AccuSway PLUS

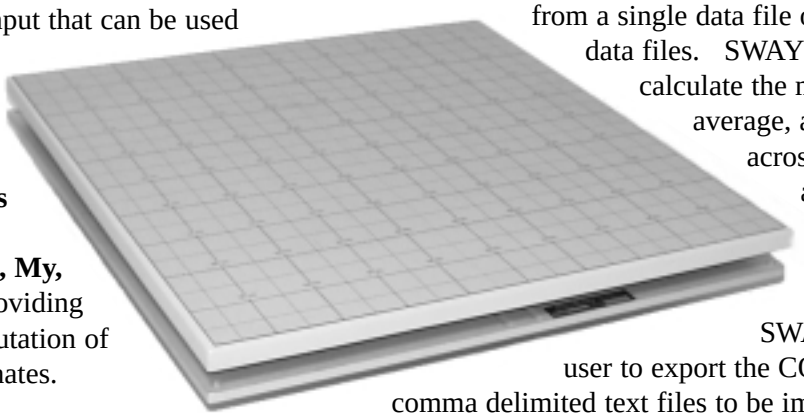
For Balance and Postural Sway Measurement

DESCRIPTION

AMTI's AccuSway^{PLUS} system is a complete solution for quantifying and evaluating human balance. AccuSway^{PLUS} was developed and built to be economical, portable, and easy to use.

The AccuSway^{PLUS}:

- provides a large 50 x 50 cm support surface
- can be used with a desktop or laptop computer
- plugs directly into the R232 port of the computer
- contains complete built-in electronics
- has an external trigger input that can be used to synchronize data
- weighs only 11.4 Kg
- is only 4.4 cm high



The AccuSway^{PLUS} **measures the three forces (Fx, Fy, Fz) and the three moments (Mx, My, Mz)*** involved in balance**,** providing outputs that allow easy computation of the center-of-pressure coordinates. (*U.S. Patent #5,339,699)

A grid on the surface of the platform provides base-of-support coordinates which can be combined with the balance data, allowing the center-of-pressure (COP) to be plotted relative to the subject's position

SOFTWARE

AMTI's SWAYWIN95 postural sway measurement software acquires, analyzes, and plots data from the AccuSway^{PLUS} platform at a rate of 50 sets per second. SWAYWIN95 performs a comprehensive analysis of the sway data and presents many summarizing parameters. One particularly useful parameter, the area of a 95% confidence ellipse, may be used to track time related sway in balance due to the effects of drugs or therapy. Other results include the length of the path of the COP and the average velocity of the COP. Other parameters calculated by SWAYWIN95 are listed on the right.

SWAYWIN95 offers various plots of the sway data, including:

- color or black& white plots
- batch processing of plots
- the COP path on the force plate.
- actual boundaries of the 95% confidence ellipse.
- elliptical area vs. time plots during the test.
- Fast Fourier Transform (FFT) which shows a spectral analysis of the data.

SWAYWIN95 calculates statistical parameters using data from a single data file or from multiple sets of data files. SWAYWIN95's ability to calculate the minimum, maximum, average, and standard deviation across a set of data files allows the easy compilation of a baseline for any study.

SWAYWIN95 allows the user to export the COP and analysis data to comma delimited text files to be imported into spreadsheets like Excel, LOTUS, etc., for further analysis.

Parameters Calculated by SWAYWIN95

dT	Sampling interval
N	Number of data sets
Xo,Yo	Mean position of COP
Xs,Ys	Standard deviations of the coordinates of the COP
Xm,Ym	Mean deviations of the coordinates of the COP
Rm	Mean displacement of X,Y from Xo,Yo
Rs	Standard deviation of the displacement of X,Y from Xo,Yo
Cc	Correlation coefficient of X and Y
Is	Standard deviation of displacement along the axis of maximum standard deviation
IIs	Standard deviation of displacement along the axis of minimum standard deviation
Theta	Rotation required to bring the X-axis to the Is axis
L	Length of path of the COP
VEL	Average speed of COP along it's path
Ao	Area included within the path of the COP
A95	Area of the 95% confidence ellipse
Abos	Area of the base-of-support

ISO 9001 CERTIFIED

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AGT Absolute Gauge Technologies

Presented by: Absolute Gauge Technologies
sales@absolutegauge.com; www.absolutegauge.com,
Toronto: 416 754 3168, Montreal: 514 695 5147, Toll Free: 1 888 754 7008

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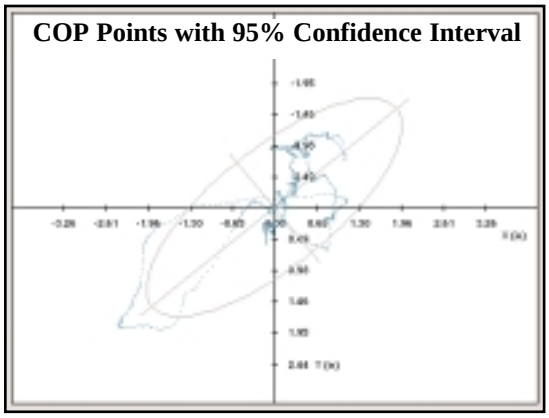
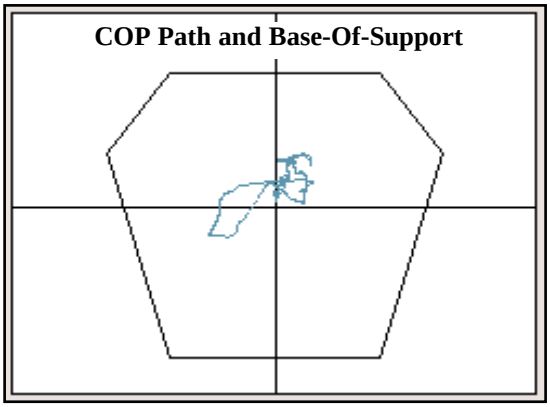
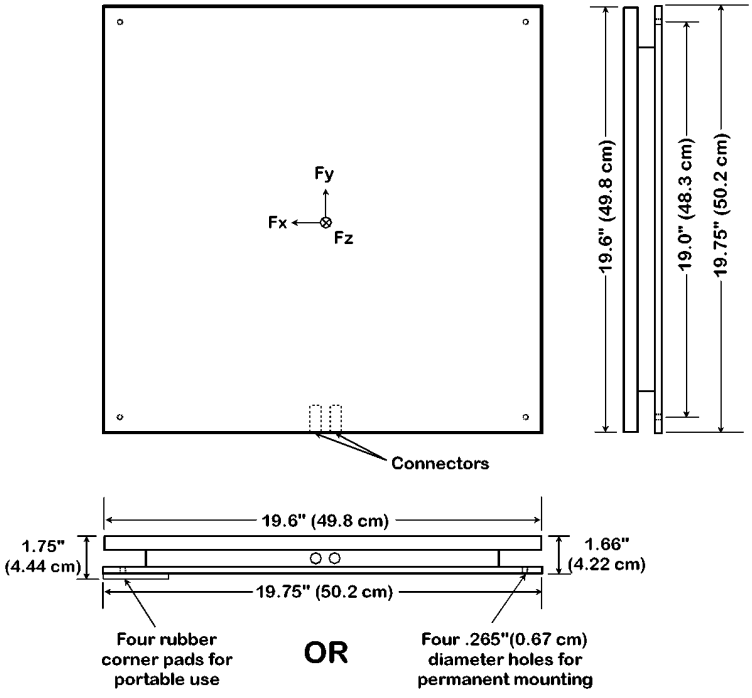
AccuSway PLUS Platform Specifications

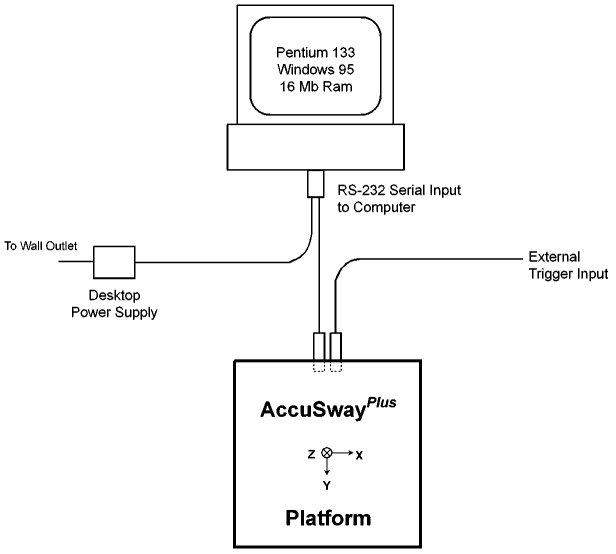
Vertical Capacity:	1800 N centered on platform
Horizontal Capacity:	180 N centered
Mx, My Capacity:	140 Nm at corners
Height:	4.4 cm
Length x Width:	50 x 50 cm
Weight:	11.4 Kg
Data Rate:	50 Hz (each channel is read 50 times a second)
Interface:	RS232, 57.6K Baud, 8 bit, 1stop bit, no parity
Data Transmission:	Proprietary binary format
Power Supply:	12V DC, 110V or 220V input power supply included
Cable Length:	4.5 m
External Trigger:	Optoisolated signal input 0-0.9V (low) 2.5-15V (high), protected to ±18V
Interface Software:	AMTI's SWAYWIN95
Computer Requirements:	Desktop: Pentium 133 MHz processor, Windows95, 16 MB Ram Laptop: 233 MHz, 32 MB Ram







AccuSway PLUS System Set-up



AMTI
ADVANCED MECHANICAL TECHNOLOGY, INC.

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AGT Absolute Gauge Technologies™
Presented by: Absolute Gauge Technologies
sales@absolutegauge.com; www.absolutegauge.com,
Toronto: 416 754 3168, Montreal: 514 695 5147, Toll Free: 1 888 754 7008