220R**
Child Retainer	for Inductoband 10.5020, 10.5025	**10.5228R**
Adult Retainer	for Inductoband 10.5028, 10.5032, 10.5036	**10.5236R**
Large Retainer	for Inductoband 10.5040, 10.5048	**10.5248R**
X-Large Retainer	for Inductoband 10.5054, 10.5066	**10.5266R**

Cables

Basic Transducer Cable — with precision gold plated plugs and pins. Goes from Inductoband to Transducer Oscillator	**10.5100**
Basic Output cable — Inductotrace Calibrator General Output Cable	**10.5110**
Inductotrace Oscillator/Calibrator Interconnect Cable	**10.5120**
Interface General Output Cable	**10.4213**
Interface to Oscillator Cable	**10.4220**
Extra Long Interconnect Cable 75'	**10.5210X**
Extra Long General Output Cable	**10.5110X**
Extra Long Inductotrace Interface Oscillator Cable 10'	**10.4221**
Extra Long Output Inductotrace Interface Cable 10'	**10.4214**
Belt to carry Inductotrace Interface during ambulatory recording (adjustable)	**10.4203**
Output Cable for Battery-Operated Inductotrace	**10.4215**

Ask about custom sized Inductobands!

Open Pleth System

Open Pleth™ System with Equine Flowmetrics™ Software is a modification of whole body plethysmography that avoids the use of an enclosure. It is a portable system, which provides an ambulatory test for airway hyper-reactivity and tool for diagnosing Inflammatory Airway Disease (IAD).

	DESCRIPTION	CATALOG NUMBER
	**OPEN PLETH SYSTEM** Measurement of flow is made at the opening of the nares in the horse. Volume displacements at the body surface are measured directly using elastic sensors instead of box pressure. The elastic sensors have coils running through them that, when stretched, reduce their impedance (i.e. reduced inductance) to DC current. For example, during inspiration, the sensors stretch, permitting an increased electrical signal, which is proportional to tidal volume. The flowmetric system relies on the respiratory system modeled as a bellows. Just as a bellows consists of a nozzle to deliver flow and the collapsible bellows to general flow, the horse's respiratory system consists of the nose and chest/abdomen components of the breathing mechanism. Flow at the nose and chest/abdomen are compared and their differences recorded as a signal proportional to constriction of airways. A system comes with a custom equine mask; precision pneumotach; respiratory inductive plethysmography (RIP) Control Box with custom differential pressure transducer, analog-to-digital converter with USB Interface and all necessary tubes and wires; one set of equine inductive plethysmography bands; Equine Flowmetrics™ Software; a calibration syringe; and a compressor/nebulizer.	**10.999**

About Ambulatory Monitoring

AMI provides unique instruments to objectively document long-term sleep, hyperactivity, daytime activity levels, fatigue, circadian rhythm, vigilance, and respiration as well as environmental light, temperature and sound measurements in ambulatory subjects.

AMI equipment is used by thousands of customers worldwide including medical centers, pharmaceutical companies, NASA, and the U.S. Department of Defense, just to name a few. It has seen use in medical clinics, in orbit around the earth, under the ocean, on Mount Everest, in the swamps of Georgia, and in the sands of Desert Storm. In short, AMI is dedicated to providing reliable, proven equipment and excellent service to its customers.

AMI continues to maintain its long-standing reputation as an industry leader by continuing to provide quality equipment for physiological and environmental monitoring and impeccable service to its customers.

Tom Kazlausky, M.Che.
President

Tom has over two decades of experience with AMI as Product Manager, then Vice President and, finally, President of AMI.

Linda Tavolacci, B.S.W.
Vice President

Linda has worked with AMI in administrative positions for almost 30 years before becoming AMI Vice President.